

Analysis of the Strategic Plan 2011–2020 of the Convention on Biological Biodiversity (CBD) and first discussions of resulting recommendations for a post-2020 CBD framework

Full study



Malte Timpke, Dr. Elisabeth Marquard & Dr. Cornelia Paulsch
INSTITUTE FOR BIODIVERSITY – NETWORK (ibn), Regensburg, Germany

Cover pictures:

Aichi targets

Authors contact:

Malte Timpke

Dr. Elisabeth Marquard

Dr. Cornelia Paulsch



Institut für Biodiversität – Netzwerk e.V.
Institute for Biodiversity
Science and Business Experts Network

Nussbergerstr. 6a, D93059 Regensburg/Germany

E-Mail: info@biodiv.de

URL: www.biodiv.de

The study is part of the project “Analysis of the Strategic Plan 2011-2020 of the Convention on Biological Biodiversity (CBD) and first discussions of resulting recommendations for a post-2020 CBD framework, including a workshop with national stakeholders” and “Conceptualisation, organisation and realisation of a workshop with European Stakeholders” R & D project „Post-2020 CBD Framework“, subprojects 1 and 2 (UFOPLAN 2017, support code 3517 84 3000). The project is funded by the Federal Agency for Nature Conservation (BfN) and supported by the German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (BMU). The content of the study does not necessarily reflect the opinion of the German Federal Agency for Nature Conservation or the German Federal Ministry for the Environment.

The project publishes three products (October 2018): the full study, an extended summary and a policy brief. All three products can be downloaded under:

Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



based on a decision of the German Bundestag



<http://www.biodiv.de/en/projekte/aktuell/post-2020.html>

Content

1. SUMMARY	1
2. INTRODUCTION.....	2
2.1. BACKGROUND AND CONTEXT OF THIS REPORT	2
2.2. SELECTED VIEWS BY GOVERNMENTS AND OTHER STAKEHOLDERS ON THE POST-2020 CBD FRAMEWORK AS SUBMITTED TO THE CBD SECRETARIAT	3
2.3. FURTHER DETAILS ON THE DEVELOPMENT PROCESS FOR THE POST-2020 CBD FRAMEWORK.....	5
2.4. OVERVIEW OF SELECTED RELEVANT INITIATIVES, PROJECTS AND MEETINGS	8
2.4.1. <i>ibn – Analysis of the Strategic Plan 2011-2020 of the CBD and expert workshops.....</i>	<i>9</i>
2.4.1.1. Recommendations.....	9
2.4.1.2. Outputs.....	9
2.4.2. <i>CCI – Expert workshop on evidence needed and effective use of knowledge</i>	<i>10</i>
2.4.2.1. Recommendations.....	10
2.4.2.2. Outputs.....	13
2.4.3. <i>IDDRI – Post-2020 workshop and ISSUE Brief.....</i>	<i>14</i>
2.4.3.1. Recommendations.....	14
2.4.3.2. Outputs.....	14
2.4.4. <i>Rethinking Biodiversity Governance (RBG-) Network.....</i>	<i>15</i>
2.4.4.1. Recommendations.....	15
2.4.4.2. Outputs.....	15
2.4.5. <i>RSPB / Birdlife International - Analysis of progress towards the Aichi Targets.....</i>	<i>15</i>
2.4.5.1. Recommendations.....	16
2.4.5.2. Outputs.....	17
2.4.6. <i>WWF Germany / ibn – International expert workshops, a ‘Horizon Scanning’ exercise and a discussion paper</i>	<i>17</i>
2.4.6.1. Recommendations.....	19
2.4.6.2. Outputs.....	19
2.4.7. <i>Zoological Society of London (ZSL) and National Geographic Society (NGS) – International symposium.....</i>	<i>20</i>
2.4.7.1. Recommendations.....	20
2.4.7.2. Outputs.....	21
2.5. OUTLINE OF THE FOLLOWING CHAPTERS OF THIS REPORT	21
3. METHODOLOGY FOR THE STUDY PRESENTED IN THE FOLLOWING CHAPTERS	22
3.1. LITERATURE REVIEW ON POLICY INSTRUMENTS	22
3.2. ANALYSIS OF THE INDIVIDUAL AICHI TARGETS	23
3.2.1. <i>Relationship to previous CBD framework and other Aichi Targets</i>	<i>23</i>
3.2.2. <i>Smartness of the Aichi Targets</i>	<i>23</i>
3.2.3. <i>Links to other conventions and further processes</i>	<i>24</i>
3.2.4. <i>Development of recommendations</i>	<i>25</i>
4. POLICY INSTRUMENTS IN THE BIODIVERSITY CONTEXT	26
4.1. LEGAL AND REGULATORY INSTRUMENTS.....	26
4.1.1. <i>Global treaties, conventions and agreements.....</i>	<i>26</i>
4.1.2. <i>Voluntary commitments</i>	<i>28</i>
4.1.2.1. Bonn Challenge and the New York Declaration on Forests	29
4.1.2.2. IUCN World Commission on Protected Areas / World Park Congress.....	30
4.1.2.3. United Nations Framework Convention on Climate Change (UNFCCC)	30
4.1.2.4. United Nations Convention to Combat Desertification (UNCCD)	31

4.1.2.5.	UN World Conferences on Disaster Risk Reduction / Sendai Framework	32
4.1.2.6.	Sustainable Development Goals	32
4.1.2.7.	UN Ocean Conference	33
4.1.2.8.	Summary and conclusions on voluntary commitments	34
4.1.3.	<i>Regional treaties, agreements, strategies and national policies</i>	<i>34</i>
4.1.3.1.	Direct regulation, e.g. protected area designation	35
4.1.3.2.	Legislation and strategies on e.g. invasive alien species	35
4.2.	ECONOMIC AND FINANCIAL INSTRUMENTS	35
4.3.	RIGHTS-BASED INSTRUMENTS AND CUSTOMARY NORMS	36
4.4.	SOCIAL AND CULTURAL INSTRUMENTS	36
5.	ANALYSIS OF INDIVIDUAL AICHI TARGETS	37
5.0.	NOTE ON THE PRESENTED ANALYSIS AND THE POST-2020 CBD FRAMEWORK'S OVERALL ARCHITECTURE ..	37
5.1.	AICHI TARGET 1	39
5.1.1.	<i>Introduction</i>	<i>39</i>
5.1.1.1.	Structural overview	39
5.1.2.	<i>Analysis</i>	<i>39</i>
5.1.2.1.	Links to previous CBD framework and to other Aichi Targets	39
5.1.2.2.	Smartness	40
5.1.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	41
5.1.2.4.	Links to other conventions and further processes	42
5.1.3.	<i>Recommended options and further suggestions for Aichi Target 1</i>	<i>43</i>
5.1.3.1.	Suggestion by ibn: accentuate crisis and actions	43
5.1.3.2.	Suggestions by participants of the national expert workshop	43
5.1.3.3.	Suggestions by participants of the international expert workshop	44
5.1.4.	<i>Further considerations</i>	<i>45</i>
5.1.4.1.	Options that could facilitate progress toward Aichi Biodiversity Target 1	45
5.1.4.2.	Suggested milestones	45
5.1.4.3.	Other issues	46
5.2.	AICHI TARGET 2	47
5.2.1.	<i>Introduction</i>	<i>47</i>
5.2.1.1.	Structural overview	48
5.2.2.	<i>Analysis</i>	<i>48</i>
5.2.2.1.	Links to previous CBD framework and to other Aichi Targets	48
5.2.2.2.	Smartness	49
5.2.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	50
5.2.2.4.	Links to other conventions and further processes	51
5.2.3.	<i>Recommended options and further suggestions for Aichi Target 2</i>	<i>52</i>
5.2.3.1.	Suggestion by ibn: Aichi Target 2 with a modified timeline	52
5.2.3.2.	Suggestions by participants of the national expert workshop	53
5.2.3.3.	Suggestions by participants of the international expert workshop	53
5.2.4.	<i>Further considerations</i>	<i>54</i>
5.2.4.1.	Options that could facilitate progress toward Aichi Target 2	54
5.2.4.2.	Suggested milestones	54
5.2.4.3.	Other issues	55
5.3.	AICHI TARGET 3	56
5.3.1.	<i>Introduction</i>	<i>56</i>
5.3.1.1.	Structural overview	56
5.3.2.	<i>Analysis</i>	<i>57</i>
5.3.2.1.	Relationship to previous CBD framework and to other Targets	57
5.3.2.2.	Smartness	57
5.3.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	58

5.3.2.4.	Links to other conventions and further processes	59
5.3.3.	Recommended options and further suggestions for Aichi Target 3	60
5.3.3.1.	Suggestion by ibn: Aichi Target 3 with modified timeline and minor changes.....	60
5.3.3.2.	Suggestions by participants of the national expert workshop	61
5.3.3.3.	Suggestions by participants of the international expert workshop.....	62
5.3.4.	Further considerations.....	62
5.3.4.1.	Options that could facilitate progress toward Aichi Target 3	62
5.3.4.2.	Suggested milestones.....	63
5.3.4.3.	Other issues.....	63
5.4.	AICHI TARGET 4.....	64
5.4.1.	Introduction	64
5.4.1.1.	Structural overview	64
5.4.2.	Analysis.....	65
5.4.2.1.	Relationship to previous CBD framework and to other Aichi Targets	65
5.4.2.2.	Smartness	65
5.4.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	66
5.4.2.4.	Links to other conventions and further processes	68
5.4.3.	Recommended options and further suggestions for Aichi Target 4	69
5.4.3.1.	Suggestion by ibn: accentuate role of consumers.....	69
5.4.3.2.	Suggestions by participants or the national expert workshop	70
5.4.3.3.	Suggestions by participants of the international expert workshop.....	70
5.4.4.	Further considerations.....	71
5.4.4.1.	Options that could facilitate progress toward Aichi Target 4	71
5.4.4.2.	Suggested milestones.....	71
5.4.4.3.	Other issues.....	72
5.5.	AICHI TARGET 5.....	73
5.5.1.	Introduction	73
5.5.1.1.	Structural overview	73
5.5.2.	Analysis.....	74
5.5.2.1.	Relationship to previous CBD framework and to other Aichi Targets	74
5.5.2.2.	Smartness	74
5.5.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	75
5.5.2.4.	Links to other conventions and further processes	76
5.5.3.	Recommended options and further suggestions for Aichi Target 5	77
5.5.3.1.	Suggestion by ibn: add the aspect of non-natural habitats	77
5.5.3.2.	Suggestions by participants of the national expert workshop	78
5.5.3.3.	Suggestions by participants of the international expert workshop.....	78
5.5.4.	Further considerations.....	79
5.5.4.1.	Options that could facilitate progress toward Aichi Target 5	79
5.5.4.2.	Suggested milestones.....	79
5.5.4.3.	Other issues.....	79
5.6.	AICHI TARGET 6.....	80
5.6.1.	Introduction	80
5.6.1.1.	Structural overview	80
5.6.2.	Analysis.....	81
5.6.2.1.	Relationship to previous CBD framework and to other Targets	81
5.6.2.2.	Smartness	81
5.6.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	82
5.6.2.4.	Links to other conventions and further processes	83
5.6.3.	Recommended options and further suggestions for Aichi Target 6	84
5.6.3.1.	Suggestion by ibn: accentuate freshwater biodiversity.....	84
5.6.3.2.	Suggestions by participants of the national expert workshop	84
5.6.3.3.	Suggestions by participants of the international expert workshop.....	85

5.6.4.	<i>Further considerations</i>	85
5.6.4.1.	Options that could facilitate progress toward Aichi Target 6	86
5.6.4.2.	Suggested milestones.....	86
5.6.4.3.	Other issues.....	86
5.7.	AICHI TARGET 7	87
5.7.1.	<i>Introduction</i>	87
5.7.1.1.	Structural overview	87
5.7.2.	<i>Analysis</i>	88
5.7.2.1.	Links to previous CBD framework and to other Aichi Targets	88
5.7.2.2.	Smartness	88
5.7.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	89
5.7.2.4.	Links to other conventions and further processes	90
5.7.3.	<i>Recommended options and further suggestions for Aichi Target 7</i>	91
5.7.3.1.	Suggestion by ibn: accentuate “area” as a key factor	91
5.7.3.2.	Suggestions by participants of the national expert workshop	92
5.7.3.3.	Suggestions by participants of the international expert workshop.....	93
5.7.4.	<i>Further considerations</i>	93
5.7.4.1.	Options that could facilitate progress toward Aichi Target 7	93
5.7.4.2.	Suggested milestones.....	94
5.7.4.3.	Other issues.....	94
5.8.	AICHI TARGET 8	95
5.8.1.	<i>Introduction</i>	95
5.8.1.1.	Structural overview	95
5.8.2.	<i>Analysis</i>	96
5.8.2.1.	Links to previous CBD framework and to other Aichi Targets	96
5.8.2.2.	Smartness	96
5.8.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	97
5.8.2.4.	Links to other conventions and further processes	98
5.8.3.	<i>Recommended options and further suggestions for Aichi Target 8</i>	100
5.8.3.1.	Suggestion by ibn: accentuate different kinds of pollution	100
5.8.3.2.	Suggestions by participants of the national expert workshop	100
5.8.3.3.	Suggestions by participants of the international expert workshop.....	101
5.8.4.	<i>Further considerations</i>	101
5.8.4.1.	Options that could facilitate progress toward Aichi Target 8	101
5.8.4.2.	Suggested milestones.....	101
5.9.	AICHI TARGET 9	103
5.9.1.	<i>Introduction</i>	103
5.9.1.1.	Structural overview	103
5.9.2.	<i>Analysis</i>	104
5.9.2.1.	Links to previous CBD framework and to other Aichi Targets	104
5.9.2.2.	Smartness	104
5.9.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	105
5.9.2.4.	Links to other conventions and further processes	106
5.9.3.	<i>Recommended options and further suggestions for Aichi Target 9</i>	106
5.9.3.1.	Suggestion by ibn: Aichi Target 9 with modified timeline	106
5.9.3.2.	Suggestions by participants of the national expert workshop	106
5.9.3.3.	Suggestions by participants of the international expert workshop.....	107
5.9.4.	<i>Further considerations</i>	107
5.9.4.1.	Options that could facilitate progress toward Aichi Target 9	107
5.9.4.2.	Suggested milestones.....	107
5.9.4.3.	Other issues.....	107
5.10.	AICHI TARGET 10	108

5.10.1.	<i>Introduction</i>	108
5.10.1.1.	Structural overview	108
5.10.2.	<i>Analysis</i>	109
5.10.2.1.	Links to previous CBD framework and to other Aichi Targets	109
5.10.2.2.	Smartness	109
5.10.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	110
5.10.2.4.	Links to other conventions and further processes	111
5.10.3.	<i>Recommended options and further suggestions for Aichi Target 10</i>	112
5.10.3.1.	Suggestion by ibn: specify pressures and vulnerable ecosystems	112
5.10.3.2.	Suggestions by participants of the national expert workshop	112
5.10.3.3.	Suggestions by participants of the international expert workshop	113
5.10.4.	<i>Further considerations</i>	113
5.10.4.1.	Options that could facilitate progress toward Aichi Target 10	113
5.10.4.2.	Suggested milestones	113
5.11.	AICHI TARGET 11	114
5.11.1.	<i>Introduction</i>	114
5.11.1.1.	Structural overview	114
5.11.2.	<i>Analysis</i>	115
5.11.2.1.	Links to previous CBD framework and to other Aichi Targets	115
5.11.2.2.	Smartness	115
5.11.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	116
5.11.2.4.	Links to other conventions and further processes	118
5.11.3.	<i>Recommended options and further suggestions for Aichi Target 11</i>	120
5.11.3.1.	Suggestion by ibn: accentuate EBSAs in the open seas	120
5.11.3.2.	Suggestions by participants of the national expert workshop	120
5.11.3.3.	Suggestions by participants of the international expert workshop	121
5.11.4.	<i>Further considerations</i>	122
5.11.4.1.	Options that could facilitate progress toward Aichi Target 11	122
5.11.4.2.	Suggested milestones	122
5.12.	AICHI TARGET 12	123
5.12.1.	<i>Introduction</i>	123
5.12.1.1.	Structural overview	123
5.12.2.	<i>Analysis</i>	123
5.12.2.1.	Links to previous CBD framework and to other Aichi Targets	123
5.12.2.2.	Smartness	124
5.12.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	124
5.12.2.4.	Links to other conventions and further processes	125
5.12.3.	<i>Recommended options and further suggestions for Aichi Target 12</i>	126
5.12.3.1.	Suggestion by ibn: Aichi Target 12 with modified timeline	126
5.12.3.2.	Suggestions by participants of the national expert workshop	126
5.12.3.3.	Suggestions by participants of the international expert workshop	126
5.12.4.	<i>Further considerations</i>	127
5.12.4.1.	Options that could facilitate progress toward Aichi Target 12	127
5.12.4.2.	Suggested milestones	127
5.13.	AICHI TARGET 13	128
5.13.1.	<i>Introduction</i>	128
5.13.1.1.	Structural overview	128
5.13.2.	<i>Analysis</i>	129
5.13.2.1.	Links to previous CBD framework and to other Aichi Targets	129
5.13.2.2.	Smartness	129
5.13.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	130
5.13.2.4.	Links to other conventions and further processes	130

5.13.3.	<i>Recommended options and further suggestions for Aichi Target 13</i>	132
5.13.3.1.	Suggestion by ibn: Aichi Target 13 with modified timeline	132
5.13.3.2.	Suggestions by participants of the national expert workshop	132
5.13.3.3.	Suggestions by participants of the international expert workshop.....	132
5.13.4.	<i>Further considerations</i>	133
5.13.4.1.	Options that could facilitate progress toward Aichi Target 13	133
5.13.4.2.	Suggested milestones.....	133
5.14.	AICHI TARGET 14.....	134
5.14.1.	<i>Introduction</i>	134
5.14.1.1.	Structural overview	134
5.14.2.	<i>Analysis</i>	134
5.14.2.1.	Links to previous CBD framework and to other Aichi Targets	134
5.14.2.2.	Smartness	135
5.14.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	136
5.14.2.4.	Links to other conventions and further processes	137
5.14.3.	<i>Recommended options and further suggestions for Aichi Target 14</i>	138
5.14.3.1.	Suggestion by ibn: Aichi Target 14 with modified timeline (and without reference to the under-privileged) 138	
5.14.3.2.	Suggestions by participants of the national expert workshop	138
5.14.3.3.	Suggestions by participants of the international expert workshop.....	139
5.14.4.	<i>Further considerations</i>	139
5.14.4.1.	Options that could facilitate progress toward Aichi Target 14	139
5.14.4.2.	Suggested milestones.....	140
5.15.	AICHI TARGET 15.....	141
5.15.1.	<i>Introduction</i>	141
5.15.1.1.	Structural overview	141
5.15.2.	<i>Analysis</i>	141
5.15.2.1.	Links to previous CBD framework and to other Aichi Targets	141
5.15.2.2.	Smartness	142
5.15.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	142
5.15.2.4.	Links to other conventions and further processes	143
5.15.3.	<i>Recommended options and further suggestions for Aichi Target 15</i>	145
5.15.3.1.	Suggestion by ibn: clarify terms, separate Target elements.....	145
5.15.3.2.	Suggestions by participants of the national expert workshop	146
5.15.3.3.	Suggestions by participants of the international expert workshop.....	146
5.15.4.	<i>Further considerations</i>	146
5.15.4.1.	Options that could facilitate progress toward Aichi Target 15	146
5.15.4.2.	Suggested milestones.....	147
5.15.4.3.	Other issues.....	148
5.16.	AICHI TARGET 16.....	149
5.16.1.	<i>Note</i>	149
5.17.	AICHI TARGET 17	150
5.17.1.	<i>Introduction</i>	150
5.17.1.1.	Structural overview	150
5.17.2.	<i>Analysis</i>	151
5.17.2.1.	Links to previous CBD framework and to other Aichi Targets	151
5.17.2.2.	Smartness	151
5.17.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs.....	152
5.17.2.4.	Links to other conventions and further processes	152
5.17.3.	<i>Recommended options and further suggestions for Aichi Target 17</i>	153
5.17.3.1.	Suggestion by ibn: replace or re-formulate Aichi Target 17 (accentuate EBSAs in the open seas)	153
5.18.	AICHI TARGET 18.....	155

5.18.1.	<i>Introduction</i>	155
5.18.1.1.	Structural overview	155
5.18.2.	<i>Analysis</i>	156
5.18.2.1.	Links to previous CBD framework and to other Aichi Targets	156
5.18.2.2.	Smartness	156
5.18.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	157
5.18.2.4.	Links to other conventions and further processes	157
5.18.3.	<i>Recommended options and further suggestions for Aichi Target 18</i>	158
5.18.3.1.	Suggestion by ibn: Aichi Target 18 with modified timeline	158
5.19.	AICHI TARGET 19	160
5.19.1.	<i>Introduction</i>	160
5.19.1.1.	Structural overview	160
5.19.2.	<i>Analysis</i>	160
5.19.2.1.	Links to previous CBD framework and to other Aichi Targets	160
5.19.2.2.	Smartness	161
5.19.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	161
5.19.2.4.	Links to other conventions and further processes	163
5.19.3.	<i>Recommended options and further suggestions for Aichi Target 19</i>	164
5.19.3.1.	Suggestion by ibn: put more emphasis on the application of knowledge and its consideration in political decision making	164
5.20.	AICHI TARGET 20	165
5.20.1.	<i>Introduction</i>	165
5.20.1.1.	Structural overview	165
5.20.2.	<i>Analysis</i>	165
5.20.2.1.	Links to previous CBD framework and to other Aichi Targets	165
5.20.2.2.	Smartness	166
5.20.2.3.	Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs	166
5.20.2.4.	Links to other conventions and further processes	167
5.20.3.	<i>Recommended options and further suggestions for Aichi Target 20</i>	168
5.20.3.1.	Suggestion by ibn: replace Aichi Target 20	168
6.	POSSIBLE ADDITIONAL TOPICS FOR THE POST-2020 FRAMEWORK OF THE CBD	169
6.1.	SOIL BIODIVERSITY	169
6.2.	UNDERWATER NOISE	169
6.3.	POLLUTION BY PLASTIC WASTE AND MICRO-PLASTICS	170
6.4.	MARINE PROTECTED AREAS BEYOND NATIONAL JURISDICTION	170
6.5.	CONSEQUENCES OF SYNTHETIC BIOLOGY	170
6.6.	GEO-ENGINEERING	171
6.7.	TELECOUPLING	171
7.	CONCLUSIONS	172
7.1.	KEEP THE LEVEL OF AMBITION	172
7.2.	FOCUS ON IMPLEMENTATION	172
7.3.	SET STRATEGIC TIMELINES	173
7.4.	OVERALL CONCLUSION	173
7.5.	OVERVIEW OVER DEVELOPED RECOMMENDATIONS	174
8.	ABBREVIATIONS	179
9.	CITED REFERENCES	182

1. Summary

The Convention on Biological Diversity (CBD) is the most comprehensive global treaty dealing with nature conservation and sustainable use. Its current Strategic Plan, which includes the 20 Aichi Targets, has a time frame until 2020. The Convention's Conference of the Parties is expected to update this Plan in 2020 – or to adopt a new post-2020 global biodiversity framework.

This report presents an analysis of the structure and the content of the current Strategic Plan of the CBD (2011–2020). This includes an analysis of the individual Aichi Targets with respect to their 'SMARTness' and their relationship towards other relevant policy processes. For each Aichi Target, the options to keep it or to modify it were assessed and respective recommendations were developed which were then discussed with national and international biodiversity experts at two stakeholder workshops. Special emphasis was put on potential approaches for fostering commitments and strengthening implementation. Furthermore, this report also includes a list of possible additional topics for the post-2020 framework of the CBD that were either extracted from the studied literature or from the discussions at the workshops.

Overall, it is recommended to maintain the current Strategic Plan to the highest degree possible beyond 2020. However, as a partial update seems unavoidable, the upcoming re-negotiations should be regarded as an opportunity for improving the framework with regard to its consistency, simplicity and – in particular – its coherency with other multilateral environmental agreements, while keeping the level of ambition.

2. Introduction

2.1. Background and context of this report

The Convention on Biological Diversity (CBD) is the most comprehensive global treaty dealing with nature conservation and sustainable use. Its current Strategic Plan, which includes the 20 Aichi Targets, is coming to an end in 2020 (CBD/COP/DEC/X/2, 2010). Therefore, the fifteenth meeting of the Conference of the Parties to the CBD (CBD COP-15), to be held in 2020 in Beijing, China, “is expected to update the Convention’s strategic plan. This would be done in the context of the 2050 Vision of the current Strategic Plan for Biodiversity 2011-2020 as well the 2030 Agenda for Sustainable Development and other relevant international processes, and in the light of an assessment of progress in achieving the goals and Aichi Biodiversity Targets of the current Plan as well as of future scenarios of change” (quote from the CBD webpage¹).

The CBD has initiated processes to facilitate the development of a post-2020 global biodiversity framework, collected first suggestions from governments and stakeholders for a timeline and a “comprehensive and participatory” approach (CBD/SBI/2/17, 2018) and discussed the development of the process toward a new framework at the twenty-second meeting of its Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-22) and at the second meeting of its Subsidiary Body of Implementation (SBI-2) (see also CBD/COP/DEC/XIII/1, 2016, p. 5; CITES, 2018). A new draft document for the process will be subject of discussion at CBD COP-14 in November 2018 (see CBD/COP/14/9, 2018). The CBD Parties also decided at SBI-2 to invite the submission of views from governments and stakeholders on the scope and content of the post-2020 global biodiversity framework until 15 December 2018 (CBD/SBI/REC/2/19, 2018).

To support the involvement of various stakeholders in the development process of the post-2020 CBD framework, the German Federal Agency for Nature Conservation (BfN) issued the study presented here and two stakeholder workshops. The aims of the study were to analyse the content and the structure of the current Strategic Plan of the CBD in order to derive recommendations for the post-2020 CBD framework. The recommendations drafted by the author team were discussed with national biodiversity experts and other stakeholders during a workshop held in April 2018 in Berlin/Germany. During the year 2018, several other initiatives in Europe have also worked on inputs to the development of a post-2020 CBD framework from different angles, e.g. from a NGO perspective² or from a more scientific standpoint³ (see section 2.4 of this report). Their common feature was that they all aimed at enriching the upcoming discussions on the future global roadmap for the conservation and sustainable use of biodiversity. To share suggestions, views and ideas among these different projects and approaches as well as with additional stakeholders, a second workshop with international biodiversity experts (mostly from European countries) was organized by ibn and held in September 2018 in Bonn/Germany.

¹ <https://www.cbd.int/post2020/>; the 2050 Vision referred to reads: “The vision of this Strategic Plan is a world of ‘Living in harmony with nature’ where ‘By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people’” (CBD/COP/DEC/X/2, 2010)

² See e.g. <http://www.biodiv.de/en/projekte/aktuell/cbd-strategy.html>

³ See e.g. <http://www.cambridgeconservation.org/collaboration/cc-engagement-defining-post-2020-biodiversity-agenda> or <https://www.iddri.org/index.php/en/publications-and-events/workshop/what-ambition-cop15>

2.2. Selected views by governments and other stakeholders on the post-2020 CBD framework as submitted to the CBD Secretariat

In 2017, the CBD Secretariat invited comments on how the preparatory process towards a post-2020 global biodiversity framework could or should be designed, compiled a draft document on such a process, and invited again stakeholders to review this document (CBD Secretariat, 2017b; c). Based on the submitted suggestions by governments and stakeholders, the CBD Secretariat prepared a working document with “Proposals for a comprehensive and participatory process for the preparation of the post-2020 global biodiversity framework” (CBD/SBI/2/17, 2018). The submissions by governments and stakeholders highlighted, that a post-2020 framework “...should build upon the achievements of the Strategic Plan for Biodiversity 2011-2020, but be remarkably enhanced” (ibid., p. 5). The submissions further highlighted the importance of closely linking the post-2020 global biodiversity framework to the 2030 Agenda for Sustainable Development and to the Sustainable Development Goals (SDGs), noting that some of the SDG sub-targets have timelines until 2020 and would need to be updated by the UN General Assembly based on new targets of the post-2020 biodiversity framework. The framework should also be coherently linked to other international agreements, e.g. to the Sendai Framework for Disaster Risk Reduction, the Paris Climate Agreement or the Land Degradation Neutrality Goal of the United Nations Convention to Combat Desertification (UNCCD) and other relevant processes (listed in CBD/SBI/2/17, 2018, p. 7). Submissions called further for a broad and meaningful engagement of CBD Parties in the development process and of “...indigenous peoples and local communities, United Nations and other intergovernmental organizations, non-governmental organizations, women organizations, academia, the business community, faith groups, youth and other stakeholders, including citizens” (ibid., p. 5). The engagement should be facilitated by meetings and workshops, online consultations, campaigns, and citizen surveys and supported regular updates on the progress and opportunities to provide comments and inputs at various stages. Parties should establish national processes to facilitate national dialogue and inputs to the development process. The post-2020 biodiversity framework should be developed by making use of all evidence and relevant information available, especially the most recent editions of the Global Biodiversity Outlook (GBO), the latest reports on National Biodiversity Strategies and Action Plans (NBSAPs) as well as the upcoming Global Assessment on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Submissions also stated that multi-disciplinary scientific information and knowledge including natural, biophysical and social sciences should be considered.

Furthermore, stakeholders expressed the following views⁴:

- The Vision and the Mission of the current Strategic Plan remain relevant for the post-2020 framework (e.g. Pro Natura, 2017).
- On the contrary: There is a need to update also the Vision and the Mission of the Strategic Plan (e.g. Bubb, 2017; IUCN, 2017b).
- The coordination and alignment with other key international processes is very important, in particular with the 2030 Sustainability Agenda (e.g. Bubb, 2017; EU and its Member States, 2017; IUCN, 2017b; UNEP-WCMC, 2017; WWF, 2017).

⁴ See the submissions at: <https://www.cbd.int/post2020/submissions.shtml>

- Contributions from the private sector to the global biodiversity agenda should be fostered; they have the potential to become more important in the future (e.g. Birdlife International, 2017; Conservation International, 2017; Pro Natura, 2017).

This first collection of views (summarized in CBD/SBI/2/17, 2018) focused on the development process for the post-2020 biodiversity framework, not on its scope or content. However, some views on the content were anyhow expressed and they were summarised in annex 2 of CBD/SBI/2/17 (2018, p. 19). For example, some stakeholders suggested that the post-2020 global biodiversity framework should tackle additional or a revised set of thematic focus areas. Topics mentioned in this context were e.g. the contribution of biodiversity to human health, links between biodiversity, peace, conflict, and the migration of peoples, services delivered by soils and their biodiversity, the role of nature in cities, land tenure related issues (e.g. IUCN, 2017b), and the relationship between biological and cultural diversity (e.g. Forest Peoples Programme, 2017). Further topics potentially worth considering for being addressed in the post-2020 CBD framework are listed in chapter 6 of this report.

A recurrent subject in the submissions by governments and other stakeholders to the CBD was the potential introduction of national voluntary commitments into the post-2020 global biodiversity framework, similar to the commitments made in the context of the United Nations Framework Convention on Climate Change (UNFCCC), the Land Degradation Neutrality Targets of the UNCCD or at the UN Oceans Conference in 2017. Several stakeholders argued in their submissions that the post-2020 CBD framework should be linked with these instruments (e.g. Conservation International, 2017; WWF, 2017) or that developing a similar instrument for the global biodiversity agenda may offer the opportunity to strengthen national commitments (e.g. Birdlife International, 2017; EU and its Member States, 2017; IUCN, 2017b; UNEP-WCMC, 2017). Different actors could be involved in a scheme of voluntary commitments: states, local authorities, international organisations, the private sector or other stakeholders. National commitments could help to create ownership and increase national relevance of the post-2020 global biodiversity targets. Concerns were raised, though, how commitments for the framework could be made before the scope of the framework is adopted and how commitments would relate to the already existing global and national targets in the National Biodiversity Strategies and Action Plans (NBSAPs). Some stakeholders highlighted that the focus should be on implementing exiting targets and strategies and that a voluntary commitment scheme would require clear guidance as well as a monitoring and evaluation mechanism (CBD/SBI/2/17, 2018, p. 6-7). The potential of a voluntary commitments scheme for the post-2020 biodiversity framework is further discussed in chapter 4 of this report.

The SBI working document CBD/SBI/2/17 (2018) also considered an information document on transformative changes needed and on policy measures that could lead to a more sustainable future leading to CBD's 2050 Vision (CBD/SBI/2/INF/26, 2018). Its "main premise [...] is that efforts to conserve biodiversity to date are being countered by negative impacts of ever increasing levels of consumption and economic growth and that new strategies are needed to achieve transformative changes" (ibid., p. 1). The document explores how sustainability transitions could be accelerated and proposes according governance options.

The SBI working document CBD/SBI/2/17 (2018) further takes reference to a set of conclusions developed by SBSTTA on scenarios for the 2050 CBD Vision "Living in Harmony with Nature". According to these conclusions, "the 2050 Vision contains elements that could be translated into a long-term goal for biodiversity and provide context for discussions on possible biodiversity targets for

2030 as part of the post-2020 global biodiversity framework” (CBD/SBI/2/17, 2018, p. 8). Further work on scenarios is needed, but the current ones also show that a transformational change would require a “...change in behaviour at the levels of producers and consumers, governments and businesses” (ibid.).

While the views summarized in CBD/SBI/2/17 (2018) addressed many very important issues, they mostly did not consider single Aichi Targets. In contrast, the analysis of the individual Aichi Targets was the main focus of the study reported here (see chapter 5).

2.3. Further details on the development process for the post-2020 CBD framework

The two advisory bodies to the CBD, the SBSTTA and the SBI met in July 2018 in Montreal and discussed among other agenda items the development of the post-2020 global biodiversity framework.

According to SBI, the development process should be open and make no assumptions on the content of the post-2020 global biodiversity framework. It will be overseen by the Bureau of the COP and should be based on following principles (CBD/SBI/2/17, 2018, p. 9):

- (a) Participatory – should enable the effective and meaningful participation in relevant workshops and meetings and provide opportunities to provide feedback and comments on discussions and official documents
- (b) Inclusive – should encourage all relevant groups and stakeholders and be gender sensitive by ensuring appropriate representation in relevant meetings
- (c) Comprehensive – should make use of all available information, incl. relevant international frameworks, broader global trends and other relevant strategies and plans
- (d) Transformative – should help mobilize a broader societal engagement on the longer term to achieve sustainable transformations
- (e) Catalytic – should serve to catalyse a movement for biodiversity emphasizing the sense of political urgency from local to global scale
- (f) Knowledge-based – should be based on the best available science and evidence from relevant knowledge systems, including the natural and social sciences, local, traditional and indigenous
- (g) Transparent – should be clearly documented through a dedicated webpage and progress reports
- (h) Iterative – should be developed in an iterative manner to create consensus and ownership

The preparation process should provide CBD Parties, other governments and all stakeholders with opportunities to contribute their views including the submission of comments on working documents, submissions through online forums, surveys, campaigns, questionnaires, as well as interventions in relevant workshops and meetings. Workshops should be organised on global, regional and sectoral level and relevant events should be used to consult on the development of a post-2020 biodiversity framework. The CBD Secretariat encourages third parties to organise related events and will support the development process with an outreach and engagement campaign.

Based on the views summarized in CBD/SBI/2/17 (2018), SBI-2 decided to invite further views from governments and stakeholders on the proposed development process, to be discussed and adopted at CBD COP-14 in November 2018, as well as initial views “...on the aspects of the scope and content of the post-2020 global biodiversity framework, including (a) the scientific underpinning of the scale

and scope of actions necessary to make progress towards the 2050 Vision; and (b) a possible structure for the post-2020 biodiversity framework” (CBD/SBI/REC/2/19, 2018, p. 2).

SBI-2 further proposed to the Parties of COP-14 to decide that “...the post-2020 global biodiversity framework should be accompanied by an inspirational and motivating 2030 Mission as a stepping stone towards the 2050 Vision” (ibid.). SBI-2 recommended that COP-14 should urge Parties and stakeholders to engage in the development of the post-2020 global biodiversity framework and to facilitate dialogues on national, subnational and local levels that should feedback into the global process through the clearing-house mechanism of the CBD. COP-14 should also decide to make use of the advice to enable a gender-responsive process. SBI-2 further proposed to calls on Parties and stakeholders for financial contributions to facilitate the consultations at various levels and recommended convening a high-level biodiversity summit at the level of Heads of State/Heads of Government in 2020 in order to raise the political visibility of biodiversity.

Three issues that were intensively discussed during SBI-2 only made it partly to the recommendations and to the proposed draft decision for COP-14:

- 1) Informal advisory groups and/or a High-Level Panel supporting the development of the post-2020 framework: The CBD Secretariat is asked to further explore this option.
- 2) Linkages between the post-2020 global biodiversity framework and the CBD's protocol on biosafety (Cartagena Protocol) and the CBD's protocol on access and benefit-sharing (Nagoya Protocol): SBI-2 recommended developing a specific follow-up to the Strategic Plan for the Cartagena Protocol that is complementary to the post-2020 global biodiversity framework, but there was no consensus if that should also be the case for the Nagoya Protocol.
- 3) Voluntary national commitments: Regarding the question, whether the post-2020 global biodiversity framework should include voluntary national commitments similar to the approach of the Paris Agreement on Climate Change, SBI-2 decided to leave it to the Parties and only recommended to CBD COP-14 to encourage Parties and stakeholders “...to consider developing, prior to the fifteenth meeting of the Conference of the Parties, as appropriate to the national context, and on a voluntary basis, biodiversity commitments that may contribute to an effective post-2020 biodiversity framework, commensurate with achieving the 2050 Vision for Biodiversity, and to make information available to the CBD Secretary” (CBD/SBI/REC/2/19, 2018, p. 3).

An indicative chronology of key activities leading to the adoption of the post-2020 global biodiversity framework by CBD COP-15 has been provided by SBI-2 (CBD/SBI/2/17, 2018, p. 16) and has been updated in CBD/COP/14/9 (2018, see Table 2.3 below). An even broader overview, including also potentially relevant events and meetings outside the biodiversity policy realm, can be found in the “Post-2020 Global Biodiversity Framework Roadmap” provided by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 2018).

Table 2.3: Indicative chronology of key activities and milestones leading to the consideration of the post-2020 global biodiversity framework by COP 15 (CBD/COP/14/9, 2018)

	<i>Date</i>	<i>Activity</i>
	17 July- 15 December 2018	In response to SBI recommendations 2/6 and 2/11 Parties, other Governments, indigenous peoples and local communities, international organizations, civil society organizations, private sector and other stakeholders submit initial views on the aspects of the scope and content of the post-2020 global biodiversity framework. The views received will be synthesized and analysed and made available in the discussion document noted below.
	10 – 22 November 2018	COP-14, CP/MOP-9 and NP/MOP-3 consider for adoption the preparatory process for the development of the post-2020 global biodiversity framework.
Phase 1. Consultation	15 January 2018	Initial discussion paper, grounded on submissions received and other sources of knowledge.
	January- May 2019	Regional Consultation workshops and online discussion forums, focused on the post-2020 process organized. The number, timing and modalities for the workshops will depend on the resources available, and the timing of other related events being organized during this period.
	15 January-15 April 2019	Parties and observers invited to provide views on the initial discussion paper as well as any additional views and inputs arising from their national and regional consultations.
	April-May 2019	Consultation workshop among the biodiversity related conventions. The specific timing and modalities for the workshops will depend on the resources available, and the timing of other related events being organized during this period.
	15 May 2019	Discussion paper focusing on possible elements of the post-2020 global biodiversity framework developed and made available for comment.
	15 May -15 August 2019	Peer review by Parties and observers to the Convention and Protocols and stakeholders on the elements of the post-2020 global biodiversity framework.
	2-5 July 2019	Global consultation workshop focused on the evidence from the natural, economic and social sciences and traditional knowledge systems related to the post-2020 global biodiversity framework.
	June-August 2019	Global consultation with business.
	June – September 2019	Thematic consultation workshop(s) including workshop(s) that focus on the Cartagena Protocol and Nagoya Protocol.

	Date	Activity
	15 September 2019	Revised document on elements of the post-2020 global biodiversity framework, and the draft fifth edition of the <i>Global Biodiversity Outlook</i> , made available for consideration during SBSTTA-23.
Phase 2 – Consensus building	14 – 18 October 2019 ⁵	SBSTTA-23 reviews possible elements for the post2020 global biodiversity framework, including any implications arising from the IPBES global assessment, the draft of the fifth edition of the <i>Global Biodiversity Outlook</i> as well as other relevant information and sources of knowledge.
	19 – 21 October 2019 ⁶	WG8J-11 examines the potential role of traditional knowledge, customary sustainable use and the contribution of the collective actions of indigenous peoples and local communities to the post-2020 global biodiversity framework.

2.4. Overview of selected relevant initiatives, projects and meetings

Several initiatives from research institutions and non-governmental organisations have, with the support of their national governments, engaged with experts and decision makers at the national and international level to contribute to the development process of the post-2020 global biodiversity framework (Table 2.4). The CBD will decide on the elements of the development process at the upcoming COP-14 in December, while the ongoing discussions in the expert community go already beyond this step and focus mainly on the scope and the content of a new framework. Thereby, these discussions correspond to the CBD's proposal for regional and national dialogues on the post-2020 global biodiversity framework.

Table 2.4: Recent events with a focus on the post-2020 global biodiversity framework

Date	Title
14./15.9.2017, Oslo	Launch of the Rethinking Biodiversity Governance Network [hosted by the Fridtjof Nansen Institute]
11.-14.12.2017, Montreal	Twenty-first meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-21)
10.12.2017, Montreal	First international Workshop: Towards a CBD Strategy 2021-2030 (I) [hosted by WWF Germany / Institute for Biodiversity – Network (ibn)]
11.12.2017	SBSTTA-21 Side Event: Towards a CBD Strategy 2021-2030 [hosted by WWF Germany / ibn]
15./16.01.2018, Paris	Rethinking Biodiversity Governance (RBG) network – 2 nd Meeting [hosted by IDDRI]
27.-28.2.2018, London	International symposium: Safeguarding space for nature and securing our future: developing a post-2020 strategy [hosted by the Zoological Society of London (ZSL) and the National Geographic Society (NGS)]
10.4.-12.4.2018, Cambridge	Expert Workshop: Framing the Future for Biodiversity [hosted by the Cambridge Conservation Initiative - CCI]
12./13.4.2018, Berlin	National Stakeholder Workshop: Post-2020 Biodiversity- Framework

⁵ To be confirmed.

⁶ To be confirmed.

	as follow-up of the strategic plan of the Convention on Biological Diversity (CBD) 2011-2020 <i>[hosted by ibn on behalf of the German Federal Agency for Nature Conservation (BfN)]</i>
29./30.5. 2018, Paris	CBD post-2020 informal workshop: “What ambition for COP-15?” <i>[hosted by IDDRI]</i>
2.- 13.7. 2018, Montreal	Twenty-second meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-22) / Second meeting of the Subsidiary Body on Implementation (SBI-2)
30.06-01.07.2018, Montreal	Second international workshop: Towards a CBD Strategy 2021-2030 <i>[hosted by WWF Germany / ibn]</i>
11.07.2018	SBSTTA-22/ SBI-2 Side Event: Towards a CBD Strategy 2021-2030 (II) <i>[hosted by WWF Germany, UFZ and ibn]</i>
3.7.2018, Montreal	SBSTTA-22/ SBI-2 Side Event: Effective use of knowledge in developing the post-2020 global biodiversity framework <i>[hosted by UNEP-WCMC, Birdlife, RSPB, University of Cambridge, IUCN, Defra, UNEP, JNCC]</i>
3.7.2018, Montreal	SBSTTA-22/ SBI-2 Side Event: IPBES Scenario and model development on biodiversity and ecosystem services and relevance to the CBD post-2020 Strategic Plan <i>[hosted by IPBES and PBL]</i>
8.7.2018, Montreal	SBSTTA-22/ SBI-2 Side Event: Third Bogis-Bossey Dialogue on Transformative Change for Biodiversity <i>[hosted by the CBD Secretariat]</i>
10.7.2018, Montreal	SBSTTA-22/ SBI-2 Side Event: Biodiversity governance in the post-2020 framework – lessons to be learned from the Paris Agreement on climate change? <i>[hosted by IDDRI]</i>

2.4.1. ibn – Analysis of the Strategic Plan 2011-2020 of the CBD and expert workshops

The study “Analysis of the Strategic Plan 2011-2020 of the CBD” conducted by the Institute for Biodiversity –Network (ibn) constitutes the bulk of this report. It was complemented by results of two expert workshops (see the chapter 3 for more details on the methodology).

2.4.1.1. Recommendations

See chapter 7 of this report.

2.4.1.2. Outputs

ibn 2018 [not published]. Workshop Report: Post-2020 Biodiversity- Framework as follow-up of the strategic plan of the Convention on Biological Diversity (CBD) 2011-2020. Berlin, April 2018.

ibn/Marquard, E., Timppte, M., Paulsch, C., 2018. Policy brief on a CBD Post-2020 biodiversity framework.

ibn/Timppte, M., Marquard, E., Paulsch, C. 2018 [= this report]. “Analysis of the Strategic Plan 2011-2020 of the Convention on Biological Biodiversity (CBD) and first discussions of resulting recommendations for a post-2020 CBD framework”. Full study. October 2018.

ibn/Timpte, M., Marquard, E., Paulsch, C. 2018. "Analysis of the Strategic Plan 2011-2020 of the Convention on Biological Biodiversity (CBD) and first discussions of resulting recommendations for a post-2020 CBD framework". Extended summary. October 2018.

ibn/Timpte, M., Paulsch, C., 2018. Background information & hand-out for the workshop "Post-2020 Biodiversity-Framework as follow-up of the strategic plan of the Convention on Biological Diversity (CBD) 2011-2020" in Bonn, 26/27 September 2018.

Contact

Dr. Cornelia Paulsch
Institute for Biodiversity –Network (ibn)
cornelia.paulsch@biodiv.de, www.biodiv.de

The study and/or workshops were conducted in cooperation with:

- German Federal Agency for Nature Conservation (BfN)
- Helmholtz Centre for Environmental Research – UFZ
- German Network-Forum for Biodiversity Research (NeFo)

2.4.2. CCI – Expert workshop on evidence needed and effective use of knowledge

The Cambridge Conservation Initiative (CCI) hosted the expert workshop "Framing the Future for Biodiversity" from the 10th to the 12th April 2018 in Cambridge, United Kingdom. Experts with a broad range of expertise and with different backgrounds were invited and over 40 experts from 25 countries participated in the workshop, including members of the SBSTTA Bureau and representatives of the CBD Secretariat.

The purpose of the workshop was to create a better understanding of evidence and knowledge needed to support the development of a post-2020 global biodiversity framework. Leading questions included what evidence was needed, what the primary sources of such evidence were, and whether there were ways in which the delivery and use of the evidence could be improved. The participants were provided with a background document presenting different sources of relevant evidence as basis for the discussions. The results of the workshop were submitted as an information document for SBSTTA-22 and SBI-2 (CBD/SBSTTA/22/INF/31, 2018) and presented during a side event.

2.4.2.1. Recommendations

The participating experts highlight the importance of the 2050 Vision and conclude that more clarity and a common understanding of the elements of the Vision are needed to help Parties and stakeholders to develop the new framework and the required steps to achieve the 2050 Vision. They recommend to consider other exiting conceptual approaches such as the IPBES Conceptual Framework, which has already been adopted by governments (CBD/SBSTTA/22/INF/31, 2018, p. 5).

The experts identified seven different, non-exclusive types of evidence/knowledge that can support the development of the post-2020 global biodiversity framework. Five key questions were asked to identify relevant evidence (ibid., p. 3):

- a) What pathways will lead us to (or away from) the 2050 Vision already agreed by Parties?
- b) What scale and possible mixes of policies will deliver these pathways?
- c) Which policy instruments and tools will be most effective in delivering these policies?
- d) What sort of framework would motivate such policies and interventions being put in place?

- e) How can monitoring, indicators and reporting promote implementation and accountability?

The information document summarising the results of the expert workshop presents the current state of evidence for the different identified types of evidence. Furthermore, the experts propose 26 options to generate additional evidence, including meta-studies and synthesis reports that could significantly contribute to the development of the post-2020 global biodiversity framework and therefore would need to be considered before COP-15. Each of the proposed options is addressing the following questions:

- a) What evidence is needed?
- b) What are the primary sources of such evidence?
- c) Are there ways in which delivery and use of the evidence could be improved?

Identified types of relevant evidence/knowledge:

a) The importance of **scenario analysis and modelling** for the 2050 Vision and the post-2020 biodiversity framework were already considered by SBSTTA-21, a list of issues to be considered in future scenarios and models was provided in its recommendation (CBD/SBSTTA/REC/XXI/1, 2017, p. 3). The IPBES assessment report on scenarios and models of biodiversity and ecosystem services was recognized as important source for evidence. Additional evidence could be provided by a meta-analysis of the different scenario and modelling initiatives that are considering pathways to the future, scenario analysis and modelling projects that explore potential impacts of different policy mixes or by using scenario analysis and modelling approaches to analyse how biodiversity and ecosystem services contribute to the objectives of the SDGs or the goals of the Paris Agreement.

b) **Findings from major assessment processes** such as IPBES, GBO, IPCC or by FAO should be considered. The experts propose a synthesis of the high-level messages and key findings from biodiversity-related assessments as well as from less considered areas like the World Economic Forum Global Risks Report, to help negotiators to develop the post-2020 global biodiversity framework.

c) The **inputs from ‘big ideas’** such as the concept of the planetary boundaries or campaigns like ‘Earth needs Half’ should be considered as well as knowledge generation approaches such as citizen science or dynamic ocean management. An annotated list of relevant ‘big ideas’ and/or an assessment of the strengths and weaknesses of a range of these ‘big ideas’ and their implications for the post-2020 global biodiversity framework would provide additional evidence.

d) The need of transformational change to achieve the 2050 Vision is already discussed in different CBD fora, an **analysis of change in other sectors and factors leading to a successful transformation**, including accompanying communication approaches, could provide ideas for the development and implementation of new biodiversity targets.

e) A **better understanding of what ‘alignment with other agreements and frameworks’ actually means** and how it can be achieved is necessary, according to the experts, to develop the next global biodiversity framework. They recommend a review of the relationships between elements of the framework and the objectives and activities of other biodiversity-related conventions or other global issues such as human rights as well as an analysis of the actual relationships between the processes

to highlight the benefits. Other processes can also provide useful lessons learned with respect to the development process and implementation of their targets.

f) **Information about effectiveness of different policies and policy mixes** is already available through scenario and modelling reports, national reports as well as in NBSAPs and should be considered. Further evidence could be reports on how to improve biodiversity mainstreaming, a synthesis of the findings and evidence presented in assessment reports relating to the effectiveness or ineffectiveness of mainstreaming as well as reviews of the effectiveness of other policy options such as incentives or with regard to the sustainable use of biodiversity. It was realised that there is a need to create more opportunities to share lessons learned on the effectiveness of different interventions.

g) The experts point out that a “full picture of both funding needs and spending to achieve biodiversity targets is currently not available” (CBD/SBSTTA/22/INF/31, 2018, p. 11) and that more **evidence on the effectiveness of different approaches for mobilizing resources** is needed. A synthesis of existing evidence relating to resource mobilization and the successful use of funding, including identifying resource needs and their breakdown by desired outcomes is recommended as well as a new high-level panel or similar mechanism to exchange this information.

h) **Lessons learned from previous experience with targets**, mainly from the Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets, but also from target setting in other contexts like the Paris Agreement should be considered. The efficiency and the SMARTness of the Aichi Targets has been analysed in a few publications (see also Birdlife and IBN sections within this chapter) and it was highlighted to not only consider information available in English. In addition, the experts propose a review of different options for a framework to achieve the 2050 Vision, synthesis of lessons learned from translating global into national targets and a review of experience with the nationally determined contributions in the climate context.

i) The experts further point out that an important **lesson learned from the use of indicators** is that the indicators should be developed in parallel to the framework so they can inform the development of targets and milestones. Initiatives like the Biodiversity Indicators Partnership provide information on how biodiversity indicators are related to other frameworks and processes like the SDGs, but a better understanding of the relationship of global indicators is needed. Lessons learned from indicators used at the national level for the NBSAPs and from the sixth national reports should be considered as well.

j) Another **lesson learned from review and reporting processes** is that basic formats and processes for reporting should be identified when the post-2020 global biodiversity framework is adopted. Online tools and reporting mechanisms could be developed based on experience from the CBD sixth national reporting round. A review of different reporting options and a comparison with other processes would help choosing the appropriate tools, improve the alignment and show the need for guidance and capacity development. The experts also highlight the value of voluntary peer review of implementation and the contribution of national audit agencies to evaluate national environmental policies.

In addition to these types of evidence, following sources of information could be useful:

- Evidence of the risks and potential consequences associated with inaction

- An improved understanding of the relative distribution of benefits and the burden of action
- Evidence from different knowledge systems, and in particular indigenous and local knowledge systems
- A better understanding of the effects of multiple pressures and their trade-offs
- Different approaches for changing human behaviours
- Improved understanding of how decisions are made at the national level and in relevant sectors

Further recommendations for the development process of the post-2020 global biodiversity framework are

- Indicators should be developed and agreed upon at the same time as the framework
- The implementation of the framework should be aligned with a capacity-building strategy and resource mobilization guidance
- National reporting guidance for Parties and a communications strategy should be in place too, when the framework is adopted, to support its implementation
- A knowledge generation or research strategy, e.g. inspired by the IPBES Conceptual Framework, could help to identify what knowledge would be needed in order to support implementation of the framework

2.4.2.2. Outputs

CBD/SBSTTA/22/INF/31, CBD/SBI/2/INF/33. Framing the Future for Biodiversity Effective use of knowledge in developing a post-2020 global biodiversity agenda.

CCI 2018. Background document: Framing the Future for Biodiversity: Effective use of knowledge in developing the post-2020 global biodiversity agenda. Cambridge, UK, 10-12 April 2018, hosted by the Cambridge Conservation Initiative. Meeting Documentation. Discussion Note 16, Version of 05 April 2018.

SBSTTA-22/ SBI-2 side event, 03.07.2018: Effective use of knowledge in developing the post-2020 global biodiversity framework.

Contact

Jerry Harrison, Head of Programme, International Policy and Strategy
UN Environment World Conservation Monitoring Centre (UNEP-WCMC)
Jerry.Harrison@unep-wcmc.org, <http://www.cambridgeconservation.org>

The work was conducted in cooperation with:

- Joint Nature Conservation Committee (JNCC)
- UN Environment
- CBD Secretariat
- Department for Environment, Food and Rural Affairs in the UK and Northern Ireland (Defra)
- International Union for Conservation of Nature (IUCN)
- BirdLife International
- Royal Society for the Protection of Birds (RSPB)
- WWF UK
- UN Environment World Conservation Monitoring Centre (UNEP – WCMC)

2.4.3. IDDRI – Post-2020 workshop and ISSUE Brief

The Institute for Sustainable Development and International Relations (Institut du développement durable et des relations internationales – IDDRI) hosted the informal workshop “What ambition for COP-15?” with invited experts and active and former decision-makers from all over Europe from 29 to 30 May 2018 in Paris. The meeting was under Chatham House rules and no individual positions were recorded to ensure a free exchange of options. It is planned to facilitate several meetings with the same group of experts until 2020.

Researchers from the IDDRI also published an Issue Brief in May 2018 with the title “Relaunching the international ambition for biodiversity: a three-dimensional vision for the future of the Convention on Biological Diversity” (Laurans et al., 2018), discussing how the development process for the post-2020 global biodiversity framework could benefit from the lessons learned from the Paris Agreement on climate change to create a momentum for ambitious targets and make use of the concept of voluntary commitments. The research was also presented at a side event at SBSTTA-22 that was hosted in cooperation with the Fridtjof Nansen Institute (FNI) and PBL Netherlands Environmental Assessment Agency.

2.4.3.1. Recommendations

The authors argue that a simple update of the Aichi Targets could be perceived as powerless, since many assessments show that most Aichi Targets will not be achieved by 2020. They also point out that the Aichi Targets only have a global dimension and that governments avoided an individualisation of the Targets for which they could be held accountable. The Paris Agreement however, now includes a bottom-up dimension since countries and other actors can contribute to the agreed global targets and the vision of a “decarbonisation” economy by 2050 with individual voluntary commitments. It is proposed that the NBSAPs developed in the CBD context could serve as voluntary national contributions. If some countries would decide to promote this option and would show their commitment with voluntary contributions, it could create a new dynamic for the CBD negotiations. The Issue Brief is also suggesting that the CBD should not only focus on biodiversity on the global scale but could serve as an institutional matrix supporting sector-oriented initiatives of states and non-states actors to focus e.g. on the reduction of pesticides.

2.4.3.2. Outputs

Laurans, Y., Kinniburgh, F., Rankovic, A. 2018. BLOG POST May 17th 2018. 2018-2020: an outburst for biodiversity?

Laurans, Y., Rankovic, A., Kinniburgh, F., Colombier, M., Damien Demailly, D., Treyer, S. 2018. IDDR ISSUE BRIEF May 2018. Relaunching the international ambition for biodiversity: a three-dimensional vision for the future of the Convention on Biological Diversity.

22/ SBI-2 Side Event: Biodiversity governance in the post 2020 framework – lessons to be learned from the Paris Agreement on climate change? 10.7.2018, Montreal

Contact

Aleksandar Rankovic, Research Fellow, Biodiversity and Science-Society Interactions
IDDRI - Institute for Sustainable Development and International Relations
aleksandar.rankovic@iddri.org, <https://www.iddri.org/en/about-iddri/team/aleksandar-rankovic>

2.4.4. Rethinking Biodiversity Governance (RBG-) Network

A new expert network with the objective of “Rethinking Biodiversity Governance” was launched at its inaugural session on 14 and 15 September 2017 at the Fridtjof Nansen Institute (FNI) in Norway. 26 invited experts from research institutions and non-governmental organisations took part in the first network meeting. The idea for the network was proposed by Marcel Kok from the Netherlands Environmental Agency (PBL) and was further developed with colleagues working on international biodiversity governance in margins of meetings of the Subsidiary Body on Implementation (SBI-1) in May 2016 and CBD COP-13 in December 2016.

The objectives of the RBG-Network are to facilitate knowledge-sharing and research cooperation, to fill research gaps and to add a social science dimension to international biodiversity policy and law making. Furthermore, the Network is aiming at providing recommendations for decision-makers e.g. on the development of a post-2020 global biodiversity framework.

A second Network meeting was hosted by IDDRI in January 2018 in Paris, a third one is planned in the margins of the 2018 Utrecht Conference on Earth System Governance on 8 November 2018.

Members of the Network were engaged in side events at SBSTTA-22/SBI-2 such as “Biodiversity governance in the post 2020 framework – lessons to be learned from the Paris Agreement on climate change?” hosted by IDDRI, FNI and PBL. Further side events are planned in the margins of the CBD COP-14 in Egypt in November 2018.

2.4.4.1. Recommendations

The Network is currently working on publications on new perspectives on biodiversity governance, including a perspective paper on the post-2020 global biodiversity framework to be published before CBD COP-14.

2.4.4.2. Outputs

NeFo/Raab, K. 2017. Short summary of seminar at the Fridtjof Nansen Institute, Norway 14 – 15 September 2017 to launch a research network on ‘Rethinking Biodiversity Governance’.

FNI 2017: FNI hosts expert network on biodiversity. Presentation of the network and the content of the first network meeting, 14./15. September 2017, Fridtjof Nansen Institute (FNI) in Norway. Web article available at: www.fni.no

Contact

Christian Prip, Senior Policy Analyst
Fridtjof Nansen Institute
P.O.Box 326, 1326 Lysaker, Norway
cp@fni.no / www.fni.no

2.4.5. RSPB / Birdlife International - Analysis of progress towards the Aichi Targets

The Royal Society for the Protection of Birds (RSPB) and Birdlife International submitted an information document in June 2018 for consideration at SBSTTA-22/SBI-2 that is based on the assessment of peer-reviewed literature (including 294 publications) and an expert-based approach to score the relative ‘SMART’-ness of the Aichi Target elements. The detailed results of the research are to be published in a scientific journal (Green et al., submitted), the information document for SBSTTA (CBD/SBSTTA/22/INF/35, 2018) is providing an overview of the findings.

Table 2.4.4: Perceived strengths and weaknesses of the Aichi Targets as identified by the literature review (based on CBD/SBSTTA/22/INF/35, 2018, p. 4-5)

Strengths <i>The Aichi Targets...</i>	Weaknesses <i>The Aichi Targets...</i>
...are broadly based (covering the state of biodiversity, pressures acting upon it and responses to biodiversity loss)	...use ambiguous terms, providing too much room for subjectivity and leaving the targets open to interpretation
...try to achieve specific end points or states for conservation management	...are unspecific, use unquantified objectives which make it difficult to measure progress or identify an end-point; some elements are lacking quantifiable elements
...are SMARTer than the previous 2010 Targets or other conservation targets	...are lacking specific baselines or indicators for some of the targets
...are more successful at addressing drivers than other targets	...are not 'comprehensive'
...are more detailed and ambitious than the Sustainable Development Goals	...state ambitions that are not sufficient enough to achieve their goals

The literature review delivered perspectives on the strengths and weaknesses that are associated with individual Aichi Targets by different stakeholders (Table 2.4.4).

The expert survey on the SMARTness assessed the 20 Aichi Targets and its elements and whether they can be considered specific, measurable, ambitious, realistic, unambiguous and scalable (all Targets are time-bound). The full analysis will be presented in Green et al., the overview presents the analysis of the Aichi Targets 17, 16 and 9, that have been evaluated by the experts as Targets with the highest SMARTness and 14, 19 and 10, as the Targets with the lowest perceived SMARTness scores. Targets and Target elements that received the highest scores were those that contained explicitly defined deliverables, while Targets and Target elements with low scores were considered to be complex, unclear and poorly defined and therefore difficult to measure. All Targets were perceived to be moderately comprehensive. A variation between the SMARTness of the different elements of the Targets was observed. Green et al. also investigated the relationship between the 'SMART' scores of the Aichi Targets and the progress made towards them using GBO4 and draft versions of the forthcoming IPBES Global Assessment on biodiversity and ecosystem services. Their analysis showed that significantly greater progress has been made towards SMART Target elements, specifically to those that are more measurable, realistic, unambiguous and scalable. The analysis could not show a correlation between ambition and progress.

2.4.5.1. Recommendations

Based on the research on the framing of the Aichi Targets the authors give the following recommendations for the development of the post-2020 global biodiversity framework and new or revised targets (CBD/SBSTTA/22/INF/35, 2018, p. 3-4, 9):

- Targets should be ambitious but realistic, recognising that ambition without realism can undermine confidence in the ability to deliver on targets - but equally that ambition also promotes and drives progress.
- Targets should be clearly and unambiguously worded, and provided with necessary definitions, so that the intent and necessary action or actions, are apparent.

- Targets should be clear and well defined with explicit deliverables, and therefore amenable and easy to measure in any realistic way.
- Targets should include quantifiable elements wherever practicable so as to facilitate both action and the tracking of progress (financial and other enabling mechanisms should be considered).
- Targets should be considered and framed against an extended SMART-type set of criteria (noting that it would be helpful to explore further whether different formulations of the SMART criteria were more or less instructive in framing biodiversity targets).
- New targets should be sense checked against a 'SMART'-type framework using a traffic light system (Green-Amber-Red) applied by Green et al. (submitted).

2.4.5.2. Outputs

CBD/SBSTTA/22/INF/35. Literature-based assessment and lessons-learned analysis of progress towards the Aichi Biodiversity Targets - input of the Royal Society for the Protection of Birds and Birdlife International to the twenty-second meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the fourteenth meeting of the Conference of the Parties to the Convention on Biological Diversity.

Green, E.J., Buchanan, G.M., Butchart, S.H.M., Chandler G.M., Burgess N.D., Hill, S.L. and Gregory, R. D. (submitted). Smarter biodiversity targets are associated with greater progress.

Contact

Georgina Chandler, International Policy Officer
 Royal Society for the Protection of Birds
<http://www.cambridgeconservation.org/person/georgina-chandler>

The work was conducted in cooperation with:

- UN Environment Programme's World Conservation Monitoring Centre (UN WCMC)
- CBD Secretariat
- Government of the United Kingdom of Great Britain and Northern Ireland

2.4.6. WWF Germany / ibn – International expert workshops, a 'Horizon Scanning' exercise and a discussion paper

WWF Germany prepares a discussion paper as a contribution to the development of the post-2020 global biodiversity framework to be presented at CBD COP-14 in Egypt. The discussion paper is meant as a concrete input to the negotiations and wants to provide ideas and proposals relevant for the positioning of different actors.

In preparation for the discussion paper, two international expert workshops entitle "Towards a CBD Strategy 2021-2030 (I + II)" were hosted in the margins of SBTTA 21 in December 2017 and SBSTTA-22 in July 2018. The results of the workshops were presented at side events of the respective SBSTTA meetings.

The first workshop focused on the discussion of the Vision, Mission and the five strategic goals of the Strategic Plan 2011-2020. Leading questions were:

- Should the Vision, Mission and Strategic Goals be maintained, adjusted, or amended?
- Do we need additional strategic goals until 2030 to better link to the SDGs?

A background paper provided the workshop participants with a summary of submissions by governments and stakeholders in response to a call by the CBD Secretariat for the preparation of the post-2020 process.

The workshop collected comments following the leading questions and clustered them, not aiming to create consensus on certain positions or ideas. To stimulate the discussion, participants were asked if the Vision, the Mission and the Strategic Goals should be kept or adjusted. The clear majority of the participants said that the Vision text should be kept as it stands and that the Mission text should be amended, while some were in favour of replacing it. When discussing the wording of the Vision and Mission, participants had divergent options whether the current text is still sufficed and should be kept, also to not open it for new negotiations, or if it should be amended using stronger or more active formulations or including missing issues. The majority of the participants also voted to integrate wording of the SDGs into CBD's existing strategic goals instead of drafting a new goal or using a different approach. The workshop participants also were in favour of amending the text of the five strategic goals and alternative text elements and issues that could be covered were proposed. It was also raised, that all strategic goals should include qualifiers.

The second workshop focused on the Aichi Targets and their elements and how they could be used in the post-2020 global biodiversity framework. Leading questions were:

- Should the current targets be maintained, adjusted, or replaced?
- Do we need additional targets until 2030?
- How should the linkages to the targets under the SDGs be reflected? How to underpin the target with milestones up to 2030?

The results of the workshop were presented at a side event during SBSTTA-22/SBI-2.

In addition to the two international workshops, WWF Germany, in cooperation with ibn and the Helmholtz Centre for Environmental Research – UFZ, carried out a “horizon scanning” inspired survey to identify issues that are particularly important for the decade 2021-2030 on the way towards the 2050 Vision. The expert survey was conducted as a two-step process (carried out between February and June 2018). The objective of the first step was to screen for relevant topics, during the second step, participants were asked to prioritise the topics or thematic clusters identified by step 1, according to the urgency CBD Parties should take action on them. About 200 international experts were invited to take part in the surveys, 35 responded to the first survey (15%) and 42 to the second (19%). The participants of the first survey were asked to identify the three most important topics which they think should be included in the post-2020 global biodiversity framework to achieve one the three CBD objectives (the conservation of biological diversity; sustainable use; fair and equitable sharing of the benefits arising out of the utilization of genetic resources). The second survey asked participants to prioritize clusters that were built based on the analysis of the answers of the first survey. Table 2.4.5 shows the most important thematic clusters identified by the first and the second survey, respectively.

Table 2.4.5: Most important thematic clusters identified by the ‘horizon scanning’ surveys (based on Raab and Marquard, 2018, p. 16)

Survey 1	Survey 2
4: Policy coherence, government, enforcement	4: Policy coherence, government, enforcement
5: Capacity building, (traditional) knowledge, knowledge generation	8: Mainstreaming, sectoral integration, sustainable production
8: Mainstreaming, sectoral integration, sustainable production	2: Conservation, connectivity, restoration
	1: Awareness, behaviour, education

The authors of the study discuss in their report, why participants might have prioritised different clusters in the two surveys and which factors could have influenced their decision. Furthermore, they highlight the difference between their approach and the ‘Horizon Scan of Emerging Issues for Global Conservation and Biological Diversity’ performed by a group of researchers around W. J. Sutherland from Cambridge University (Raab and Marquard, 2018, p. 19). They also discuss how the clusters identified in their surveys relate to the issues/topics identified by the most recent horizon scanning studies of Sutherland et al. (see *ibid.*, p. 19 ff. and p. 41) and to issues raised in the latest IPBES assessments and in the synthesis report of the international initiative “The Economics of Ecosystems and Biodiversity – TEEB” (*ibid.*, p. 21 ff.).

2.4.6.1. Recommendations

Recommendations by WWF will be provided in the upcoming discussion paper. Inputs from the participants of the two international workshops can be found in the comprehensive workshop reports (available at www.biodiv.de).

2.4.6.2. Outputs

WWF 2017. Towards a CBD Strategy 2021-2030. Results of the 1st International Workshop, 10 December 2017 (including background information sent prior to the workshop).

WWF 2018. Towards a CBD Strategy 2021-2030. Results of the 2nd International Workshop, 30 June to 1 July 2018 (including background information sent prior to the workshop).

Raab, K., Marquard, E., 2018. Towards a new CBD Strategy 2021-2030. Final Report on a ‘Horizon Scanning’ exercise.

Upcoming: Discussion paper for input to the post-2020 CBD strategic framework development process (to be presented at CBD COP-14).

Contact

Günter Mitlacher
 Director International Biodiversity Policy, CBD Focal Point WWF Germany, IPBES Focal Point WWF Network
 WWF Germany
Guenter.mitlacher@wwf.de, www.wwf.de

Dr. Cornelia Paulsch
 Institute for Biodiversity –Network (ibn)
cornelia.paulsch@biodiv.de, <http://www.biodiv.de>

2.4.7. Zoological Society of London (ZSL) and National Geographic Society (NGS) – International symposium

An international symposium on “Safeguarding space for nature and securing our future: developing a post-2020 strategy” was hosted by the Zoological Society of London (ZSL) and the National Geographic Society (NGS) in London on 27 and 28 February 2018. It was supported by Birdlife International, the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and the CBD Secretariat. The recommendations of the two-day symposium, that was attended by over 250 experts, were published in an information document for SBSTTA-22 (CBD/SBSTTA/22/INF/36, 2018). According to the meeting report, the “...key objectives of the meeting were to: (i) review the science informing future area-based conservation targets; (ii) evaluate the implications of various policy options for delivering area-based conservation; (iii) provide balanced, evidence-based recommendations to Parties to the CBD and other intergovernmental policy processes; and (iv) raise awareness of the need for a more ambitious, holistic and effective strategy to safeguard space for nature, incorporating protected areas and other effective area-based conservation measures” (CBD/SBSTTA/22/INF/36, 2018, p. 2).

2.4.7.1. Recommendations

A set of key messages to the CBD was developed during the meeting, with a focus on how to improve especially a new biodiversity target based on Aichi Target 11 (CBD/SBSTTA/22/INF/36, 2018):

- The focus should be on the quality as well as of the quantity of protected areas, all protected areas should be considered and reported including those conserved privately or by indigenous peoples and local communities.
- ‘Other effective area-based conservation measures’ (OECMs) should be considered to ensure conservation beyond protected areas.
- Areas of particular importance for the conservation should be recognised by the inclusion of Key Biodiversity Areas (KBAs), equivalent national priorities, Ecologically and Biologically Significant Areas (EBSAs) and other priority areas determined through systematic conservation planning methods.
- All areas of importance for ecosystem services should be considered, including provisioning, regulating and supporting functions. Some of these areas overlap with those of importance for biodiversity, but these also require further space.
- To conserve the most important areas for biodiversity as well as areas of importance for ecosystem services more space would have to be protected than covered by the goals of Aichi Target 11; “A healthy planet requires that the most important areas are conserved, restored and connected through ecologically functional landscapes under a range of management approaches”, this would have to be also incorporated in Aichi Targets 5, 7 and 15.
- International standards such as the IUCN Green List Standard of Protected and Conserved Areas should be used to measure the effectiveness of conservation efforts.
- Successful mobilisation of financial and other resources is essential for the post-2020 framework and innovative and international sourcing of financing for biodiversity across all sectors, including removing harmful subsidies and financial disincentives, should be considered.
- The human dimension in nature conservation and the empowering of communities to conserve their environment whilst supporting human rights should be in the focus.

- Public and political communication strategies could support the implementation of the post-2020 global biodiversity framework.

2.4.7.2. *Outputs*

Zoological Society of London (ZSL) and the National Geographic Society (NGS) 2018. Space for nature symposium. Safeguarding space for nature and securing our future. Developing a post-2020 Strategy. Full programme. London, 27./28. February 2018.

CBD/SBSTTA/22/INF/36. Safeguarding space for nature and securing our future: developing a post-2020 strategy.

Contact

Zoological Society of London (ZSL) and National Geographic Society (NGS)

The work was conducted in cooperation with:

- International Union for Conservation of Nature (IUCN)
- Birdlife International/RSPB,
- UN Environment World Conservation Monitoring Centre (UNEP-WCMC)
- Secretariat of the Convention on Biological Diversity (SCBD)

2.5. *Outline of the following chapters of this report*

The analysis presented in the remainder of this report took the following considerations as a starting point:

Most of the Aichi Targets will not be fulfilled in 2020 (Tittensor et al., 2014; Hill et al., 2015; CBD/SBSTTA/22/5, 2017; IPBES/6/15/Add.4, 2018). In the light of this conclusion, the upcoming CBD negotiations need to address – amongst other issues, the following questions:

1. Why does the CBD Strategic Plans fail repeatedly?
2. Are there structural features of the current Strategic Plan of the CBD that promote or hamper progress toward the Aichi Targets?
3. Which factors enhance or could enhance the implementation of the Aichi Targets, how could they be integrated into the post-2020 global biodiversity framework?
4. Which topics should the post-2020 global biodiversity framework address that are currently not (sufficiently) covered by the Strategic Plan?

Guided by these questions, the structure of this report is as follows:

Chapter 3 outlines the methodological approach of this study. According to the overall structure of the project, it consists of two sections: 3.1) Methodology for the review of published literature on factors affecting the implementation of the Convention on Biological Diversity; 3.2) Methodology for the analysis of the individual Aichi Targets.

Chapter 4, considers some general obstacles hampering the implementation of Multilateral Environmental Agreements (MEAs), discusses selected policy instruments with regard to their potential to support progress toward the 2050 Vision of the CBD and illustrates some options using examples from the published literature. Based on a literature review, chapter 4 presents selected

policy instruments that are applied elsewhere (e.g. in the climate context) and which may be promising with regard to the implementation of the CBD.

Chapter 5 portrays each Aichi Target individually, including its links to other important international policy processes and sketches several suggestions for a more effective post-2020 global biodiversity framework. These suggestions include the preparation and delivery of general guidance by the CBD, the adoption of milestones or sub-Targets with more concrete provisions and shorter timelines than the main Targets, and recommendations for either keeping a particular Target as it stands (except for an prolonged timeline) or modifying it (to different degrees). Specific suggestions for re-formulating the Aichi Targets are presented. In some cases, two or more alternative wordings are given for one Aichi Target to reflect diverging opinions expressed by stakeholders during the expert workshops held in April and September 2018.

Whether the post-2020 framework of the CBD will address additional topics compared to the current Strategic Plan is not yet decided. **Chapter 6** lists some topics that may be worth considering in this context. These topics were collected either from documents studied for the analyses presented in chapters 4 and 5 or from suggestions made by participants during the expert workshop in April 2018.

3. Methodology for the study presented in the following chapters

Overall, two methodological approaches were applied: a literature review on policy instruments and an analysis of the individual Aichi Targets.

3.1. Literature review on policy instruments

Published literature was screened for conclusions about factors that either hamper or promote the implementation of the Convention on Biological Diversity. Particular attention was paid to the 'Regional and Subregional Assessment of Biodiversity and Ecosystem Services for Europe and Central Asia' (IPBES ECA Assessment) of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and to the summaries for policy makers (SPMs) of all four Regional and Sub-Regional Assessments adopted by the IPBES member states at the sixth IPBES plenary in March 2018 (addressing biodiversity and ecosystem services in Africa, the Americas, Asia-Pacific and Europe and Central Asia, see IPBES/6/15, 2018). These SPMs as well as the respective assessments identify relevant policy-support tools and instruments, however these are analysed and discussed to a different extent in the four Regional Assessments. Identified instruments and tools are collected in an online catalogue⁷ to make them available for decision-makers (see decision IPBES-2/5 in IPBES/2/17, 2013). We complemented the information extracted from the mentioned IPBES assessments and SPMs with insights gained from selected scientific articles as well as from documents released by the CBD, its subsidiary bodies and other international organisations (including non-governmental organisations, NGOs). Overall, we aimed at identifying some examples that could inspire the implementation process of the CBD. The results from this analysis are presented in chapter 4 and structured according a scheme suggested by IPBES (legal and regulatory instruments, economic and fiscal instruments, rights-based instruments and customary norms, social and cultural instruments, IPBES/4/INF/14, 2016).

⁷ <https://www.ipbes.net/policy-support>

3.2. Analysis of the individual Aichi Targets

We analysed 19 out of 20 Aichi Targets individually with respect to structural and content-related aspects. Aichi Target 16 was excluded because it addresses the Nagoya Protocol which was outside the scope of this study. The base line for our analysis was the assessment of the “achievement” of the elements of the individual Targets published in GBO4 (note that different definitions of Target elements have been published, e.g. by CBD Secretariat, 2014; Butchart et al., 2016; CBD/SBSTTA/20/INF/27, 2016). Drawing on published literature, our analysis focused on the following aspects: (i) relationship to previous CBD framework and to other Targets (ii), smartness, (iii) links to other conventions and further processes, and (iv) the development of recommendations for post-2020 biodiversity Targets.

3.2.1. Relationship to previous CBD framework and other Aichi Targets

We compared the Targets to the CBD framework that was valid for the pre-2010 timespan. The source of information for this analysis was the COP decision about the Strategic Plan for 2002-2010 (CBD/COP/DEC/VI/26, 2002).

Furthermore, we drew on a published analysis of the relationships among the Targets (Marques et al., 2014) and complemented this perspective partly with our own view, if we felt that it would be appropriate to add some additional or diverging thoughts on how the Targets may influence each other.

3.2.2. Smartness of the Aichi Targets

We critically reflected whether the Aichi Targets fulfil the so called „SMART“-criteria ("smart" standing originally for "specific, measurable, assignable, realistic, time-related", Doran, 1981). The rationale behind this sub-analysis is that “SMART” targets are usually regarded as more achievable and therefore more effective (Butchart et al., 2016; CBD/SBI/2/17, 2018). It is important to note however, that the aim to arrive at internationally agreed commitments sets different requirements for targets than the private business-context the SMART - criteria were originally identified for. In fact, in the realm of MEA negotiations, choosing unspecific wording is frequently the only way to reach a consensus among all Parties of a treaty. This might be especially true for cases dealing with biological diversity since biodiversity, its use and its loss, are, at least in part, “local phenomena”, driven (not exclusively but substantially) by numerous natural and social on-site circumstances (e.g. local environmental and economic conditions, local management regimes, national regulations, etc.). For being acceptable to all CBD member states, CBD targets therefore need to address issues in a fairly general way, ensuring that they are applicable even under extremely different circumstances. Judgements about the (necessary) specificity of global biodiversity targets should bear this in mind.

Furthermore, it should be noted that in the CBD context, the acronym “SMART” is interpreted slightly differently than originally suggested: here, it stands for the adjectives: specific, measurable, ambitious, realistic, and timebound.

In our analysis (see chapter 5 of this report), we focused on the specificity (S) and measurability (M) of the Aichi Targets for the following two reasons: When the achievability or usefulness of global Targets is discussed, it is often argued that ‘measurability’ is key but the specificity of a Target partly determines its measurability, thus the two criteria (S and M) are closely linked. Furthermore, substantial resources have been and are continuously put into the improvement of the measurability of global Targets, in particular into the development, interpretation and political negotiation of

indicators and their reporting. Changing the strategic framework of the CBD will impact the respective scientific and political debates and will have significant financial implications.

S: For assessing whether a particular Aichi Target meets the criterion “specific”, we analysed whether the terms and the wording used convey a very clear picture about their meaning or whether they are rather fuzzy and ambiguous. As a first step, we identified those components of a Target that express the core of what should ultimately be achieved („aspirational components“). We also drew on published evaluations of the specificity of the Aichi Targets or similar analyses (Butchart et al., 2016) to derive our judgments.

M: For our analysis of the Target’s measurability, we mainly extracted information on available indicators from relevant CBD documents (e.g. CBD/COP/DEC/XIII/28, 2016; CBD/SBSTTA/20/INF/34, 2016).

A: We did not assess the criterion “ambitious” in detail because, on the one hand, it seemed difficult to decide against which measure it might be evaluated. On the other hand, we think that the fact that almost all Targets will not be reached by 2020 indicates that they are all ambitious. Referring to the original meaning of the “A” in the SMART acronym (“assignable”, as in Doran, 1981, see also above), we therefore rather asked whether for (some of) the Aichi Targets, actors with a special responsibility may be identified and whether there are differences between the Targets in this regard.

R: We did not assess the criterion „realistic“, because – as it was also the case with “ambitious” – the measure against which it might be evaluated seemed rather unclear. We suggest that the following aspects might be regarded as facets of realism and that these apply to all twenty Aichi Targets: there is ample practical and scientific evidence that the issues the Targets address are all of great importance for reaching the overall goal of the CBD, i.e., to halt the loss of biodiversity. Moreover, progress toward each of them can be supported at the national level, i.e. at the administrative scale at which the implementation of the CBD takes place. However, the fact that almost all Targets will not be reached by 2020 may also be interpreted as a lack of realism: although all CBD member states agreed to these Targets, their political will for triggering the required substantial societal changes seems limited. Likewise, other relevant actors, e.g. the private sector and individual consumers, also show insufficient will and actions to support the implementation of the Targets.

T: We did not assess the criterion „timebound“ in detail, because all Targets meet this criterion by including the clause “By 2020, ...” (or “By 2015,” in Targets 10, 16 and 17).

3.2.3. Links to other conventions and further processes

Due to the breadth of the issues that are addressed under the CBD, there are numerous links to other environmental governance processes at the national and international scale. In some cases, these processes are mutually reinforcing, e.g. because they promote the same or similar goals. Or they may be rather contradictory or insufficiently streamlined and this may pose an impediment to their implementation (Perrings et al., 2011; Young, 2011). In this study, some cases of interdependencies among different processes were selected per Aichi Target to highlight the character of some of the links toward the CBD. Special attention was given to overlaps and differences among the Targets on the one hand and the German NBSAP, the EU Biodiversity Strategy and the SDGs on the other hand.

3.2.4. Development of recommendations

Based on the analysis of the individual Aichi Targets (see above), recommendations for potential post-2020 biodiversity Targets were developed, suggesting a) that a Target might no longer be relevant, b) that a Target should be kept as it stands (with a modified timeline), or c) that a Target should be modified (to a varying degree). To support the implementation of the post-2020 framework, potential milestones were identified for each proposed Target, as well as some further issues potentially worth considering. These draft recommendations (developed by the authors of this report) were discussed for Aichi Targets 1–15 during an expert workshop in Berlin in April 2018 with about 40 representatives of the German science- and NGO community, as well as of some German government agencies. In September 2018, the same draft recommendations for Aichi Targets 1–15 were discussed with about 40 international biodiversity and CBD experts (mostly from European countries) at another workshop in Bonn. Due to time constraints, the recommendations drafted by ibn for Aichi Targets 17–20 were not dealt with at the expert workshops. For each Target, the results of the above described analysis and all recommendations and suggestions (by the authors and by the participants of the two workshops) are compiled in chapter 5 of this report.

4. Policy instruments in the biodiversity context

Factors hampering or promoting the implementation of the CBD have been identified repeatedly and by several actors in the past. For example, in the year 2002, the CBD identified approx. 30 important obstacles for the implementation of its (former) Strategic Plan (CBD/COP/DEC/VI/26, 2002). For Germany, the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) identified ten fields of action that should be prioritized to improve the poor situation of biodiversity in Germany (BMUB, 2015; 2017a). To complement these existing analyses, we here synthesize knowledge about the effectiveness of biodiversity-related governance processes that has been published elsewhere. In this context, reflections on policy instruments are highly relevant, e.g. those that have been produced by IPBES (IPBES/4/INF/14, 2016; IPBES/6/15, 2018). Policy instruments are defined by IPBES as follows:

“Policy instruments are structured activities by means of which decision-making institutions attempt to realize or achieve a decision to ensure support and effect or prevent social change expressed by a policy addressing an identified challenge or opportunity (adapted from Vedung 2011)” (IPBES/4/INF/14, 2016, p. 6).

According to IPBES, policy instruments can not only be designed and implemented by public authorities but also by a broader range of decision-makers. Instruments can be implemented on different levels and scales, independently or (mostly) as part of a policy mix and they only work if supportive formal and informal standards are in place. IPBES differentiates policy instruments from policy support tools and methodologies and defines the latter as follows:

“Policy support tools and methodologies are approaches and techniques based on science and other knowledge systems (incl. indigenous and local knowledge – ILK) that can inform, assist and enhance relevant decisions, policy making and implementation at local, national, regional and international levels to protect nature, so promoting nature’s benefits to people and a good quality of life” (IPBES/4/INF/14, 2016). Policy support tools such as monitoring, assessments or public participation processes can help decision-makers to develop adequate policy instruments.

In the remainder of this chapter, promising examples and cases provided by the IPBES Regional Assessments are presented. We structure this chapter according to the categorization of policy instruments put forward by IPBES: a) legal and regulatory instruments; b) economic and financial instruments; c) rights-based instruments and customary norms; d) social and cultural instruments (IPBES/4/INF/14, 2016). The four IPBES Regional Assessments completed in 2018 discuss policy instruments and policy support tools and methodologies in different ways and relate only some of the examples to the implementation of the Aichi Targets. We derived most of the information presented in the following sections from the IPBES ECA Assessment (IPBES/6/15/Add.4, 2018; IPBES/6/INF/4, 2018). A more comprehensive study of policy instruments and their (potential) contributions to the implementation of the CBD objectives and the Aichi Targets is expected to be part of the IPBES Global Assessment on biodiversity and ecosystem services due in April 2019.

4.1. Legal and regulatory instruments

4.1.1. Global treaties, conventions and agreements

International treaties, conventions and agreements are an important instrument for setting global standards. “Globally, there are more than 1,100 formal, legally binding and multilaterally negotiated ‘multilateral environmental agreements’. Many of these multilateral environmental agreements are

also represented in Europe and Central Asia” (Widerberg and Pattberg 2015 as referred to in IPBES/6/INF/4, 2018, p. 895). However, due to their global nature and the frequent approach to negotiate a consensus among all Parties, they often represent the least common denominator in terms of ambitions. In the literature, several factors are discussed that may contribute to the failure of such treaties. For the environmental field, Table 4.1 gives an overview over factors hampering the implementation of MEAs in general and that are regarded as obstacles for the implementation of the CBD in particular. Promoting factors are not listed, as they are usually the opposite of the hampering factor.

Table 4.1: Non-exhaustive overview over factors that may hamper the implementation of the CBD or the effectiveness of MEAs in general

Overarching category (as in CBD/COP/DEC/VI/26, 2002)	Hampering Factors	Relevant international process or agreement	Selected references
political/societal	<ul style="list-style-type: none"> • Lack of political will and support • Limited public participation and stakeholder involvement • Lack of mainstreaming and integration of biodiversity issues into other sectors • Political instability • Lack of precautionary and proactive measures, causing reactive policies 		CBD/COP/DEC/VI/26 (2002)
	<ul style="list-style-type: none"> • Lack “of a coalition of influential actors” • Lack of a sense of fairness and legitimacy 		Young (2011)
	<ul style="list-style-type: none"> • Power imbalances, marginalization of some peoples or communities • Violent conflicts 		Hill et al. (2015)
institutional, technical and capacity-related	<ul style="list-style-type: none"> • Inadequate capacity to act, caused by institutional weaknesses • Lack of human resources • Lack of transfer of technology and expertise • Loss of traditional knowledge • Lack of adequate scientific research capacities to support all the objectives 	IPBES, UNEP/UNDP	CBD/COP/DEC/VI/26 (2002)
	<ul style="list-style-type: none"> • Poor institutional design (e.g. with regard to context and scale) 		Young (2011)
	<ul style="list-style-type: none"> • Time-consuming treaty making processes and negotiations 		Kanie (2007)
knowledge-related	<ul style="list-style-type: none"> • Loss of biodiversity and the corresponding goods and services it provides not properly understood and documented • Existing scientific and traditional knowledge not fully utilized • Dissemination of information on international and national level not efficient • Lack of public education and awareness at all levels 	IPBES, IPCC, UNESCO	CBD/COP/DEC/VI/26 (2002)
	<ul style="list-style-type: none"> • Insufficient information flows 		Hill et al. (2015)
economic / financial	<ul style="list-style-type: none"> • Lack of financial and human resources • Fragmentation of GEF financing • Lack of economic incentive measures • Lack of benefit-sharing 	GEF, CBD-Nagoya Protocol	CBD/COP/DEC/VI/26 (2002)
	<ul style="list-style-type: none"> • Economic distortions in the global political arrangements for trade 		Hill et al. (2015)

	<ul style="list-style-type: none"> • Incentives offered by private markets, failure of markets to signal the importance of non-marketed services 		Perrings et al. (2011)
collaboration / cooperation-related	<ul style="list-style-type: none"> • Lack of synergies at the national and international levels • Lack of horizontal cooperation among stakeholders • Lack of effective partnerships (also partnerships involving non-state actors) • Lack of engagement of scientific community 	Joint Liaison Group (JLG) of the Rio Conventions, Rio Pavilion	CBD/COP/DEC/VI/26 (2002); Young (2011); Perrings et al. (2011)
	<ul style="list-style-type: none"> • Fragmentation of policy landscape, detached negotiating arenas of different but related international agreements 		Kanie (2007)
legal/juridical	<ul style="list-style-type: none"> • Lack of appropriate policies and laws 	e.g. marine areas beyond national jurisdiction / UNCLOS	CBD/COP/DEC/VI/26 (2002)
	<ul style="list-style-type: none"> • Absence of a hegemon, i.e. of a government at the international level (ruling out enforcement mechanisms of the sort that states usually apply) 		Young (2011), (Barrett, 2016)
socio-economic	<ul style="list-style-type: none"> • Poverty • Population pressure • Unsustainable consumption and production patterns • Lack of capacities for local communities 	SDGs, CBD, FAO, UNESCO	CBD/COP/DEC/VI/26 (2002); Hill et al. (2015)
	<ul style="list-style-type: none"> • Lack of infrastructure 		Hill et al. (2015)
natural phenomena and environmental change	<ul style="list-style-type: none"> • Climate change • Natural disasters 	UNFCCC, UNISDR / Sendai Framework of Disaster Risk Reduction	CBD/COP/DEC/VI/26 (2002)

4.1.2. Voluntary commitments

During recent years, calls for voluntary commitments and voluntary national targets that could support the implementation of MEAs have become more popular. The following section introduces the latest international environment-related processes calling for and applying voluntary commitments (see Table 4.2). Furthermore, the potential of voluntary commitments for the post-2020 global biodiversity framework is discussed.

The conventions, treaties and agreements described below have in common that they all (except the SDGs) focus on specific global challenges. However, they all have clear links to biodiversity and could benefit from integrating biodiversity targets into their goals. Similarly, the CBD would benefit from reflecting the goals and approaches of these conventions and treaties in its framework.

Table 4.2 Overview over selected international agreements and declarations calling for and applying voluntary commitments

International agreement/declaration	Target framework	Monitoring / Evaluation	Links to Targets
Bonn Challenge (2011)/ New York Declaration on Forests (NYDF) (2014)	Restoration and stop of deforestation pledges	Annual assessment reports of the NYDF Assessment Partners	5, 15
IUCN World Commission on Protected Areas (2014)	“The Promise of Sydney” Voluntary pledges by governments, donors and NGOs, reaching from financial contributions to promises to establish new protected areas	Platform for best practice and case studies, monitoring or evaluation remains unclear	5, 10, 11
UNFCCC / Paris Agreement (2015)	(Interim / Intended) Nationally Determined Contributions ((I)NDCs)	NDCs are submitted every 5 years. A first evaluation report on NDCs is scheduled for 2018; after 2023, evaluations are to be carried out every 5 years	10, 14, 15 but also 1, 2, 3, 5, 20
UNCCD / COP-12 (2015)	National voluntary land degradation neutrality (LDN) targets	A new online reporting tool was launched early 2018 (PRAIS). National reports are to be submitted until August 2018	5,7,12,13, 14, 15
WCDDR / Sendai Framework (2015)	Voluntary national targets	Online platform to report national targets – combination of existing international targets and national targets	11, 15
Sustainable Development Goals (2015)	Voluntary commitments / voluntary national reviews	A global indicator framework with 231 indicators was adopted by UNGA and a first progress report was published in 2017	All Targets (for more details see chapter 5)
UN Oceans Conference (2017)	Voluntary commitments to implement SDG 14	No decision yet on evaluation or monitoring approaches	3, 8, 7, 11, 12

4.1.2.1. Bonn Challenge and the New York Declaration on Forests

The Bonn Challenge was launched in 2011 by the Government of Germany and the International Union for Conservation of Nature (IUCN) to contribute to the implementation of existing goals like Aichi Target 15, UNFCCC REDD+ or the UNCCD. The Bonn Challenge aims to reach the global goal of restoring 150 million hectares (Mha) of forest by 2020 which was further enhanced by the 2014 New York Declaration on Forests (NYDF) by setting the target of 350 Mha by 2030. The non-binding declaration of states, companies, indigenous people’s organisations and NGOs contains ten goals, including proposals for targets to be taken up by the upcoming UNFCCC and SDG negotiations, and a voluntary action agenda. The first goal of the New York declaration is to “halve the rate of loss of natural forests globally by 2020 and strive to end natural forest loss by 2030” (UN-NYDF, 2014), clearly referencing Aichi Target 5. Progress towards the goals is evaluated by a group of NGOs and research organisations (NYDF Assessment Partners) that publish an annual report with a focus on specific goals. Goal 1 (stop forest loss) and Goal 5 (restore forests) have not been the main subject of one of the latest annual reports. However, the 2016 report stated that on the one hand, deforestation was still increasing and on the other hand, that states are committed to restoration efforts: “Since early 2015, some 114 Parties to the UNFCCC have submitted intended NDCs [i.e.,

Nationally Determined Contributions] containing land sector targets. The cumulative restoration and afforestation pledges are estimated to amount to 161.6 million hectares – equal to 46% of the 350 million hectare 2030 restoration target set by the NYDF” (Climate Focus, 2016).

The Bonn Challenge is also a “voluntary, non-binding initiative launched to advance the restoration movement and in recognition of the importance of forest landscape restoration for meeting national priorities and international commitments” (IUCN, 2017a). Supporters of the Bonn Challenge who have the right to manage land announce and register their pledges with the secretariat. Implementation efforts should follow the forest landscape restoration (FLR) approach. According to IUCN, 47 contributors have made reforestation pledges for 160 Mha of land. A progress report, the so-called Bonn Challenge Barometer, is scheduled for 2018, evaluating the progress of pilot projects in six regions. Indicators are identified to track developments with regard to Challenge-related policy frameworks, financial commitments, technical planning and results and benefits.

4.1.2.2. IUCN World Commission on Protected Areas / World Park Congress

The World Park Congress hosted by IUCN is a global forum to facilitate the exchange of knowledge and to support protected areas conservation efforts. The last World Park Congress took place in Sydney in 2014; the outcomes were summarized in the “The Promise of Sydney” which includes a vision document and “twelve innovative approaches to transformative change”⁸, e.g. recommendations on how to reach conservation goals in the next decade and a list of voluntary pledges by governments, donors and NGOs, reaching from financial contributions to promises to establish new protected areas (IUCN, 2014a). In addition, a new online platform for best practices and case studies (Inspiring Protected Area Solutions⁹) was launched in this context (IUCN, 2014b). However, the implementation of the pledges and follow-up processes yet remain unclear.

4.1.2.3. United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC was adopted in 1992 and entered into force in 1994, aiming to “stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system” (UNFCCC, 1992). The Parties of the Convention agreed in 1996 to the Kyoto protocol, “which commits its Parties by setting internationally binding emission reduction targets” (UNFCCC, 1998). Parties were requested to submit their commitments in two periods, 2008-2012 and 2013-2020. To meet their reduction targets, industrialised countries (listed in annex 1 to the Convention), could buy emission reduction certificates to compensate for insufficient progress on their way to cut emissions. The Kyoto Protocol introduced three market-based mechanisms for emission reduction certificates: International Emissions Trading, Clean Development Mechanism (CDM) and Joint Implementation (JI). At the 21st UNFCCC-COP in Paris 2015, the member states adopted the Paris Agreement aiming to limit global warming to 1.5 to 2 °C above pre-industrial levels (UNFCCC, 2015). Key elements of the Paris Agreement are the Nationally Determined Contributions (NDCs). These are contributions that include national targets for emission reduction and adaptation to climate change that every member state can propose on a voluntary basis (UNFCCC, 2015, Article 4). Before the 2015-UNFCCC COP in Paris, member states were invited to submit Intended Nationally Determined Contributions (INDCs) to assess whether these commitments would contribute to intended long-term goals.

⁸ http://www.worldparkscongress.org/about/promise_of_sydney_commitments.html

⁹ <http://www.panorama.solutions/en>

NDCs are submitted every five years and are currently collected and published in the interim NDC registry, until the terms for the registry are finalized. The first evaluation report on the submitted NDCs is scheduled for 2018. From 2023 on, a global stocktaking of the NDCs is to be carried out every five years. According to the Climate Action Tracker Project, “...a substantial gap remains between the levels of emissions reached until 2025 and 2030 through the NDCs declared and the lower levels that would be consistent with the temperature goal in the Paris Agreement” (CAT, 2018). Pauw et al. (2018) point out, that the NDCs should not only be evaluated based on the promised emission cuts:

“...beyond these headline mitigation numbers, NDCs are more difficult to analyse and compare. UN climate negotiations have so far provided limited guidance on NDC formulation, which has resulted in varying scopes and contents of NDCs, often lacking details concerning ambitions. If NDCs are to become the long-term instrument for international cooperation, negotiation, and ratcheting up of ambitions to address climate change, then they need to become more transparent and comparable, both with respect to mitigation goals, and to issues such as adaptation, finance, and the way in which NDCs are aligned with national policies” (Pauw et al., 2018).

4.1.2.4. United Nations Convention to Combat Desertification (UNCCD)

The UNCCD Convention was adopted in 1994 to address land degradation and desertification and to achieve sustainable land management. “The objective of this Convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements...” (UNGA, 1994 p. 6). The UNCCD has a focus on drylands, calls on affected member states to develop long-term strategies (National Action Programmes – NAPs) to combat desertification and requests from developed countries to support the efforts of affected countries. The NAPs are complemented by programmes and cooperation’s at the regional and sub-regional level. In 2007, the member states agreed on a 10-year strategic plan and framework (2008-2018), including strategic and operational objectives (Decision 3/COP.8 in UNCCD, 2007). The 2030 Agenda for Sustainable Development (adopted in 2015) with its SDGs include target 15.3: “By 2030 combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world”. This SDG target mirrors the main objective of the UNCCD and introduces the concept of Land Degradation Neutrality (LDN). This concept was – in turn – included in the UNCCD strategy the same year at UNFCCC COP-12 and all member countries, not only affected ones, were invited to announce national voluntary targets (Minelli et al., 2017). The ‘Scientific Conceptual Framework’ for Land Degradation Neutrality provides guidelines on how the concept can be implemented at the national level as well as indicators to monitor that there is ‘no net loss’: “Unlike past approaches, LDN creates a target for land degradation management, promoting a dual-pronged approach of measures to avoid or reduce degradation of land, combined with measures to reverse past degradation. The objective is that losses are balanced by gains, in order to achieve a position of no net loss of healthy and productive land” (UNCCD, 2016). In 2017, the UNCCD decided on a new strategic framework for 2018-2030 including guidelines to work towards SDG 15.3 and to contribute to LDN, while asking the member states to avoid duplication of efforts with regard to other MEAs and international commitments. Strategic objectives should guide UNCCD stakeholders and one of the expected impacts of the framework is that “...National voluntary land degradation neutrality targets are set and adopted by countries wishing to do so, related measures are identified and implemented, and necessary

monitoring systems are established” (UNCCD, 2017). By January 2018, 114 countries had committed to the LDN target setting programme and 14 countries took part in a pilot project in 2014/2015. A new online reporting tool was launched early 2018 (PRAIS) to register commitments. National reports are to be submitted until August 2018.

The UNCCD is cooperating with CBD and UNFCCC and its strategies are especially relevant for Aichi Targets 5, 7, 11 and 15. UNCCD is also part of the Joint Liaison Group (JLG) between the three Rio Conventions established for cooperation and exchange of knowledge in 2001¹⁰.

4.1.2.5. UN World Conferences on Disaster Risk Reduction / Sendai Framework

The UN World Conferences on Disaster Risk Reduction (WCDRRs) took place three times since 1994, the latest in 2015 in Sendai, Japan. The goal of the conferences and related processes is to reduce losses related to disasters through preparation, awareness-raising and early warning systems. The Sendai Framework for Disaster Risk Reduction 2015–2030 (UNISDR, 2015) is a non-binding agreement. It is the result of a multi-stakeholder consultation process including online, local, national, regional and global events that started in 2012 on request of the UN General Assembly (UNGA). The Sendai Framework is the follow-up to the Hyogo Framework for Action 2005–2015 (UNISDR, 2005) and includes four priorities for action (addressing actions at the local and national as well as at the regional and global level). It is also stating seven global targets and its implementation is intended to be monitored with a set of 38 indicators that should also allow “...simultaneous and coherent monitoring and reporting on the Sendai Framework and the SDGs”¹¹. States can report the progress through the Online Sendai Framework Monitor, which allows national targets and indicators and is expected to provide the data for the first progress report in 2019. The UN Office for Disaster Risk Reduction (UNISDR) publishes government announcements and voluntary commitments from stakeholders on its webpage¹².

4.1.2.6. Sustainable Development Goals

The 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) and the 20 Aichi Targets of the CBD are closely linked. The relation between the SDGs and the individual Aichi Targets are shown in detail in chapter 5. The CBD Secretariat points out that the implementation of the 2030 Agenda could create some trade-offs and negative impacts for biodiversity: “Implementing the 2030 Agenda for Sustainable Development will require the involvement of a range of actors from various sectors, some of whom will have limited direct focus or interest in biodiversity. Their actions have the potential to both benefit and hinder biodiversity objectives. Therefore, the mainstreaming of biodiversity will greatly increase the prospects for finding optimal means of reaching the Sustainable Development Goals while also addressing biodiversity concerns” (CBD/SBSTTA/21/2/Add.1, 2017, p. 6).

The SDGs are not legally binding and governments and stakeholders like NGOs, civil society and private sector are expected to commit to their implementation. “Targets are defined as aspirational and global, with each Government setting its own national targets guided by the global level of ambition but taking into account national circumstances. Each Government will also decide how these aspirational and global targets should be incorporated into national planning processes, policies and strategies” (UNGA, 2015, p. 13). Governments are encouraged “...to conduct regular and

¹⁰ <https://www.cbd.int/cooperation/liaison.shtml>

¹¹ <https://www.preventionweb.net/drr-framework/sendai-framework-monitor/>

¹² <https://www.preventionweb.net>

inclusive reviews of progress at the national and subnational levels which are country-led and country- driven. Such reviews should draw on contributions from indigenous peoples, civil society, the private sector and other stakeholders, in line with national circumstances, policies and priorities” (ibid., p. 33). Data from the voluntary national reviews are expected to provide the main input for a global review of the process. A ‘Global Partnership’ is supposed to support and facilitate the implementation processes on different levels. Voluntary commitments by member states, but also by various stakeholders, are collected in an online registry that also includes specific commitments made in the context of thematic UN conferences, e.g. the UN Oceans Conference (see Fig. 4.1).



Fig. 4.1: Numbers of registered voluntary commitments and multi-stakeholder partnerships per SDG (total number: 3830). Source: UN Partnerships for the SDGs – Global Registry, accessed 31 May 2018: <https://sustainabledevelopment.un.org/partnerships/>.

A global indicator framework with 231 indicators was adopted by UNGA and a first progress report was published in 2017 (UNGA, 2017d). The report shows that overfishing, ocean acidification and coastal eutrophication remain a serious challenge for marine biodiversity (SDG 14) and that the world’s forest area is still shrinking, but deforestation is slowing down. Recent data shows positive trends for terrestrial and marine areas under protection (SDG 15). The report states for all targets of the SDG framework that the “pace of progress observed in previous years is insufficient to fully meet the Sustainable Development Goals (SDGs) and targets by 2030” (UN, 2017, p. 3).

4.1.2.7. UN Ocean Conference

The high-level United Nations Conference to Support the Implementation of Sustainable Development Goal 14 took place in June 2017 and invited governments and stakeholder organisations in advance to submit voluntary commitments to implement SGD 14 and its seven targets. Commitments were expected to show a clear link to SDG 14, to include means of implementation and to follow the SMART¹³ criteria. Over 1400 commitments were submitted¹⁴. A first analysis report tried to cluster the commitments according to main issues and covered SGD sub-targets and made proposals for an evaluation. However, no final decision has been taken on monitoring or a follow-up process so far (UN DESA, 2017). Further outcomes of the conference were the adopted declaration “Our ocean, our future: call for action” (UNGA, 2017c) and seven partnership dialogues, e.g. on sustainable fisheries.

¹³ SMART = specific, measurable, ambitious, realistic, timebound, see chapter 5 of this report

¹⁴ <https://oceanconference.un.org/commitments/>

4.1.2.8. Summary and conclusions on voluntary commitments

The overview above shows that voluntary commitments and voluntary national targets haven't become increasingly popular during the recent years and that they have the potential to replace or complement stricter frameworks. There are many reasons why states might prefer non-binding agreements, e.g. the expectation that such an agreement might be negotiated in a shorter time, entails lower transaction costs and provides them with more flexibility, e.g. also in dealing with national resistance to the commitments (Brown Weiss, 2014). Voluntary commitments could be a great opportunity, especially since they also include non-state actors such as NGOs or companies, and if they are fully implemented, they would result in a huge step towards existing (and new) international environmental targets. However, this would require consistent national implementation, transparent monitoring and reporting, such that states and other actors can really be held accountable with regard to their commitments. The described processes are all still in an early stage, indicators, evaluation and monitoring tools are still under development. Accompanying research remains so far in an early observation mode and only the future will tell how effective voluntary commitments really are. "While voluntary commitments may be an important, perhaps necessary, step in the face of inaction, they cannot be regarded as a substitute for negotiated norms and requirements. Indeed they may, in the long run, depend upon the latter for their effectiveness" (Brown Weiss, 2014). An early assessment of the national commitments to the Paris Agreement on Climate Change shows, that the current promises will not be enough to meet the agreed goal to slow down global warming (CAT, 2018).

4.1.3. Regional treaties, agreements, strategies and national policies

For achieving conservation and sustainable use of biodiversity at the regional or national level, the mainstreaming of these goals across sectors is very important (see also Aichi Target 1 in chapter 5): "The evidence shows that biodiversity and nature conservation will benefit from being mainstreamed in environmental policies and all economic sectors and their policies and that nature's contributions to people will benefit from being mainstreamed in all economic sectors, as well as the conservation sector" (IPBES/6/15/Add.4, 2018, p. 31). The IPBES ECA Assessment proposes three steps for successful mainstreaming "...first, raising awareness of the dependence of good quality of life on nature, enhancing capacity-building and strengthening participation of affected actors in decision processes; second, defining policy objectives concerning the ecological, economic and sociocultural needs for achieving sustainable living, taking account of the diverse values of nature for different stakeholder groups; and, third, designing instruments and policy mixes to support the implementation of effective, efficient and equitable policy and decision-making for nature and a good quality of life" (ibid., p. 30; see also Aichi Target 2 and Aichi Target 17 in chapter 5).

There are several regional instruments in Europe and Central Asia that focus on specific environmental issues and / or on certain regions. The European Union Common Agricultural Policy (CAP) has been taken as an example by the IPBES ECA Assessment where regional legal and regulatory instruments as well as the mainstreaming of biodiversity could be improved. "A number of factors would increase the effectiveness, efficiency and equity of policy instruments. These include: a better definition of clear and coherent objectives for the Common Agricultural Policy, simultaneously addressing multiple ecosystem services; a more defined focus on biodiversity conservation and delivery of nature's contributions to people at landscape level; a more explicit disclosure of trade-offs and synergies between different objectives; and more balanced and transparent funding

between production of agricultural commodities and the delivery of public goods” (Pe'er et al., 2014 as referred to in IPBES/6/INF/4, 2018, p. 939).

According to the IPBES ECA Assessment, the major shortcoming within the European Union is not the lack of regional instruments, initiatives or strong enforcement mechanisms but the insufficient implementation and compliance (IPBES/6/INF/4, 2018, p. 898). The authors of the assessment assume that “policies, plans, programmes, strategies and practices of public and private actors could be achieved with more proactive, focused and goal-oriented environmental action, including quantitative goals (IPBES/6/15/Add.4, 2018, p. 30).

4.1.3.1. Direct regulation, e.g. protected area designation

A similar observation has been made for regulation instruments such as protected area designation, which is considered to be highly effective with regards to conservation of biodiversity and ecosystem service provision (see also Aichi Target 11 in chapter 5). The IPBES ECA Assessment points out, that protected areas are expanding in the region, but that effective management is the key to prevent biodiversity loss (IPBES/6/15/Add.4, 2018, p. 4). Several factors might reduce the effectiveness of conservation efforts, such as weak enforcement, changing environmental conditions, e.g. caused by climate change, or the insufficient integration of local communities in conservation projects (IPBES/6/INF/4, 2018, Table 6.5, p. 918). It needs to be considered that “local opportunity costs can be substantial” (ibid.), e.g. due to limited access or limited agriculture use. On the other hand, the local communities may also benefit from ecosystem services provided by protected areas (ibid.).

4.1.3.2. Legislation and strategies on e.g. invasive alien species

Invasive alien species (IAS) have been identified as one of the drivers for the loss of biodiversity and the problem has been addressed in several international and regional agreements besides the CBD (see also Aichi Target 9 in chapter 5). The IPBES ECA Assessment however concludes that despite of the existing legal instruments and strategies to combat the spread of IAS in the region, they are not sufficiently effective and fail at the national level due to “scattered legislative or advisory tools” (IPBES/6/INF/4, 2018, p. 911). Only the United Kingdom is named as a positive example for a coordinated approach. Future challenges for the management of IAS are seen in new trade routes like the New Silk Road from China to Europa or the enlargements of the channels in Suez or Panama (IPBES/6/INF/4, 2018, p. 910).

4.2. Economic and financial instruments

The IPBES ECA Assessment presents and discusses several economic and financial instruments that are of relevance for achieving the Aichi Targets (see also Aichi Target 2 in chapter 5):

Natural Capital Accounting has been considered an important tool for mainstreaming the value of biodiversity and this approach is for example an integral part of the second target of the EU Biodiversity Strategy. The IPBES ECA Assessment proposes that integrating “...the spatial dimensions of ecosystem services within decision-making at different scales would raise awareness, inform about the human dependence on diverse natural resources and enhance the recognition of their values” (UK NEA, 2011 as referred to in IPBES/6/INF/4, 2018, p. 986).

Economic instruments often named in the CBD context are, e.g., biodiversity offsets or tradable permits. The IPBES ECA Assessment points out that there is a lack of evidence for the effectiveness of offsets. The effectiveness of quantity-based mechanisms aiming for “no net loss” in case that destruction of biodiversity needs to be compensated (e.g. by tradable permits, biodiversity offsets or

habitat banking) is only described as medium: “...problems arise in assuring equivalence of mitigation measures and their long-term monitoring” (IPBES/6/INF/4, 2018, Table 6.5, p. 918).

Another option to add economic value to biodiversity is the Payments for Ecosystem Services (PES) approach. A PES scheme targets for example land users and compensates them for conservation measures. The IPBES ECA Assessment concludes that the effectiveness of PES schemes can vary from low to high, “...depending on instrument design regarding baseline, and additionality, leakage, permanence and participation” (IPBES/6/INF/4, 2018, Table 6.5, p. 918).

4.3. Rights-based instruments and customary norms

Rights-based instruments focus on human rights, especially on the rights of indigenous peoples and local communities and the IPBES ECA Assessment highlights that they need to be considered in the context of the implementation of the SDGs and the Aichi Targets as well as in analyses of the impacts of the ECA region’s resource use on other regions of the world. The IPBES ECA Assessment has mainly looked at rights-based instruments and the application of a rights-based approach in conservation projects, while such instruments do not exist for other sectors in the region, or they are still under development (IPBES/6/15/Add.4, 2018, Table SPM.4, p. 31-32). The assessment shows that conservation efforts have contributed to the recognition of rights and enabled participation in decision-making but also contributed to undermine or violate “...human rights, through human translocations, abolishment of traditional practices, centralization of governance and management or the prioritization of one industry (e.g., wildlife tourism) over traditional industries (e.g. live-stock herding) (Dowie, 2009 as referred to in IPBES/6/INF/4, 2018, p. 1001).

4.4. Social and cultural instruments

Social and information-based policy instruments can help “...to trigger behavioural change at the local, national and international levels, and to include consumers and producers in policy development” (IPBES/6/15/Add.4, 2018, p. 33). Certification standards and eco-labelling have been considered helpful tools to support sustainable consumption and production (see also Aichi Target 4 in chapter 5), but the IPBES ECA Assessment also highlights some challenges, “...certified production systems may offer effective and cost-efficient solutions for protecting and safeguarding ecosystem services. However, a quick scan of a selection of standards reveals that not all services are as yet equally well addressed and treated” (van Oorschot et al., 2016 as referred to in IPBES/6/INF/4, 2018, p. 1000). The most known and applied certification schemes in the ECA region are the Marine Stewardship Council (MSC) and the Forest Stewardship Council (FSC). Even so forest certification standards such as FSC are widely used in forestry in the ECA region, their effectiveness regarding biodiversity conservation has been evaluated as medium in the IPBES ECA Assessment. The impacts are “dependent on rigorousness of standard and framing conditions, such as intensity of investment, difficulties in transport and licensing, land tenure and conflicts with competing land uses” (IPBES/6/INF/4, 2018, Table 6.5, p. 918). The IPBES ECA Assessments also points out that there is a lack of knowledge regarding the efficiency of forest certification standards (IPBES/6/INF/4, 2018, p. 903). According to the assessment, some evidence suggests that the MSC certification scheme has led to “some improvements” in fisheries management and practices, but nonetheless, overfishing continues on a global scale (IPBES/6/INF/4, 2018, p. 909).

5. Analysis of individual Aichi Targets

5.0. Note on the presented analysis and the post-2020 CBD framework's overall architecture

In the remainder of this chapter, 19 out of 20 Aichi Targets are analysed on an individual basis. Suggestions for alternative wordings are presented for many of the Targets, partly at a level of considerable detail. Taking the submissions summaries in CBD/SBI/2/17 (2018) into consideration, this approach assumes that the Aichi Targets will form one of the important bases of discussions during the upcoming negotiations on the post-2020 framework of the CBD and that it is worthwhile scrutinizing potential options for improvements. The recommendations given in the following sections for the individual Targets were therefore derived focusing on the respective Target text and neglecting to a certain extent some other very relevant considerations such as potential implications that changes in the wording will have, e. g. for the indicator framework of the CBD and for the chances that all CBD parties will agree to revised Target text. An assessment of the impact that changed wording for a single Target could have on the overall biodiversity framework was beyond the scope of this study. The authors of this report are aware of the fact that e.g. negotiation strategies of CBD Parties might limit the opportunities for changes.

Another important issue largely neglected in this analysis is the question which overall architecture might be desirable for the post-2020 CBD framework. One option – at which the following analysis largely builds – is that the post-2020 architecture resembles the one of the current Strategic Plan in which the individual Aichi Targets are grouped under Strategic Goals but without a clear hierarchy amongst each other or a clear differentiation of different Target types.

Alternatively, the post-2020 CBD framework could have a very different structural character than the current Strategic Plan. For example, it could be composed of different categories of Targets that are ordered hierarchically within the overall scheme. Such architecture was sketched by some of the participants of the international expert workshop in September 2018 who strongly argued for separating the Targets into the following two categories: a) Targets that aim at incremental societal change toward a desired future, achievable realistically only over several decades (also depicted as ‘more procedural’ Targets or as Targets that aim at creating ‘enabling conditions’, e.g. Aichi Targets 1, 2, 3, 4); and b) Targets that fairly clearly define a desired state of a particular entity and that allow measuring progress in a comparatively straightforward manner (also depicted as ‘Targets with a defined endpoint’ or as ‘clearly quantifiable’ or ‘conservation-focused’, e.g. Aichi Targets 5, 9, 11, 15). Separating these two categories of Targets could significantly increase the consistency, logic and therefore the overall persuasiveness of the global biodiversity framework. The proponents of such a new architecture further argued that the separation of the different categories of Targets and their appropriate arrangement in a hierarchical structure would stimulate the analysis and understanding of dependencies among the Targets as well as between the Targets and other important global processes (such as links to the Sustainability Agenda), create opportunities for scrapping redundancies and for re-focusing the post-2020 global biodiversity framework on issues that are actually under the mandate of the CBD and the other biodiversity-related conventions. This view was contentious among the participants of the September workshop and spurred vivid discussions. Some of the participants argued further that discussing the overall architecture of the post-2020 global biodiversity framework and finding some common understanding on its set up and / or main building

blocks would constitute a prerequisite for scrutinizing the text of the individual Aichi Targets in a meaningful way.

Acknowledging the value of these architecture-related considerations, the authors of this study took a different approach. They chose to scrutinize the individual Target texts and believe that this has merit by inspiring thinking and possibly guiding toward some improvements of the Targets.

However, when looking at the bigger picture, the authors overall conclude that the drawbacks linked to strongly modifying the overall structure of the framework or several of the individual Targets – namely the risk of losing important driver-orientated elements of the framework altogether, a significant decrease of the level of its ambition and a further indefensible delay of the implementation – largely outweigh the potential benefits (see chapter 7 for the overall conclusions of this study).

Bearing this in mind, the draft recommendations in the following sections of this document should be understood as suggestions intended to foster creative thinking on the significance and appropriateness of the individual Aichi Targets and on options for modifications. An overview over the developed recommendations is provided in Table 7.1 (see chapter 7).



5.1. Aichi Target 1

By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

5.1.1. Introduction

“Awareness” is often regarded as a prerequisite for taking action: only if people know what biodiversity is and what it is good for, they will value and care about it. Thus, “awareness” has been incorporated into the CBD Strategic Plan 2011-20, and the prominent place of the respective Target (#1) reflects the key role that the CBD Parties attribute to it. However, there are a number of challenges linked to Aichi Target 1 that are particularly related to its vagueness and the unclear relationship between awareness and action (i.e. related to the Target’s 2nd element: “the steps”).

5.1.1.1. Structural overview

Aichi Target 1 consists of two elements (GBO 4):

People are aware of the values of biodiversity
People are aware of the steps they can take to conserve and sustainably use biodiversity

The aspirational components are “awareness”, “values of biodiversity” and “steps”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Surveys suggest that while people are aware that biodiversity is important for human well-being, they do not necessarily view biodiversity protection as an important contribution to human well-being. With important national differences, survey respondents see biodiversity loss as a global problem but not one that is of great local concern. People are still not certain which actions have a negative impact on biodiversity, and fewer still are able to connect specific actions to biodiversity protection” (CBD Secretariat, 2014, p. 33).

Trend according to the IPBES ECA Assessment:

“Evidence suggests progress in addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society [...]. Public awareness about the importance of biodiversity and ecosystem services (Aichi Target 1) appears to be increasing” (IPBES/6/15/Add.4, 2018, p. 28).

5.1.2. Analysis

5.1.2.1. Links to previous CBD framework and to other Aichi Targets

Aichi Target 1 corresponds to “Goal 4” of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): “There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.” This shows that there is already a long-term commitment by the CBD and its

parties in support of Aichi Target 1. While during 2002-2010, Goal 4 was underpinned by some more concrete expectations¹⁵, Aichi Target 1 lacks specifications.

Marques et al. (2014) conclude that none of the other Targets is particularly strongly affected by progress toward Aichi Target 1, while Target 1 itself is particularly strongly affected by progress toward Targets 17 (addressing NBSAPs), 19 (addressing knowledge and technology) and 20 (addressing the mobilization of financial resources).

This view is debatable, as “understanding, awareness and appreciation of the diverse values of biodiversity, are necessary to create the willingness to undertake the behavioural changes required to conserve and sustainably use biodiversity” (CBD/COP/10/9, 2010). As such, progress toward Aichi Target 1 may have a strong influence on the progress toward all other Targets. Moreover, one may also argue that e.g. the implementation of biodiversity policies with strong economic implications (e.g. related to Aichi Targets 3, 4, 6 and 7) may ultimately have a profound effect on the awareness and appreciation of biodiversity.

5.1.2.2. *Smartness*

S (specific): Of the three aspirational components, “awareness” is the most concrete, interpretable e.g. as “attention”, “cognizance”, “knowledge” and “mindfulness” and related e.g. to “apprehension”, “recognition” and “understanding” (Merriam-Webster online thesaurus¹⁶). The component “values of biodiversity” is very unspecific, because the term “value” can be associated with very different concepts, e.g. intrinsic, instrumental or relational values (Chan et al., 2016). However, numerous studies have addressed the question how to better integrate biodiversity values into decision making which provide also conceptualizations of the term “values of biodiversity” (e.g. TEEB¹⁷; see next chapter on Aichi Target 2). Furthermore, the upcoming IPBES assessment on values will shed additional light on this concept and its possible interpretations. The component “steps” remains vague. This has the advantage that it may encompass any action by any stakeholder at any organizational level, but a strong disadvantage for the measurability of this Target element (see below).

M (measurable): To date, three specific Target-1-indicators have been recognized by the CBD that measure trends in “awareness and attitude” (first Target element) (CBD/COP/DEC/XIII/28, 2016) and there are scientific endeavours to complement these with newly developed additional indicators (e.g. Correia et al., 2017). In their fifth National Reports, Parties usually reported either about surveys that measured understanding or attitudes of people directly or about the participation in or number of certain biodiversity-related activities. Sometimes, these indicators addressed environmental issues in general rather than biodiversity in particular (CBD/SBSTTA/20/INF/34, 2016).

However, no specific Target-1-indicator has been identified that could measure whether people “take steps” (second Target element) (CBD/COP/DEC/XIII/28, 2016). This is a serious drawback for the overall measurability of Aichi Target 1.

Butchart et al. (2016) conclude that both elements of Aichi Target 1 are not quantifiable.

¹⁵ Such as sub-goal 4.1 for the period 2002-2010: “All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention” (CBD/COP/DEC/VI/26, 2002).

¹⁶ <https://www.merriam-webster.com/thesaurus/awareness>

¹⁷ <http://www.teebweb.org>

A (assignable): “People” may be understood as “the general public”, i.e. Aichi Target 1 speaks in a way to everyone. The “Technical Rationale” for the Strategic Plan specifies that “the key audiences for [such] communication, education and public awareness activities will vary between Parties, but generally could focus on national and local governments, business, non- governmental organizations and civil society groups, including in their role as producers and consumers of biodiversity-related goods” (CBD/COP/10/9, 2010). However, there is no indication in the Target text on the question *who* could or should take responsibility for initiating relevant actions. Ideally, all stakeholder groups, including national and local governments, NGOs and the private sector, engage in efforts leading to progress toward Target 1.

5.1.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.1 gives an overview over how Aichi Target 1 is linked with different policies at the national, European and global scale.

Table 5.1: Reflection of Aichi Target 1 (2010) in the content of the German NBSAP (2007)*, the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 5 and chapter B 2.1 (see BMUB, 2014, p. 33).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that is equivalent to Aichi Target 1; however EU Biodiversity target 1 is a commitment by the EU to fully implement the Birds and Habitats Directives in all Member States and to reach this aim, one action partly equivalent to Aichi Target 1 is proposed ¹⁸ : “Action 3: Raise awareness of Natura 2000, get citizens involved and improve the enforcement of the nature directives” (European Commission, 2011).
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p> <p>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.</p> <p>Goal 13. Take urgent action to combat climate change and its impacts.</p> <p>13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.</p> <p><u>Missing elements:</u></p> <p>“Awareness of the values of biodiversity and action to conserve and use it sustainably is not explicitly mentioned” (Schultz et al., 2016).</p>

¹⁸ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 1 calls for people to be aware of the values of biodiversity by 2020, while SDG target 12.8 calls for awareness for sustainable development by 2030” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 1 could better support one or more SDGs:</u></p> <p>Several SDG targets mention awareness, e.g. 4.7 on education, 12.8, or 13.3 on education with respect to climate change, without timelines or with a timeline of 2030. A CBD post-2020 Target on awareness would at least help fostering the achievement of these SDG targets. A respective CBD Target could further aim at implementing some steps which make people aware of the values of biodiversity and in that way foster also the achievement of several other SDG targets.</p>
--	---

* The German NBSAP was adopted before the Aichi Targets, however the NBSAP is often addressing similar issues, see also BMUB (2014).

5.1.2.4. Links to other conventions and further processes

Given the breadth and vagueness of the issues addressed by Aichi Target 1 (“awareness” and “values”), there are numerous other relevant processes. All of the biodiversity-related conventions have incorporated “awareness” either as an article in their convention text (CBD, WHC), their strategic documents (Ramsar, CMS, CITES) or have released guidance that is relevant for achieving Target 1 (all mentioned conventions and the International Treaty on Plant Genetic Resources for Food and Agriculture - ITPGRFA) (UNEP-WCMC, 2015). Further international processes with a strong emphasis on “awareness” and “values” are IPBES and TEEB.

Furthermore, as Aichi Target 1 aims at awareness and such awareness can be reached by education there is a direct link to UNESCO: its educational programmes could be supplemented by including awareness rising on ‘the values of biodiversity and steps to conserve and sustainably use it’. The same is true for any multilateral or bilateral education and training programme, e.g. in development aid or academic knowledge transfer and exchange programmes. In fact, one of the milestones of the Target 1 is to include the concept of biodiversity and its sustainable use in curricula and education programmes. The UNESCO Decade of Education for Sustainable Development (ESD) and its follow-up, the Global Action Programme on Education for Sustainable Development (ESD GAP) are aiming for similar goals (ESD GAP Priority Area 1). The ESD GAP was aligned to the SDGs and is also contributing to SDG goal 15, as e.g. expressed in the following objectives: “The learner understands basic ecology with reference to local and global ecosystems, identifying local species and understanding the measure of biodiversity” or “The learner is able to argue against destructive environmental practices that cause biodiversity loss” (UNESCO, 2017, Table 1.2.15. Learning objectives for SDG 15 “Life on Land”).

The UN Framework Convention on Climate Change is addressing awareness and education in article 6 of the Convention (UNFCCC, 1992). In 2012, the members of the Convention adopted the Doha Programme of Work on Article 6 to implement activities with regards to education and public awareness for climate resilience. An Alliance on Climate Change Education, Training and Public Awareness was launched in Doha as well, aiming to “...maximize synergies and coherence of activities, avoid duplication of effort and utilize available expertise and resources in an efficient manner through enhanced coordination” (UNFCCC website¹⁹). The alliance is assembling 13 UN

¹⁹ <https://unfccc.int/topics/education-and-outreach/focal-points-and-partnerships/un-alliance-on-climate-change-education--training-and-public-awareness>

organisations covering most working areas of the UN. The CBD is not a member, however due to the strong link between climate change and the loss of biodiversity, close cooperation between the two processes would be helpful to increase the outreach and benefit from lessons learned.

Latest knowledge on biodiversity, for example produced by IPBES, could help to develop state-of-the-art education material to be used by the Communication, Education and Public Awareness (CEPA) programme of the CBD as well as in the ESD context. The regional and sub-regional IPBES assessments have addressed Aichi Target 1 in their chapters dealing with “Options for governance, institutional arrangements and private and public decision-making across scales and sectors” (IPBES/6/INF/4, 2018).

Finally, social media offer new technologies for reaching a high number of people in a very short time and could also be used for awareness raising campaigns.

5.1.3. Recommended options and further suggestions for Aichi Target 1

5.1.3.1. Suggestion by ibn: accentuate crisis and actions

Recommended option (ibn): Keep but modify Target 1.

By **2030**, at the latest, **all** people are aware of the **irreversibility and gravity of biodiversity loss**~~values of biodiversity~~, and ~~the steps they can~~ take **actions** to conserve and **sustainably** use ~~biodiversity~~~~it sustainably~~.

Rationale:

The Target as it stands is too unspecific; its focus is more on awareness and less on actions. In 2010 in Nagoya, it was discussed if the qualifier 'all' should be included before 'people' or if the word 'people' is sufficient because it is anyway meant as a synonym for 'everybody'. This remains unclear from the current formulation. Furthermore, all biodiversity-related MEAs and the SDGs aim at and simultaneously compete for awareness; joined efforts could help using resources and outreach channels more efficiently. Furthermore, it should be considered whether IPBES language such as “Nature’s contributions to people” and “quality of life” should be included in the Target to acknowledge recent developments and (scientific) discourses around the terms “biodiversity values”, “ecosystem services” and “nature’s benefits”.

5.1.3.2. Suggestions by participants of the national expert workshop

Recommended option 1 (participants): Keep Target 1 as it stands.

*Explanatory comments*²⁰:

- Aichi Target 1 is of critical importance and should be kept.

²⁰ The explanatory comments support the recommended option stated directly above. They were mentioned during the discussions at the respective expert workshop but the opinions they convey were not necessarily shared by all workshop participants. The purpose of listing them here is to offer some plausible arguments for the presented options. When issues were discussed intensively, this is reported to a high degree (marked by the insertion “Objection” or “Note”). If there was no agreement within the break-out group about which option to recommend or how the Target text should be re-phrased, two alternatives are presented in this report (marked as “Option 1, Option 2” if they refer to whether the Target text should be changed or maintained and as “Option A, Option B” if they refer to alternative wording of Target text).

- Target 1 should convey a positive message by accentuating the values of biodiversity instead of only focussing on the *loss* of biodiversity (as it was proposed by ibn).
- Whether the inclusion of the word “all” before “people” is appropriate, would need more reflection (this issue was raised but not further discussed by the group).
- It seems too early to include terminology coined by IPBES, such as “Nature’s contributions to people”. This term is still highly debated and only time will tell whether it becomes widely accepted. The term “quality of life” may be regarded as highly problematic, especially in the global south.

Recommended option 2 (participants): Keep but modify Target 1.

Option A

By **2030**, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it ***fairly and*** sustainably.

Explanatory comments:

- The principle of “justice” should be enshrined in Target 1. – *Note:* The term “fair” was intensely discussed. While there was general agreement that a reference to “justice” was important, participants debated about how this could most appropriately be achieved. The word “just” refers more directly to “intergenerational justice” than the word “fair”. However, there seemed to be a tendency toward “fair” among the participants because it corresponds closely to the standard term “fair and equitable sharing of the benefits” and would result in Target 1 echoing the triad of the CBD objectives.

Option B

By **2030**, at the latest, people are aware of the values of biodiversity and ***of the irreversibility of biodiversity loss and the threat it poses to humanity and*** the steps they can take to conserve and use it ***fairly and*** sustainably.

Explanatory comments:

- It is also important to communicate the urgency of actions and that biodiversity loss poses a threat to humanity.
- Possible alternative terms to “threat to humanity” may be “risks to humanity”, “meaning of biodiversity for humanity” and “importance of biodiversity for humanity”.

5.1.3.3. *Suggestions by participants of the international expert workshop*

At the international expert workshop, there was a controversial discussion on whether Target 1 (and also Target 2, 3 and 4) should be maintained as stand-alone Targets in the post-2020 global biodiversity framework. Some participants argued that Target 1 (and 2, 3 and 4) aim(s) at creating ‘enabling conditions’ and that Targets of this type should be incorporated in a different way than Targets that are more conservation-focused (e.g. in a strategic section of the framework, see also the introductory ‘Note on the presented analysis and the overall architecture’ for a more detailed report on these considerations). Instead of proposing alternative Target text, participants made more general statements on the usefulness, specificity and complexity of Aichi Target 1 and reflected on ways how it could better be implemented. The following list summarizes some of the aspects that were raised:

- The level of ambition should potentially be raised, possibly by an addition referring to the need of reconnecting people to nature.

- The wording “values of biodiversity” should be kept. But a modification that stresses severity and urgency could indeed be an improvement.
- Inserting ‘all’ before ‘people’ aims too high: reaching ALL people by 2030 seems unrealistic.
- Affirmation of the notion that ‘awareness’ does not suffice and does not necessarily lead to the desired actions.
- Cautionary note on focusing too much on the ‘people’: this should not take off responsibility from the governments. The CBD is a country-level convention, committing individuals by the CBD seems very difficult – the CBD does not seem to be the right instrument for doing so. Instead, the governments are (and should be) the responsible actors addressed by the CBD in the first place and they should be reminded of their responsibility to raise the awareness of the ordinary people: Specifying particular steps and actions that are suitable for raising the levels of awareness and pointing out actions or behaviour that are needed for making progress toward the Target could help implementing it.
- Target 1 could have two streams: a) on the empowerment of people; b) on the responsibility of leaders/governments
- It is important to acknowledge that the concept and the valuation of biodiversity are not universal but culture-dependent.
- It is very important to define baselines for Aichi Target 1, there is not sufficient information on people’s awareness from most countries; this poses a severe problem for the development and use of indicators.
- The Target should ideally be more specific.
- Knowledge is needed on effective communication strategies, including different narratives for different target groups. Knowledge is also needed to define baselines (see above).

5.1.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones in detail.

5.1.4.1. *Options that could facilitate progress toward Aichi Biodiversity Target 1*

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020²¹).
- Clarify link between awareness and action.
- Join forces among CBD, other biodiversity-related MEAs and SDGs, align communication and education activities, strategies and plans as well as related indicators for evaluation.

5.1.4.2. *Suggested milestones*

- By 2025, biodiversity and nature’s contributions to people, their conservation and sustainable use are included in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment (in line with UNESCO ESD and SDG 4.7/indicator 4.7.1).
- By 2025, biodiversity and nature’s contributions to people, their conservation and sustainable use are fully included in aligned awareness campaigns, e.g. of UNEP, UNESCO and

²¹ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

UNDP and the UN Education for Sustainable Development / SDG related campaigns, especially related to SDG 4.7.

- By 2025, actions identified to achieve Target 1 as well as the other Targets are compiled in an indicative list of “implementation action” (specifying different groups of actors) that feeds back into the process and is used, in turn, to enhance the implementation of the first element of Target 1.

5.1.4.3. Other issues

- Awareness “of the values of biodiversity and the steps they can take to conserve and use it sustainably” is not explicitly mentioned in the SDG framework.
- **It could be worth considering a reference within Target 1 to the importance of the benefits of restoration (e.g. by adding text like “...and people are aware of the benefits of biodiversity restoration”).**



5.2. Aichi Target 2

By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

5.2.1. Introduction

“Though our well-being is totally dependent upon the continued flow of [these] ‘ecosystem services’, they are predominantly public goods with no markets and no prices, so are rarely detected by our current economic compass. As a result, biodiversity is declining, our ecosystems are being continuously degraded and we, in turn, are suffering the consequences” (TEEB, 2008, p. 9). Aichi Target 2 is meant to address the fatal situation that the over-exploitation of natural resources is often a profitable strategy in economic terms – at least in the short run: when a decision has harmful effects on biodiversity, it is often not the individual or group responsible for this decision that bears the costs, but the society as a whole. For example, if industrial discharge pollutes the freshwater reserves of a community in a situation, where legal regulations do not exist or are not enforced, the decision to neglect the treatment of wastewater may result in economic benefits for the industrial shareholders but in potentially high costs for the community (e.g. for communal water treatment and health care). The phenomenon that the unregulated access and use of public goods may incentivize their over-exploitation is well known as “the tragedy of the commons” and it is regarded as one of the main drivers of unsustainable production and consumption patterns. Aichi Target 2 therefore demands a more adequate and significant consideration of the multiple values of biodiversity in decision-making processes, in particular in the context of economic development and poverty reduction. This includes – economically speaking – the internalization of negative externalities. Providing conceptual and methodological guidelines for such ‘mainstreaming’ of biodiversity has been one of the central aims of the influential TEEB study²². The CBD argues that “including the values of biodiversity in national accounts, strategies and plans would [...] give it greater visibility amongst policy-makers. The integration of biodiversity into national decision-making processes will enable Parties to appropriately assess the consequences of biodiversity loss, possible trade-offs and increase coordination among government ministries and levels of government” (CBD/COP/10/9, 2010). While the IPBES regional assessments agree that the value of biodiversity and nature’s contribution to people need to be included on local and national planning and strategies such as poverty reduction, they highlight the many challenges for the implementation and application of current tools to achieve elements 3 and 4 of Aichi Target 2 (e.g. Offsetting or accounting approaches provided by TEEB, SEEA or WAVES) (IPBES/6/INF/4, 2018, p. 986; see also Vardon et al., 2017). On the one hand they support the development of a more holistic “comprehensive methodological approach in which biophysical, socio-cultural and monetary value domains can be explicitly considered and integrated into decision making processes” (Martin-Lopez et al., 2014 as cited in IPBES/6/INF/4, 2018, p. 986). On the other hand they highlight that decision-makers still have difficulties to interpret and implement existing tools. The future results of IPBES Deliverable 3(d): “Policy support tools and methodologies regarding the diverse conceptualization of values of biodiversity and nature’s benefits to people including ecosystem services” may help to overcome this gap and contribute to easier applicable tools.

²² www.teebweb.org

5.2.1.1. Structural overview

Aichi Target 2 consists of four elements (GBO 4):

Biodiversity values integrated into national and local development and poverty reduction strategies
Biodiversity values integrated into national and local planning processes
Biodiversity values incorporated into national accounting, as appropriate
Biodiversity values incorporated into reporting systems

The aspirational components are “biodiversity values” and “integrated or incorporated”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Important progress has been achieved recently in incorporating biodiversity values into planning processes and strategies to reduce poverty, [...]. Wide variations among countries remain, but international initiatives are helping to reduce these differences” (CBD Secretariat, 2014, p. 37). However, the evidence for this trend is largely based on poverty reduction strategies and “relatively little attention is given to the integration of biodiversity into national accounting and reporting systems. [...] while important progress has been made towards achieving all components of Target 2, significant additional actions are required to meet the Target by the 2020 deadline” (CBD Secretariat, 2014, p. 37).

In line with this analysis, initiatives such as WAVES²³ show a growing trend towards the incorporation of biodiversity values.

Trend according to the IPBES ECA Assessment:

“Progress has also been reported in integrating biodiversity and ecosystem services into planning processes and national accounting in Western and Central Europe (Aichi Target 2)” (IPBES/6/15/Add.4, 2018, p. 28).

5.2.2. Analysis

5.2.2.1. Links to previous CBD framework and to other Aichi Targets

Aichi Target 2 corresponds to segments of the Goals 1 and 3 of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): Sub-goal 1.5: “Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels”; and Sub-goal 3.3: “Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies”. This shows that there is already a long-term commitment by the CBD and its Parties in support of Target 2. However, the explicit reference to national accounting in Target 2 might reflect a change to a more economic perspective. Exchanging the term “concerns” with “values” was possibly motivated by the more positive connotation of the latter, which stresses the benefits that humans derive from nature. Furthermore, the shift in the terminology could have been inspired by the popularization of the ecosystem service concept and methodological advances in the mapping and accounting and valuation of such services.

²³ <https://www.wavespartnership.org/>

Marques et al. (2014) conclude that most of the other Targets are strongly affected by progress toward Aichi Target 2 (all but 1, 8, 9 and 19 – which receive an intermediate rating), while Target 2 itself is particularly strongly affected by progress toward Aichi Targets 3 (addressing harmful incentives), 17 (addressing NBSAPs) and 20 (addressing the mobilization of financial resources) – i.e., Targets that also address policy instruments or the availability and allocation of financial resources.

Additionally, one could argue that, although Aichi Target 2 explicitly addresses all values of biodiversity – not only monetary ones, progress toward Target 2 would probably imply that the use of natural resources comes at higher economic costs. This would have profound effects on a vast spectrum of private and public decisions related directly or indirectly to resource-use (which would in turn increase the awareness for biodiversity, see above). As such, in our view, progress toward Target 2 may heavily influence progress toward all Targets, possibly in particular those (other) Targets under Strategic Goal A (“Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society”, Targets 1, 3, 4), Strategic Goal B (“Reduce the direct pressures on biodiversity and promote sustainable use”, Targets 5-10), Strategic Goal C (“To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity”, Targets 11-13) and Strategic Goal D (“Enhance the benefits to all from biodiversity and ecosystem services”, Targets 14-16).

5.2.2.2. Smartness

S (specific): As stated above, the aspirational component “biodiversity values” is – as such – very unspecific, because the term may refer to many very different concepts. The “CBD Quick Guide” to Aichi Target 2²⁴ explicitly states, that the Target considers “all biodiversity values”, of which some “can be quantified in monetary terms and others which are more abstract”. The second aspirational component “integrated or incorporated” is more specific in the sense that the four different elements of the Target list four concrete examples for where the values should be integrated or incorporated into: “national and local development and poverty reduction strategies”, “planning processes”, “national accounting” and “reporting systems”. However, the Target does not specify what “integration” or “incorporation” means in practical terms and what needs to be achieved that it may be regarded as accomplished. This gives much room for interpretation and poses a challenge for measuring progress toward the Target (see below).

Butchart et al. (2016) criticize that Aichi Target 2 contains the ambiguous term “as appropriate”.

M (measurable): To date, three specific Target-2-indicators have been recognized by the CBD, one measuring “trends in incorporation of measures of stock and flow of natural resources into national accounting”, one measuring “trends in number of countries that have assessed values of biodiversity [...]” and one measuring trends in “integration of biodiversity and ecosystem service values into sectoral and development policies” (CBD/COP/DEC/XIII/28, 2016). The measure used for two of these indicators is the “number of countries” that have implemented certain measures, such as natural resource accounts within the System of Environmental-Economic Accounting (SEEA), or that recognize a strong role of biodiversity within their national poverty reduction strategy papers (Roe, 2010). Thus, in principle, there are elaborated methods available for measuring progress toward Aichi Target 2 – its measurability could therefore be rated as rather good. However, in their fifth National Reports, only few parties actually used indicators to report on progress toward Target 2. Instead, “many countries referred to different valuation studies associated with specific ecosystem

²⁴ <https://www.cbd.int/doc/strategic-plan/targets/T2-quick-guide-en.pdf>

services or habitats but these largely appear to be one off studies as opposed to indicators” (CBD/SBSTTA/20/INF/34, 2016). Thus, despite an increased effort with regard to mapping and valuing ecosystem services in general and a wealth of guidelines and methods being available, the systematic and wide-spread implementation of Target 2 as well as a rigorous and global assessment of progress toward this Target seem to be a distant prospect.

Butchart et al. (2016) conclude that all four elements of Aichi Target 2 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 2. However, as the Target mentions national and local strategies and planning processes, as well as national accounting and reporting systems, it is clear that national and local authorities bear the primary responsibility for implementing the Target. The “CBD Quick Guide” to Target 2²⁵ mentions “sub-national (state/province, city, municipal) governments” of being involved in or responsible for planning decisions and reporting systems and states that “in many countries there will be a need to increase coordination among government ministries and different levels of government”. Thus, Target 2 is assignable to governments and other authorities at different administrative scales.

5.2.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.2 gives an overview over how Aichi Target 2 is linked with different policies at the national, European and global scale.

Table 5.2: Reflection of Aichi Biodiversity Target 2 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 2.3 (see BMUB, 2014, p. 33).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that is fully equivalent to Aichi Target 2; however EU Biodiversity target 6 is a commitment by the EU to step up its contribution to averting global biodiversity loss and for its implementation, one partly equivalent action is proposed ²⁶ : “Action 19: Systematically screen EU action for development cooperation to reduce any negative impacts on biodiversity” (European Commission, 2011).
SDG framework	<p>Related targets can be found in following SDGs and SDG sub-targets (Schultz et al., 2016):</p> <p>Goal 1. End poverty in all its forms everywhere.</p> <p>1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.</p> <p>Goal 6. Ensure availability and sustainable management of water and sanitation for all.</p> <p>6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably</p>

²⁵ <https://www.cbd.int/doc/strategic-plan/targets/T2-quick-guide-en.pdf>

²⁶ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.</p> <p>15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.</p> <p><u>Considerations about how (a modified) Target 2 could better support one or more SDGs:</u></p> <p>Being aware of biodiversity values (Aichi Target 1) and officially recognizing such values by accounting (Aichi Target 2) are basic steps in many scenarios that go beyond business as usual and such scenarios show that without a change based on such awareness and recognition, the 2030 Agenda and its SDGs as a whole will not be achieved. Therefore, a CBD Target like the current Target 2 is fundamental not only for SDG 15.9 but also for SDGs on poverty reduction or ending hunger, which could be counterproductive to biodiversity conservation if biodiversity values are not integrated appropriately into planning processes.</p>
--	--

5.2.2.4. *Links to other conventions and further processes*

Under the UNFCCC measures to mitigate climate change are assigned to monetary values, carbon credits can be traded etc. Such a system does not exist for biodiversity values but accounting such values would be a necessary basis to develop a global framework to trade biodiversity credits and even more important to compensate states or companies for not exploiting certain areas or for conservation activities. However, further research is needed to investigate how such a framework could work in a sustainable way taking in consideration the local and regional specificities of biodiversity. Experiences from UNFCCC and UNCCD could be helpful in such thinking.

The UNFCCC introduced tradable units/certificates as a tool for industrialised countries (so called 'annex-1-countries') to meet their binding emission reduction targets agreed under the Kyoto protocol in 1998. Two mechanisms were developed, the Clean Development Mechanism (CDM) allowed industrialised countries to invest in emission reduction projects in developing countries instead of more costly measures at home, and the Joint Implementation (JI) mechanism, where industrialised countries could invest in projects in other annex-1-countries to earn emission reduction units to meet their obligations. Through the units/certificates a price was put on every ton of emitted CO₂, helping to internalize the environmental and social costs of carbon pollution. The parties of the UNFCCC agreed 2015 (as part of the Paris Agreement) to change from binding emission reduction targets to voluntary pledges for emission reduction, so called Nationally Determined Contributions (NDCs) (see also chapter 4). The sum of all NDCs should contribute to reach the non-binding goal to keep global warming "well below" 2 degrees. All voluntary national targets are supposed to be made public and should be reviewed every five years, to increase the ambitions. However, according to the Climate Action Tracker (CAT) Project "a substantial gap remains between the levels of emissions in 2025 and 2030 projected in the NDCs submitted to the UNFCCC and the lower levels that would be consistent with the temperature goal in the Paris Agreement" (CAT, 2018). The Paris agreement will introduce a new market mechanism, that will build on CDM and JI after 2020 and will allow all countries to include carbon credits or carbon offsetting, now called "internationally transferred mitigation outcomes" (ITMOs) in their voluntary NDCs (UNDP, 2016). Another mechanism established under UNFCCC that is creating a monetary value for emission reduction is REDD+ (reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of

forest carbon stocks). The mechanism ensures result-based payments for emission reduction projects that meet the REDD+ requirements, including certain safeguards²⁷, e.g. that actions are consistent with the conservation of natural forests and biological diversity.

The TEEB initiative was launched in 2007 by Germany and the European Commission in the context of a G8+5 summit to “initiate the process of analysing the global economic benefit of biological diversity, the costs of the loss of biodiversity and the failure to take protective measures versus the costs of effective conservation” (TEEB, 2010). A first interim report was presented at CBD COP-9, followed by five reports with a focus on different decision-makers and a synthesis report presented at CBD COP-10 2010 in Nagoya, Japan. Five pilot country studies have been initiated and TEEB inspired studies were planned in 18 countries and four regions (the arctic, ASEAN, Nordic countries, south pacific). Furthermore, focused studies on oceans and coasts and on wetlands and water and a study on agriculture and food were initiated. The approach has also been critically discussed, “TEEB has been associated with several challenges and pitfalls that relate to valuation, such as issues of subjectivity, incommensurability, and ecological and economic uncertainty. These legitimate concerns are each specifically addressed by TEEB through its layered approach to valuation, in order to recognize, demonstrate and capture nature’s values in appropriate social and ecological contexts” (Sukhdev et al., 2014; see also IPBES/6/INF/4, 2018).

The Wealth Accounting and the Valuation of Ecosystem Services (WAVES), is a global initiative and partnership platform led by the World Bank. It was launched at CBD COP-10 in Nagoya. The aim of the initiative is to support the inclusion of Natural Capital Accounting (NCA) in development planning and therewith the recognition of natural resources. Five pilot or WAVES core countries (Botswana, Colombia, Costa Rica, Madagascar, and the Philippines) started programmes for NCA and in 2013 Guatemala, Indonesia and Rwanda joined the initiative. WAVES is cooperating with partners such as central banks, UN agencies, NGOs, IGOs and governments to further develop and test methodologies for ecosystem accounting. The initiative is following standards for the integration of environmental and economic statistics provided by the UN Statistical Commission, the System of Environmental-Economic Accounting (SEEA), but also develops and tests experimental approaches²⁸. In 2017, WAVES became WAVES+ with broader objectives such as to reach out to more countries (e.g. Zambia and Kyrgyz Republic will become core countries), support that NCA is included in decision-making and to include Natural Capital Accounting in World Bank activities (World Bank Group, 2017).

5.2.3. Recommended options and further suggestions for Aichi Target 2

5.2.3.1. Suggestion by ibn: Aichi Target 2 with a modified timeline

Recommended option (ibn): Keep Target 2 as it stands.
--

By **2030**, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Rationale:

Aichi Target 2 is based on a valid and important rationale but its implementation is hampered by various factors. IPBES recently concluded that with respect to the integration of biodiversity values,

²⁷ <http://redd.unfccc.int/fact-sheets/safeguards.html>

²⁸ <https://www.wavespartnership.org>; <https://seea.un.org>

decision-makers still have difficulties to interpret and apply existing tools (IPBES/6/INF/6, 2018, p. 987). The aim and ambition of Target 2 should therefore be captured in a more accessible and less abstract way, which could be achieved with underpinning milestones and guidelines. Furthermore, some tools available to implement Target 2 (e.g. offsetting, payments for ecosystem services) are critically discussed in the scientific literature and by the IPBES regional assessments. Thus, more research and knowledge transfer is needed on the effectiveness and biodiversity-related impacts of tools that can be used implement Target 2.

5.2.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep Target 2 nearly as it stands.

By **2030**, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are ~~being~~ incorporated into national accounting, as appropriate, and reporting systems.

Explanatory comments:

- The formulation “are being” seems to imply that the processes of incorporation may just have started in 2030. “Are incorporated” seems more appropriate instead (and still allows that the incorporation happens continuously).
- Alternatively, to “values have been incorporated” the wording “values have been reflected” could be used; however this may actually lower the level of ambition. – *Note:* Participants also discussed whether there was sufficient evidence for positive effects of accounting on conservation. This issue remained unresolved in the group but several participants argued that accounting plays a very important role for the conservation of nature and should be kept as an element within Target 2.
- The insertion “as appropriate” weakens the level of ambition but since the conceptualization of the values of biodiversity is such a disputed and sensitive issue, the term “as appropriate” should be kept in this particular case.

5.2.3.3. *Suggestions by participants of the international expert workshop*

At the international expert workshop, Aichi Target 2 also triggered the discussion on the overall architecture of the global biodiversity framework (see also the introductory ‘Note on the presented analysis and the overall architecture’). Some participants argued that, by having Targets like Aichi Target 2, the CBD framework creates the impression that it could save the planet. This may ‘dilute’ the responsibility of other sectors. The CBD should therefore rather have Targets that address issues under its mandate (see also the introductory ‘Note on the presented analysis and the overall architecture’). On the contrary, some participants expressed the view that the issues addressed by Aichi Target 2 are very important and that they are in risk of getting less political attention if they are no longer included in a stand-alone target. It was further argued in favour of Target 2 by pointing out the need for a shared narrative with the development sector. In this respect, sending a signal that biodiversity is part of development (and thereby: stressing the importance of ‘mainstreaming’ biodiversity into development assistance) seems very significant. Accordingly, the link with the SDGs seems crucial.

Further points that were raised:

- Economic valuation of nature holds risks in terms of development. Some participants cautioned against the accounting of biodiversity in economic terms.

- When biodiversity values are being incorporated into national accounting and development strategies this should not be limited to monetary ways. Instead, alternative valuation methods should also be explored and used.
- It might be worth considering to incorporate the concept of the “rights of earth (e.g. applied to rivers, mountains, etc.)”, possibly also in laws and other regulations
- “Just measuring” is not sufficient. Instead, there is a need for “setting limits”, e.g. to activities of certain stakeholders that are harmful to biodiversity.
- Target 2 needs to be more specific to be achievable, e.g. with regard to land-use and decisions.
- It seems very easy to pay lip service to Aichi Target 2. Therefore, more focus is needed on operational questions and on means of implementation for specific actors, e.g. by specifying more tools and action plans and guidance on how the Target can be incorporated into the realities of the sectors.
- Environmental Impact Assessment is one major tool to consider biodiversity impacts – biodiversity considerations are still missing in a lot of environmental impact assessments in a number of countries. Making improvements in this regard could be a suitable milestone for Target 2.

5.2.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.2.4.1. Options that could facilitate progress toward Aichi Target 2

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020²⁹).
- Milestones ~~could~~**should** include roadmaps **and strategies** for the consideration and incorporation of biodiversity values to be developed by different sectors.
- These roadmaps **and strategies** should make use of the insights of TEEB, the IPBES values assessment (IPBES Deliverable 3d) and other seminal processes in this field.
- **Some particularly relevant sectors may need to be mentioned explicitly to increase their readiness for action and the effectiveness of the milestone (such as agriculture, forestry, fisheries, infrastructure, trade, aquaculture, extractive industries, financial services, pharmaceutical industry, tourism, chemical industry).** – *Objection:* This list of particularly relevant sectors may possibly be better placed in an overall implementation guideline than in the particular Target(s).

5.2.4.2. Suggested milestones

- By 2025, all sectors **(possibly mentioning the particularly relevant sectors and the fact that the drivers operate directly and indirectly – but see objection above) that impact heavily on biodiversity** have developed a roadmap of how to incorporate the multiple values of biodiversity into decision-making, that include considerations about how to arrive at a

²⁹ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

prioritization, how to deal with trade-offs (among biodiversity conservation and other political goals) and guidelines on the choice of potential compensation measures.

- By 2025, ~~at least a fraction of ...per cent of all newly adopted~~ national and local poverty reduction strategies and planning processes have ~~showcased implemented how~~ Target 2 ~~may be implemented~~ in the respective field. – **Objection:** By using the term “all newly adopted strategies” this milestone calls for the endpoint of a process – it therefore turns the milestone into a proper (sub)Target.
- By 2025, Parties have developed and adopted a common reporting standard for the incorporation of multiple biodiversity values into national reporting systems.
- By 2025, our understanding of the available tools for Target 2, and of their effects (including potential negative consequences of biodiversity) has increased significantly. – **Note:** “significantly” is not sufficiently strong and not measureable.
- By 2025, guidelines have been developed for particular tools that can be used to implement Target 2 (e.g. offsetting, natural capital accounting, habitat banking and payments for ecosystem services), highlighting options to overcome challenges and potential trade-offs.

5.2.4.3. Other issues

- SDG 15.9 is equivalent to Target 2 and has therefore a time horizon until 2020; this would have to be exchanged in the SDG framework by the longer timeline of a modified CBD Target.
- It could be considered to include IPBES language such as ‘Nature’s contributions to people and quality of life’ in a modified (this is exemplified for Target 1, see above). – **Objection:** It seems too early to include terminology coined by IPBES, see explanatory comment to Target 1 on page 5.



5.3. Aichi Target 3

By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

5.3.1. Introduction

The elimination of incentives that foster environmentally harmful decisions is the core of Aichi Target 3. Specifically, subsidies that support activities detrimental to biodiversity are to be tackled and either phased out or reformed. Such harmful subsidies play a huge role in agriculture and fisheries, where they are known to trigger biodiversity loss. But also in other sectors, e.g. those dealing with traffic, housing or regional development, subsidies often incentivize unsustainable behaviour. The implementation of Aichi Target 3 therefore demands changes in several political sectors, policies, regulations and programs, including trading and tax-schemes, with potentially drastic implications for national budgets and public spending. Furthermore, Aichi Target 3 asks for measures that reward decisions that are beneficial to biodiversity (positive incentives).

5.3.1.1. Structural overview

Aichi Target 3 consists of two elements (GBO 4):

Incentives, including subsidies, harmful to biodiversity, eliminated, phased out or reformed in order to minimize or avoid negative impacts
Positive incentives for conservation and sustainable use of biodiversity developed and applied

The aspirational components are “harmful incentives”, “elimination”, “phasing-out”, “reform”, “minimized negative impacts”, “no negative impacts”, “positive incentives”, “development”, “application”.

Trend according to the Global Environment Outlook 4 (GBO 4):

With regard to the elimination of negative incentives, the GBO 4 concludes that there has been “no significant overall progress; some advances but some backward movement. Increasing recognition of harmful subsidies but little action” (CBD Secretariat, 2014, p. 18). With regard to positive incentives, their “development and application [...], especially for agricultural practices that protect the environment, are steps in the right direction, but on the current trajectory are not judged sufficient to meet this component of the Target by 2020” (ibid., p. 41). Overall, positive incentives are “still outweighed by perverse incentives” (ibid., p. 18).

Trend according to the IPBES ECA Assessment:

“Substantial reforms could reduce the negative impacts of subsidies. Increasing positive incentives for conservation could also improve progress towards Target 3 (harmful incentives eliminated, positive incentives developed and applied). Several countries have implemented ecological fiscal reforms, with mixed results (established but incomplete), but some policy instruments continue to have negative environmental impacts” (IPBES/6/15/Add.4, 2018, p. 28).

5.3.2. Analysis

5.3.2.1. Relationship to previous CBD framework and to other Targets

There had been no equivalent to Aichi Target 3 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of incentives, including perverse subsidies, into the Strategic Plan was a real innovation in 2010. It may indicate an increased awareness for the fact that the indirect drivers for biodiversity loss need to be reduced and that this may only be achieved effectively by a cross-sectorial approach.

Marques et al. (2014) conclude that Aichi Targets 2, 4, 5, 6, 7, 8, 10, 14 and 15 are strongly affected by progress toward Aichi Target 3, while Target 3 itself is particularly strongly affected by progress toward Target 2 (addressing the recognition and integration of biodiversity values into policies and strategies) and Target 4 (addressing sustainable consumption and production).

Indeed, because Aichi Target 3 addresses a very important indirect driver for biodiversity loss, progress toward this Target would probably have strong effects on many other Targets, possibly in particular on Target 4 but as well as on those Targets under Strategic Goal B ("Reduce the direct pressures on biodiversity and promote sustainable use", Targets 5-10) and on Targets 14 and 15 under Strategic Goal D ("Enhance the benefits to all from biodiversity and ecosystem services"). In addition, one could argue that progress toward Target 4 would most likely also strongly enhance progress toward Targets 12 and 13 under Strategic Goal C ("Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity").

5.3.2.2. Smartness

S (specific): Aichi Target 3 may be regarded as rather unspecific because it contains several aspirational components (see above) and states the desired outcomes with alternative options ("eliminated, phases out or reformed", "to minimize or avoid"). Furthermore, the relativizing clause "taking into account national socio economic conditions" can be used to legitimize any level of ambition and therefore decreases the specificity of Target 3. On the other hand, however, Target 3 clearly pinpoints one of the major indirect drivers of biodiversity loss: harmful subsidies. In comparison to the other Targets, this is an exceptionally clear accentuation of a particular economic mechanism that parties are urged to tackle. It therefore seems adequate to rate the specificity of Target 3 rather high – despite the fact that the more general aspirational component "harmful incentives" is hard to define and the Target also contains the blurring components mentioned above.

Butchart et al. (2016) conclude that Aichi Target 3 contains unnecessary complexities, namely the phrase "consistent and in harmony with the convention and other relevant international obligations, taking into account national socioeconomic conditions". However, when making a judgement about these complexities, the realities of international negotiations need to be taken into account. The reference to the other relevant international obligations was inserted to guarantee compatibility between Target 3 and the decisions of the World Trade Organisation (WTO).

M (measurable): To date, six specific Target-3-indicators have been recognized by the CBD, of which three measure "trends in the number and value of incentives, including subsidies, harmful to biodiversity, removed, reformed or phased out" and three measure "trends in development and application of incentives that promote biodiversity conservation and sustainable use" (CBD/COP/DEC/XIII/28, 2016). Three of these six indicators are still in development and therefore not yet available. Furthermore, the generality of the term "harmful incentives" hampers an unambiguous

quantification of progress toward the Target. However, with its indicators for “trends in potentially harmful elements of government support” (to agriculture or fisheries, see CBD/COP/DEC/XIII/28, 2016), the OECD provides a feasible and pragmatic approach for measuring progress toward Target 3, including the necessary methodology (e.g. OECD, 2003). However, in their fifth National Reports, only few parties actually used indicators to report on progress toward Target 3. Instead, “progress is generally assessed through other means including case studies, expert opinion and examples of the types of actions taken” (CBD/SBSTTA/20/INF/34, 2016). It is hard to tell whether the low reporting rate on Target 3 is due to a low measurability per se, a lack of knowledge or a lack of political interest and will.

Butchart et al. (2016) conclude that both elements of Aichi Target 3 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 3. However, the “CBD Quick Guide” to Target 3³⁰ states that “incentives, including subsidies, harmful to biodiversity generally emanate from policies or programs [...], often as unanticipated and unintended side effects. Types of possibly harmful incentives include production subsidies and consumer subsidies while policies and laws governing resource use, such as land tenure systems and environmental resource management, can also have harmful effects”. From these explanations, it seems clear that Target 3 is primarily assignable to governments and other authorities at different administrative scales.

5.3.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.3 gives an overview over how Aichi Target 3 is linked with different policies at the national, European and global scale.

Table 5.3: Reflection of Aichi Target 3 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 2.1 (see BMUB, 2014, p. 34).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that explicitly addresses negative incentives, including harmful subsidies, so none is equivalent to the first element of Aichi Target 3. However, one of the actions proposed under EU Biodiversity target 6 reads “Action 19: Systematically screen EU action for development cooperation to reduce any negative impacts on biodiversity” (European Commission, 2011). This action could also include the elimination of incentives that harm biodiversity. Furthermore, one other action under EU Biodiversity target 6 could include the fostering of positive incentives and could therefore relate to the second element of Aichi Target 3: Action 18: Target more EU funding towards global biodiversity and make this funding more effective (European Commission, 2011).
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture</p> <p>2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation</p>

³⁰ <https://www.cbd.int/doc/strategic-plan/targets/T3-quick-guide-en.pdf>

	<p>and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.</p> <p>15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.</p> <p><u>Missing elements:</u></p> <p>“Negative incentives focus solely on agricultural exports, ‘rationalizing inefficient fossil fuel subsidies’ and fisheries. Not on unsustainable use in any other sector, development and planning, or with general environmental benefit.</p> <p>Positive incentives are partly and indirectly captured within general targets on financial resource mobilization for conservation and sustainable use (Schultz et al., 2016).”</p> <p><u>Considerations about how (a modified) Target 3 could better support one or more SDGs:</u></p> <p>As outlined above, implementation of Aichi Target 3 would support the implementation of several SDG targets directly. As market distortions caused by incentives also influence equity and the chances for development of the poor and vulnerable there are further links to SDG goals, e.g. to SDG 8 and 10.</p>
--	---

5.3.2.4. *Links to other conventions and further processes*

As incentives and subsidies are economic steering instruments, agreements on economy and trade have direct influence on the chances to achieve a target like Aichi Target 3. This includes global agreements, e.g. under WTO, or regional or bilateral agreements, e.g. between the EU and Africa, or amongst states around the Pacific Ocean.

The Organisation for Economic Co-operation and Development (OECD) has identified sustainable development as one its objectives. Environmentally harmful subsidies are seen as hampering factor to this development, therefore the OECD held a multi-stakeholder workshop on this issue in 2002, aiming to create a common understanding how they can be identified and phased out (OECD, 2003). The workshop proposed the development of a checklist for subsidy removal, based on an already in 1998 presented “quick scan”, that was however not easy to apply (see Pieters, 2003). Two additional workshops were held in 2005 and 2006, but the OECD Ministerial Council only picked up the issue of environmentally harmful subsidies again in 2009 when a declaration on green growth was adopted. The declaration also encouraged “...domestic policy reform, with the aim of avoiding or removing environmentally harmful policies that might thwart green growth, such as subsidies: to fossil fuel consumption or production that increase greenhouse gas emissions; that promote the unsustainable

use of other scarce natural resources; or which contribute to negative environmental outcomes” (OECD, 2009). In 2017, the OECD prepared a report to feed into the G7 process (“Towards a G7 target to phase out environmental harmful subsidies”), however the G7 environmental minister conference in June 2017 only recognised the OECD’s and others efforts on this issue, encouraged monitoring processes on the phase out of environmentally harmful subsidies and supported the elimination of inefficient fossil fuel subsidies that encourage wasteful consumption by 2025 (G 7 Italy, 2017). Agriculture or fishery subsidies were not specifically mentioned.

The FAO is supporting sustainable fishery with its “Code of Conduct for Responsible Fishing” from 1995 and with the “Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing”, adopted in 2009 and in force since 2016. Together with UNEP and UN Conference on Trade and Development (UNCTAD) it reiterated the importance of phasing out harmful subsidies in a joined statement calling for the implementation of SDG 14.6 (UNCTAD, 2016). The issue was also discussed in several meetings during the UN Oceans conference in 2017 and addressed in the final call for action under paragraph 13(p):

“Act decisively to prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, including through accelerating work to complete negotiations at the World Trade Organization on this issue, recognising that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of those negotiations” (UNGA, 2017c, p. 5).

The World Trade Organisation has addressed fisheries subsidies for some time as well. Negotiations on this issue were initiated at the Ministerial Conference in 2001, and in December 2017, it was decided to continue and to finalize the talks in 2019 on “...an agreement on comprehensive and effective disciplines that prohibit certain forms of fisheries subsidies that contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU-fishing [i.e., illegal, unreported and unregulated] recognizing that appropriate and effective special and differential treatment for developing country Members and least developed country Members should be an integral part of these negotiations” (WTO, 2017).

Finally, there are obvious links between Target 3 and the UNFCCC process. However, according to van Asselt and Kuloesi (2017), the Paris Agreement does not specifically address environmentally harmful subsidies such as fossil fuel subsidies.

5.3.3. Recommended options and further suggestions for Aichi Target 3

5.3.3.1. *Suggestion by ibn: Aichi Target 3 with modified timeline and minor changes*

Recommended option (ibn): Keep Target nearly as it stands.

By **2030**, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to ~~minimize or~~ avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Rationale:

The IPBES regional assessments identify harmful subsidies as still being one of the important indirect drivers that trigger biodiversity loss and report that in most sectors harmful subsidies still exist and that little progress in phasing them out has been made (IPBES/6/15/Add.4, 2018, p. 28).

5.3.3.2. Suggestions by participants of the national expert workshop

Recommended option 1 (participants): Keep Target 3 as it stands.

Explanatory comments:

- Aichi Target 3 is regarded as a very important Target and it has been a huge achievement that the CBD adopted it in 2010 in its current form. To prevent that a re-negotiation results in weakening the Target (or in losing it altogether), it seems advisable to leave it untouched (except for the timeline).

Recommended option 2 (participants): Keep Target 3 nearly as it stands.

Option A

By **2030**, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, ~~phased out or reformed~~ transformed into order to minimize or avoid negative impacts, and positive incentives, and new positive incentives for the conservation and sustainable use of biodiversity are developed and applied[, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions].

Explanatory comments:

- If a re-negotiation of Target 3 cannot be avoided, the term “phased out” should be deleted because it lowers the level of ambition substantially. – *Note:* Participants argued intensely about the formulation “reformed in order to avoid negative impacts”. They agreed that the Target should allow that subsidies harmful to biodiversity are turned into subsidies with positive effects for biodiversity but some raised the concern that the term “reformed” provides a backdoor for maintaining harmful subsidies in place. It was suggested that the wording “transformed into” may better convey the intension of the Target than “reformed”, i.e. that positive incentives may arise from existing schemes.
- The final part of the Target which refers to other relevant international obligations (and implicitly to the provisions of the World Trade Organization) and to national socio economic conditions could possibly be shifted to the introductory text or overall rationale of the framework (corresponding text is therefore bracketed above).

Option B

By **2030**, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, ~~phased out or reformed in order to minimize or avoid negative impacts~~, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied[, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions].

Explanatory comments:

- The most important issue is to eliminate incentives harmful to biodiversity. Therefore, the entire sub-phrase about the phasing-out or reformation of incentives that have negative

impacts should be deleted. This would simplify the text without excluding different ways in which this could be achieved (such as the transformation of negative into positive incentives).

5.3.3.3. *Suggestions by participants of the international expert workshop*

At the international expert workshop, participants agreed that tackling subsidies harmful to biodiversity is crucial for combating biodiversity loss, but different views were expressed on the question whether Aichi Target 3 should be maintained as a stand-alone Target or be placed somewhere else together with other more strategic and process-oriented Targets (see also the introductory 'Note on the presented analysis and the overall architecture' and the sections about Targets 1 and 2). Alternative Target text was not discussed for Aichi Target 3.

Some participants saw a need for an active debate in the CBD on how Target 3 can be achieved and what means of implementation are at our disposal. Others, however, pointed out that CBD COP-12 already adopted milestones for Target 3 and welcomed modalities for its effective implementation (CBD/COP/DEC/XII/3, 2014)³¹. The problem is that nobody reports against these milestones and the challenge remains that achievements toward Target 3 depend on other sectors not involved in the CBD and that largely accept the 'collateral damage' that harmful subsidies cause for biodiversity. Thus, the critical question is: how to engage and convince these sectors? The implementation of Target 3 seems to be a matter of political power.

Furthermore, the following aspects were raised:

- Breaking the Target down to more tangible subtargets/concrete actions could help to accelerate achievement toward the Target.
- Countries should produce lists of environmentally harmful subsidies so that we have an overview and can direct actions.
- The profile of CBD needs to be raised so that a shaming and naming system can help to produce positive change.

5.3.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.3.4.1. *Options that could facilitate progress toward Aichi Target 3*

- Underpin Target with quantitative milestones and include responsibilities, where appropriate (revisit also the milestones and actions provided by the CBD for the period 2011–2020³²).
- Milestones could include roadmaps and voluntary commitments.
- Voluntary commitments could be stirred by an open-access pledging system that could, e.g., include an online portal, which would allow citizens and NGOs to monitor the progress, and also ensure traceability of the pledges on the national or regional level (e.g. on EU level).

³¹ See also <https://www.cbd.int/incentives/perverse.shtml> and the TEEB Implementation Guide for Aichi Target 3: http://www.teebweb.org/wp-content/uploads/2012/09/AICHI_Target_3.pdf

³² For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

- Milestones could also address certain, particularly harmful subsidies, including levels of ambition and timelines. – **Note:** The question was raised whether there should be a separate (sub)Target for the fishery sector (see below) or whether the Common Agricultural Policy (CAP) of the EU could be explicitly mentioned – or, alternatively, be implicitly addressed by a sentence about the influence of regional strategies.

5.3.4.2. *Suggested milestones*

- By ~~2022–2025~~, at the latest, Parties have [identified][**tackled**] harmful subsidies (using existing tools such as OECD guidelines) in key sectors (agriculture, fishery, forestry extraction, energy, production, transportation) and presented roadmaps to ~~phase them out~~ **eliminate these**, including levels of ambition and timelines. – **Note:** Several participants favoured a more ambitious timeline than 2025 and argued that already eight years have passed since the adoption of the current Target. Since incentives harmful to biodiversity have nowhere been eliminated to a large extent, a high level of ambition seems appropriate. Furthermore, the term “identified” seems too weak, in particular in the European context (“tackled” may be an alternative, but this option was not further discussed by the group). – **Objection:** Some participants argued that 2022 seems too unrealistic and that “2025” should be maintained. However, they proposed to add a separate, (sub)Target for the fisheries sector with a more ambitious timeline (“2022”), because the detrimental effects of fishery-subsidies on biodiversity are well-known and very severe, threatening the food security of millions of people. Against such a specific (sub)Target for the fishery sector, the following cautionary note was raised: This would potentially lead to a bargaining of timelines by all other sectors, that could lead even to less ambitious timelines for some of them.
- By 2022, a subsidies forum has been established providing Parties with a platform to discuss the elimination of subsidies harmful to biodiversity and to come up with nationally determined commitments. A system has been installed by which pledges for reducing harmful subsidies are made public in a transparent and traceable way.
- By 2025, guidelines have been developed for particular measures that can be used to implement the second element of Target 3 (i.e., positive incentives), highlighting options to overcome challenges and potential trade-offs. Possible candidates for such measures are e.g. tax reductions for environmental friendly consumption of energy, products with a small ecological footprint, environmental friendly practices in agriculture etc.).
- By 2025, Parties have developed a roadmap how they intend to increase positive incentives.

5.3.4.3. *Other issues*

- It should be ensured that incentives with a positive impact on biodiversity also support related SDGs, the Paris Agreement and other important biodiversity-related MEAs.



5.4. Aichi Target 4

By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

5.4.1. Introduction

Production and consumption: these two terms are the core of Aichi Target 4 and they capture the vast majority of human activities that involve the use of substantial amounts of natural resources. Resource-use, in turn, drives many direct pressures on biodiversity such as habitat conversion, over-exploitation, pollution and climate change. The demand for resources also underlies some indirect drivers of biodiversity loss, such as ecologically unsustainable tax- and trading systems. Thus, patterns of production and consumption of goods and services determine to a large extent the human impact on the living environment, and they are key factors that trigger the overexploitation of natural resources and therefore biodiversity loss.

Thereby, two factors are decisive: the “how?” and the “how much”? The “how” relates e.g. to the way goods are fabricated and to the respective processes and techniques. With regard to biodiversity, it is desirable to maximise the resource-use efficiency all along the live-cycle of goods and services. The “how much” relates to the absolute quantities of produced and consumed goods and services. Overall, these quantities are increasing at the global scale, which leads to an ever higher demand for natural resources and the phenomenon, “that all indicators of resource use are rising in absolute terms, even though the intensity of resource use in most cases is decreasing (i.e. efficiency is improving [...])” (CBD Secretariat, 2014, p. 45). Thus, patterns of consumption and production are key factors that trigger the overexploitation of natural resources and therefore biodiversity loss.

5.4.1.1. Structural overview

Aichi Target 4 consists of two elements (GBO 4):

Governments, business and stakeholders at all levels have taken steps to achieve, or have implemented, plans for sustainable production and consumption...
--

... and have kept the impacts of use of natural resources well within safe ecological limits
--

The aspirational components are “steps”, “plans”, “sustainable production”, “sustainable consumption”, and “safe ecological limits”.

Trend according to the Global Environment Outlook 4 (GBO 4):

Although resource use efficiency is increasing, the demand for resources is rising in absolute terms. This results in an overall growing ecological footprint, with very large geographical differences and a disproportionately high ecological footprint for urban societies. “[...] it is unlikely that maintaining current patterns of consumption can keep ecosystems within safe ecological limits by 2020. Overall use of resources is projected to continue to increase in absolute terms until 2020” (CBD Secretariat, 2014, p. 45). In many countries, “steps are being taken in many areas to implement plans for more sustainable production and consumption [...]. There is, however, ample evidence that we are

currently moving in the wrong direction regarding the objective of keeping the impacts of natural resource use within safe ecological limits, especially with regard to water use” (ibid., p. 46).

Trend according to the IPBES ECA Assessment:

“Without complementary strategies for reducing the impacts of consumption and production, more efficient resource use alone is unlikely to render current production and consumption patterns sustainable (Target 4 - sustainable consumption and production)” (IPBES/6/15/Add.4, 2018, p. 28).

5.4.2. Analysis

5.4.2.1. Relationship to previous CBD framework and to other Aichi Targets

There has been no equivalent to Aichi Target 4 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for more sustainable consumption and production patterns into the Strategic Plan was a real innovation in 2010. It may indicate an increased awareness for the fact that “underlying all the direct pressures on biodiversity is the unsustainable demand for natural resources generated by our present patterns of producing and consuming goods and services” (CBD Secretariat, 2014, p. 44).

Marques et al. (2014) conclude that Aichi Targets 3, 5, 6, 7, 8, 10, 13, 14 and 15 are strongly affected by progress toward Aichi Target 4. Furthermore, the authors suggest that Target 4 itself is particularly strongly affected by progress toward Target 3 (addressing incentives), Target 6 (addressing fisheries), and Target 7 (addressing sustainable agriculture, aquaculture and forestry).

Indeed, Aichi Target 4 relates very strongly to most other Aichi Targets, due to its tight links to most kinds of resource use. Specifically, progress toward Target 4 would heavily impact on all the Targets under Strategic Goal B (“Reduce the direct pressures on biodiversity and promote sustainable use”, Targets 5-10) and under Strategic Goal C (“Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity, Targets 11-13). Also Targets 14 and 15 (ecosystems restored and safeguarded, ecosystem resilience enhanced) would profit from advances toward Target 4. One should note, however, that “[...] this Target does not require that sustainable consumption and production is achieved by 2020 but that meaningful steps have been taken or measures put in place by 2020 to achieve it” (CBD Quick Guide to Target 4³³).

5.4.2.2. Smartness

S (specific): For being explicit about the key role that sustainable production and consumption play, Aichi Target 4 might be regarded as relatively specific. The Target does not define criteria or circumstances that classify a pattern of production or consumption as ‘sustainable’ and this surely leaves much room for interpretation. However, many detailed concepts for assessing the sustainability of production and consumption exist that offer detailed methodologies for certain goods and services, e.g. “cradle to gate”, “cradle to grave”, “gate to gate” approaches with the respective life cycle assessment methods (see e.g. EEA, 1997, p. 321-329; McDonough and Braungart, 2002). In addition to this rather specific core, the Target contains three more aspirational components that are unspecific: “steps” and “plans” which could mean any actions (see also section about Target 1) or intended activities, and “safe ecological limits”. In the same vein, Butchart et al. (2016) argue that two terms used in Target 4 are ambiguous and decrease its specificity: “Taken steps to achieve or have implemented plans for” and “safe ecological limits”. Furthermore, they

³³ <https://www.cbd.int/doc/strategic-plan/targets/T4-quick-guide-en.pdf>

criticise that the first element of Target 4 contains a redundancy, i.e. the combination of “taken steps to achieve” and “have implemented plans for”.

M (measurable): To date, fifteen specific Target-4-indicators have been recognized by the CBD, of which five measure “trends in population and extinction risk of utilized species, including species in trade”, four measure “trends in use of natural resources and/or related concepts”, four measure “ecological limits assessed in terms of sustainable production and consumption” and two measure “trends in biodiversity of cities” (CBD/COP/DEC/XIII/28, 2016). One of these fifteen indicators is still in development and therefore not yet available. No specific indicators have been identified to measure “trends in extent to which biodiversity and ecosystem service values are incorporated into organizational accounting and reporting” (which would correspond to the first Target element and the aspirational components “steps” and “plans”).

In their fifth National Reports, parties used indicators that “tend to focus on issues associated with consumption rather than production. [...] The most commonly used indicator was the ecological footprint” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that both elements of Aichi Target 4 are not quantifiable.

A (assignable): Aichi Target 4 explicitly addresses three actor groups: governments, business and stakeholders at all levels. In fact, the last group is very broad and potentially includes everybody. But the naming of the three different groups highlights that the responsibility for achieving Target 4 lies with state-actors as well as non-state-actors, the public as well as the private sector, institutions as well as individuals. In conclusion, Target 4 is assignable to “all”, which is usually unsatisfactory because such an unspecific attribution of responsibility may lead to its diffusion. However, addressing everybody seems justified here as governments and other authorities determine the framing conditions for production and consumption, businesses decide about their products, methods, supply chains and marketing strategies, and consumers make daily choices that feed back into the market and influence the life-time of a product.

5.4.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.4 gives an overview over how Aichi Target 4 is linked with different policies at the national, European and global scale.

Table 5.4: Reflection of Aichi Target 4 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 2.1 and chapter B 2.3 (see BMUB, 2014, p. 34).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that addresses sustainable production and consumption; thus, no equivalence to Aichi Target 4. The Biodiversity Information System for Europe (BISE) points out that Aichi Target 4 is captured by the ‘horizontal issue’ called ‘Partnerships for Biodiversity’ ³⁴ .
SDG framework	<u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016): Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production

³⁴ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.1 Implement the 10-year framework of programs on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.</p> <p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources. 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.</p> <p>15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.</p> <p><u>Missing elements:</u></p> <p>“The Target to keep the impacts of use of natural resources well within safe ecological limits is only implicitly covered” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“The Aichi Biodiversity Target 4 aims for 2020, while the SDG targets (8.4, 9.4, 12.2) aim for 2030. However, the scope of the targets is different and therefore they are potentially compatible” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 4 could better support one or more SDGs:</u></p> <p>As the whole agenda 2030 is aiming at sustainable development, the word sustainable appears in many SDG targets, e.g. in 8.4 on sustainable consumption and production, 12.1, 12.a and targets under SDGs 14 and 15. A CBD Target on enhanced sustainability in sectors beyond agriculture, forestry and aquaculture (which are currently addressed under Aichi Target 7) would therefore help to implement several SDGs.</p> <p>The progress towards the SDGs, especially 12, 14 and 15 will support the implementation of Aichi Target 4, especially 12.2 (By 2030, achieve the sustainable management and efficient use of natural resources), which is effectively extending Aichi Target 4 until 2030. SDG 12 is proposing several concrete activities and indicators (e.g. public procurement, reduction of food waste, recycling and material cycle, reduce subsidies for fossil fuels) that could be again included in Aichi Target 4 as milestones; however, SDG 12 remains less specific/ambitious than Aichi Target 4 that calls to keep “the impacts of use of natural resources well within safe ecological limits”.</p>
--	--

5.4.2.4. *Links to other conventions and further processes*

As also outlined in the section on Aichi Target 3, businesses and their production are heavily influenced by economic agreements and trade agreements, so that economical instruments like taxes or tolls could influence the sustainability of production and consumption. Globally agreed environmental standards and their enforcement would help to avoid that businesses move their production to places where standards are currently low. A polluter-pays principle, as it is recognized in many pollution-related conventions, in the OECD and EU (Khan, 2015), would also lead to more sustainable production along the whole value chain.

The UNEP is following a broader approach with the 10 Year Framework Programme for 2012-2021 (UNEP 10YFP) on sustainable consumption and production (SCP). The programme was adopted as part of the “The Future we want” outcome document at the UN Conference on Sustainable Development in Rio 2012, after it was developed in a global multi-stakeholder process that started in Marrakech 2003, based on a decision at the World Summit on Sustainable Development (WSSD) a year before. The process towards the programme has contributed to the development of Target 4 (CBD quick guide³⁵). The 10YFP is aiming to support “...regional and national initiatives to accelerate the shift towards sustainable consumption and production to promote social and economic development within the carrying capacity of ecosystems by addressing and, where appropriate, delinking economic growth and environmental degradation ...” (World Summit on Sustainable Development, 2002). The framework has six thematic and sectoral programmes (Sustainable Buildings and Construction, Sustainable Food Systems, Consumer Information for SCP, Sustainable Public Procurement, Sustainable Tourism, Sustainable Lifestyles and Education). A Global SCP Clearinghouse online platform has been developed, providing data and resources for the programme. In early 2018, 282 initiatives were for example registered for Europe and Central Asia³⁶. SCP is reflected in the SDGs, especially in SDG 12 and in target 12.1 calling for the implementation of the 10YFP. The 10YFP should generate a “collective impact through multi-stakeholder programmes, which develop, replicate and scale up sustainable consumption and production policies and initiatives at all levels, fosters knowledge and experience sharing and facilitates access to technical and financial resources for developing countries” (ECOSOC, 2017a). However, indicators for a success are still preliminary and have been first tested in a monitoring and evaluation exercise during 2016 (Table 5.4b). The most relevant indicators for the current or new Target 4 considering “steps” and “plans” for SCP are 3.1 and 3.2. The indicator 3.1 has also been proposed as indicator for SDG 12.1 (CBD/COP/DEC/XIII/28, 2016).

Table 5.4b: “Indicators of success” with regard to a global shift toward sustainable consumption and production, based on results of the pilot reporting exercise Indicator (ECOSOC, 2017a, p. 4)

Indicator	Unit of measurement
3.1 Sustainable consumption and production in policy instruments	Number of Governments and other organizations developing, adopting or implementing (or in process of implementing) policy instruments supporting the shift to sustainable consumption and production
3.2 Sustainable consumption and production monitoring and reporting	Number of Governments and other organizations officially establishing monitoring and reporting on sustainable consumption and production

³⁵ <https://www.cbd.int/doc/strategic-plan/targets/T4-quick-guide-en.pdf>

³⁶ <http://www.spcclearinghouse.org>

It would be helpful, if the indicators would differentiate between target groups (e.g. governments, business, stakeholders as they are mentioned in Target 4) to monitor the progress in more detail.

National/regional certification schemes like the EU Ecolabel and voluntary sustainability standards exist for many years and help customers to choose more sustainable products. During the 1990's, multi-stakeholder initiatives of NGOs and business actors created standards like FSC, MSC, the Rainforest Alliance's Sustainable Agriculture Network or Social Accountability International (SAI) as an answer to the increasing demand for sustainable products and to complement less effective government regulations (Komives and Jackson, 2014). In 2002, some of these initiatives started to cooperate and created the International Social and Environmental Accreditation and Labelling Alliance (ISEAL). ISEAL is considering itself today as "global leader in defining and communicating what good practice looks like for sustainability standards through guidance and credibility tools such as the Codes of Good Practice" (ISEAL, 2014). The alliance has developed processes for standard-setting, for assuring compliance and impact assessment and its members have to comply with the Codes of Good Practice. In 2018, the ISEAL Alliance had 21 full members, among them the most known international standards. However, platforms like the Ecolabel Index count 464 ecolabels in 199 countries³⁷.

To deal with the claim that a lot of labelling and information on product sustainability has mainly marketing purposes (green washing), to support companies and to provide reliable product information to consumers, Guidelines for Providing Product Sustainability were developed in a multi-stakeholder process, led by UNEP and the International Trade Centre, as part of the activities under UNEP's 10 YFP for SCP (UNEP and International Trade Center, 2017).

An approach that measures the environmental impact of consumption on state level is the Ecological Footprint, developed by the Global Footprint Network, which is part of the Biodiversity Indicators Partnership (BIP) of the CBD since 2010 (CBD/COP/10/9, 2010). The European Commission is investigating how the Environmental Footprint approach could be applied for products and organisations and was running pilot processes for different products between 2013 and 2017. After an evaluation and review phase, final recommendations if and how Product Environmental Footprint Category Rules (PEFCRs) and Organisation Environmental Footprint Sector Rules (OEFSRs) can be implemented within the European Union are expected for spring 2018 (EC 2018 -Environmental Footprint Pilots). These approaches could help to develop and recognize new international sustainable production standards that could be part of a milestone for a modified Target 4.

5.4.3. Recommended options and further suggestions for Aichi Target 4

5.4.3.1. Suggestion by ibn: accentuate role of consumers

Recommended option (ibn): Keep but modify Target 4.
--

By **2030**, at the latest, Governments, business and stakeholders at all levels have ~~taken steps to achieve or have~~ implemented plans for sustainable production and consumption and ~~have kept the impacts of~~ use of natural resources well within safe ecological limits.

By **2030**, *all consumers are aware of sustainable production standards and consider ecological sustainability when they make individual choices about products and services.*

³⁷<http://www.ecolabelindex.com>

Rationale:

Even with ongoing programmes such as the UNEP 10-year framework on sustainable consumption and production patterns³⁸ and numerous public and private initiatives, not all target groups (Governments, business and stakeholders) have initiated steps or developed plans for sustainable production and consumption and natural resources are still exploited beyond safe ecological limits (see IPBES Regional Assessments), therefore the Target remains relevant. It could be considered to split Aichi Target 4 into two Targets, one focusing on production and with governments, public-private partnerships/stakeholders and business as the target groups and one focusing on consumption where everybody would be addressed.

5.4.3.2. Suggestions by participants or the national expert workshop

Recommended option (participants): Keep but modify Target 4.

By **2030**, at the latest, Governments, business and stakeholders at all levels have ~~taken steps to achieve or have~~ implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within ~~safe ecological~~ the limits **compatible with halting the loss of biodiversity**.

Explanatory comments:

- Aichi Target 4 is key for achieving the goals of the CBD as it is the only one that explicitly refers to the impacts of resource-use. If a re-negotiation is unavoidable, it should be modified only slightly and efforts to implement it should be given high priority.
- The ibn-suggestion that “all consumers” should “be aware of sustainable production standards” misses the point as “awareness” is not the most pressing issue with regard to production standards but the availability of information; and, furthermore, awareness is covered by Aichi Target 1. Moreover, the request that “all consumers” should “consider ecological sustainability when they make individual choices about products and services”, as further suggested by ibn, seems unrealistic and also inappropriate with regard to the global south.
- The term “within safe ecological limits” should be replaced by more specific text that defines the “limits” with reference to the ultimate goal of the CBD, i.e., halting the loss of biodiversity. On the other hand it was argued that “within safe ecological limits” is more pro-active and positive than “halting the loss of biodiversity” and that it is actually not sufficient to “halt the loss” as a loss marks the end point of a degradation process (which needs to be prevented earlier).

5.4.3.3. Suggestions by participants of the international expert workshop

At the international expert workshop, participants perceived Aichi Target 4 as a very broad – and maybe too broad – Target with numerous relations to other fora and MEAs. This triggered again the discussion on the overall architecture of the biodiversity framework (see also the introductory ‘Note on the presented analysis and the overall architecture’). In this context, it was argued that there are some Targets that are somehow “above the CBD” due to their breadth and importance, and Aichi Target 4 is an example for this. Accordingly, some participants suggested that the reference to “save ecological limits” that is currently made in Aichi Target 4 (or alternatively: to “planetary boundaries”)

³⁸ <http://web.unep.org/10yfp/about/what-10yfp>

should be highlighted but better placed into the chapeau of the Strategic Goal B. Divergent views were expressed on whether the redundancy of Target 4 with other Targets and frameworks (e.g. SDGs) constitutes a problem or rather a plus (by fostering mutual reinforcement). Some participants saw a high value in having Aichi Target 4 as the one Target of the CBD that explicitly addresses production and consumption as driving forces for biodiversity loss. Alternative Target text was not proposed for Aichi Target 4, instead, the following more general aspects were raised:

- It is important that we also take into account how activities in one region affect biodiversity in other regions of the Earth. The underlying issue is also the question of promoting a production/export oriented policy vs. a policy of self-sufficiency.
- There is a need for a better understanding on how this Target can complement work of other conventions (while avoiding duplication of work), e.g. with regard to land-use.
- To avoid the perception that some of the Targets (such as Target 4) are unachievable, they should be underpinned by certain achievable steps, specified, e.g. for the agricultural sector.
- The CBD should provide guidelines for the operationalization of concepts such as “sustainability” and “within safe ecological limits”.

5.4.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.4.4.1. *Options that could facilitate progress toward Aichi Target 4*

- Underpin Target with quantitative milestones and include responsibilities, where appropriate (revisit also the milestones and actions provided by the CBD for the period 2011–2020³⁹).
- Increase the consistency between the CBD and the SDG framework with regard to the aims of Target 4.
- **There is also a need to increase the coherence of national policy agendas and biodiversity aspects should be considered more thoroughly, e.g. in strategies related to development and sustainability (in line with and supporting the implementation of Target 2).**
- The term “within safe ecological limits” could be replaced by some better-defined level of ambition.
- **Use the ecological footprint as a measurable indicator, e.g. by defining goals for reducing it at the national level. This would correspond to a reduction of the average per capita consumption of natural resources.**

5.4.4.2. *Suggested milestones*

- **By 2022, sectors strongly affecting biodiversity (e.g., related to food, water, energy, health, rural, urban and industrial development) have specified resource use targets. – Note: Whether particular sectors should be mentioned was controversially discussed; a respective passage could also be included in an overall guidance document for the framework (see also general considerations on page 3).**

³⁹ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

- By 2025, governments, business and stakeholders at all levels have developed and begun to implement plans for sustainable production and consumption and use natural resources within ~~safe ecological~~ limits **that ensure the conservation of biodiversity.**
- **By 2025, methodologies for measuring telecoupling effects, including indirect land-use change (ILUC), are in place.**
- **By 2025, the negative primary and secondary effects on biodiversity of imported biotic capacity of all Parties are reduced.**
- **By 2028, reliable, comparable and transparent information on the sustainability of a product (e.g. in terms of its biodiversity footprint) is available to all consumers. – Note: It seems questionable whether it should read “all consumers” here (see explanatory comment above).**
- By 2025, ... per cent of the consumers in developed countries and in countries in transition are aware of sustainable production standards and consider ecological sustainability when they make individual choices about products and services. – **Note: This milestone was not further discussed by the group but see explanatory comment above.**

5.4.4.3. Other issues

- If a modified Target 4 was inspired by and included elements of SDG 12 (e.g. 12.1 Implementation of the 10-year framework of programmes on sustainable consumption and production, 12.3. Reduction of food waste, 12.4/12.5 Reduction and sound management of chemicals and all wastes, 12.6 Encourage companies to adopt sustainable practice and 12.7 Sustainable public procurement) this could increase policy coherence and the specificity of Target 4. However, the current ambition level of Target 4 should be maintained: “impacts of use of natural resources well within safe ecological limits” (Target 4) instead of “sustainable management and efficient use of natural resources” (SDG 12.2). Furthermore, the indicator for SDG 12.2 is the ‘material footprint’ while the ‘ecological footprint’ was used as an indicator for Target 4 in the GBO4 (see comparison of the indicators for the Aichi Biodiversity Targets and the SDGs in CBD/COP/DEC/XIII/28, 2016).
- Indicators developed for the evaluation of the 10-year framework programme on sustainable consumption and production patterns⁴⁰ could contribute to an updated Target 4 (ECOSOC, 2017a).
- A modified Target 4 could also make a cross-reference to Target 1, as actions that support progress toward Target 4 could at the same time belong to those that are called for in Target 1 (“steps” or “actions”), and vice versa.

⁴⁰ <http://web.unep.org/10yfp/about/what-10yfp>



5.5. Aichi Target 5

By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

5.5.1. Introduction

Aichi Target 5 addresses absolutely critical threats to biological diversity: the loss of habitat in terms of quantity (first and second Target element, see below) and the loss of habitat quality (by degradation and fragmentation, third Target element). Globally, “habitat loss, including degradation and fragmentation, is the most important cause of biodiversity loss” (CBD Quick Guide to Target 5). Responsible for this loss are other important direct and indirect drivers, most of them being also addressed by the current Strategic Plan of the CBD. Thus, “meeting Target 5 will require tackling direct pressures on natural habitats (e.g. expansion of the agricultural frontier, aquaculture, fisheries, forestry, logging, mining, oil & gas exploitation, infrastructure development, water development, human conflict, etc.) [...]” (IDLO, 2012, p. 15). Given persisting “economic, demographic and social pressures” (CBD Secretariat, 2014, p. 51) and the related increasing demand for natural resources (see previous section on Target 4) habitats loss and degradation are likely to continue. Acknowledging these circumstances, Target 5 does not call for a total avoidance of habitat loss and habitat conversion but for slowing down the processes that lead to the shrinkage, disappearance and devaluation of natural habitats.

5.5.1.1. Structural overview

Aichi Target 5 consists of three elements (GBO 4):

The rate of loss of forests is at least halved and where feasible brought close to zero
The loss of all habitats is at least halved and where feasible brought close to zero
Degradation and fragmentation are significantly reduced

The aspirational components are “at least halved rate of forest loss”, “at least halved rate of habitat loss”, “significantly reduced degradation” and “significantly reduced fragmentation”.

Trend according to the Global Environment Outlook 4 (GBO 4):

"Habitats of all types, including forests, grasslands, wetlands and river systems, continue to be fragmented and degraded" (CBD Secretariat, 2014, p. 53).

Trend according to the IPBES ECA Assessment:

“Pressure from direct drivers on biodiversity is unlikely to be reduced [...] and the use of biodiversity is not yet sustainable [...]. The evidence base in Europe and Central Asia related to the global Aichi Biodiversity Target 5 (habitat loss halved or brought close to zero) shows negative trends in biodiversity in agricultural areas, important ecosystems such as seagrass beds, and many fish stocks [...]. Target 5 (habitat loss halved or brought close to zero) could, however, be achieved for terrestrial biodiversity in all sub-regions through, inter alia, effective and representative protected areas (see

Target 11), mainstreaming biodiversity considerations into and across all sectors and policies and integrated conservation management” (IPBES/6/15/Add.4, 2018, p. 28).

5.5.2. Analysis

5.5.2.1. Relationship to previous CBD framework and to other Aichi Targets

There had been no equivalent to Aichi Target 5 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for substantially reduced rates of habitat loss into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 7, 10, 11, 12, 14 and 15 are strongly affected by progress toward Aichi Target 5, while Target 5 itself is particularly strongly affected by progress toward Targets 2, 3, 4, 7, 10, 11, 15, 17 and 20.

As stated above, there is indeed a strong link between Aichi Target 5 and all factors that lead to the destruction, degradation and fragmentation of natural habitats. Largely consistent with the conclusions by Marques et al. (2014), one could argue that progress toward all Targets that address these the direct or indirect factors leading to these pressures would strongly affect progress toward Target 5 (i.e., Targets 7, 8 and 10 of Strategic Goal B and Targets 1-4 of Strategic Goal A). Furthermore, progress toward Targets 11, 14, 15 and 20 (addressing protected areas, safeguarding of ecosystem services and ecosystem restoration, financing) would also help to achieve Target 5.

5.5.2.2. Smartness

S (specific): Aichi Target 5 is very comprehensive as it includes all natural habitats. The four aspirational components of Target 5 name concrete challenges that are to be tackled: forest loss, habitat loss, degradation and fragmentation. These four drivers of biodiversity decline are well understood by various actors and associated with particular phenomena. In this sense, the specificity of Target 5 is high. Its specificity is somewhat compromised by the fact that there are of course multiple concepts for each of these four drivers and different methodologies for quantifying respective trends. However, specifying a particular concept would not be the adequate level of detail for a strategic Target of a global policy process that warrants its member states sovereignty and flexibility with regard to its implementation. The specificity of Target 5 is further enhanced by the qualifiers in the first and second Target element: “halved” and “close to zero”. In comparison, the qualifier in the third Target element - “significantly”- seems much less specific. In summary, the level of ambition would be very high, if it was not undermined by the words 'where feasible'. Taking out these two words was heavily discussed in Nagoya 2010.

Similarly, Butchart et al. (2016) argue that two terms used in Aichi Target 5 are ambiguous and decrease its specificity: “where feasible” and “significantly reduced”. Furthermore, they criticise that Target 5 contains a redundancy, in that the term “including forests” is encompassed by “all natural habitats”.

M (measurable): To date, twelve specific Target-5-indicators have been recognized by the CBD, of which four measure “trends in extent of forest”, three measure “trends in extent of natural habitats other than forest”, two measure “trends in degradation of forest and other natural habitats” (both still under development) and three measure “trends in extinction risk and populations of habitat specialist species in each major habitat type” (of which two are still under development)

(CBD/COP/DEC/XIII/28, 2016). No specific indicators have been identified that could measure “trends in fragmentation of forest and other natural habitats” (corresponding to the third Target element).

In comparison to other Targets, the measurability of Aichi Target 5 seems fairly good. This is confirmed by the fact that “the types and number of indicators used to assess progress toward this Target in the fifth national reports was generally greater than those for other Aichi Biodiversity Targets” (CBD/SBSTTA/20/INF/34, 2016). However, parties frequently used indicators that “were related to change in the areal extent of certain ecosystems, most commonly forests”. There was also a bias toward terrestrial indicators and only few parties reported “on habitat quality or status” or “used indicators related to land degradation and fragmentation” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that the first two elements of Aichi Target 5 are quantifiable (numerically), but that the third Target element is not.

A (assignable): No actor is explicitly addressed in Aichi Target 5. As it has multiple strong links to various direct and indirect drivers (see above), meeting Target 5 will require various different strategies by many different actors. Particular responsibility lies with governments and other authorities at different administrative scales and with the private sector, specifically with resource intensive or extractive industries.

5.5.2.3. Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs

Table 5.5 gives an overview over how Aichi Target 5 is linked with different policies at the national, European and global scale.

Table 5.5: Reflection of Aichi Target 5 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.3 and chapter B 1.2.1 (see BMUB, 2014, p. 34).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that is fully equivalent to Aichi Target 5; however EU Biodiversity target 3 is a commitment by the EU to “increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity” ⁴¹ . One of the actions proposed under EU Biodiversity target 3 particularly relates to the part of Aichi Target 5 that addresses forest habitats: “Action 11: Encourage forest holders to protect and enhance forest biodiversity” (European Commission, 2011).
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land based activities, including marine debris and nutrient pollution.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p> <p>14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable</p>

⁴¹ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>management of fisheries, aquaculture and tourism.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p> <p>15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.</p> <p>15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.</p> <p>15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.</p> <p>15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.</p> <p><u>Missing elements:</u></p> <p>“Action called for in the SDGs is less demanding compared to Aichi Target 5 which quantifies a change in rate of loss to be achieved by 2020. Fragmentation is not addressed” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 5 calls for deforestation (and loss of other natural habitats) to be at least halved by 2020, while SDG target 15.2 calls for deforestation to be halted by 2020” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 5 could better support one or more SDGs:</u></p> <p>SDG 15.2 has a 2020 timeline, which means that any new CBD Target on halting/reducing the loss of habitats, including forests, would have to be paralleled with a new respective target under SDG 15, even if the timeline of the Target is simply extended. Aichi Target 5 also relates to SDG 15.5 on reducing degradation, which has no explicit timeline. A new CBD Target with a timeline or even milestones would therefore also give a more concrete schedule for SDG 15.5. If the new CBD Target would also relate to the biodiversity of urban habitats it would also help to implement SDG 11 that aims at making cities and settlements more resilient and sustainable.</p>
--	---

5.5.2.4. Links to other conventions and further processes

As Aichi Target 5 includes all habitats and degradation, it relates to many other conventions, e.g. UNFCCC, to the Ramsar Convention on Wetlands, to the efforts under the UNCCD to reach a Zero-Net-Degradation, or to FAO (as degradation of habitats also endangers food security). Discussions at CBD COP-10 included advantages and disadvantages of listing specific habitat types and the resulting formulation 'all natural habitats, including forests' was a compromise. Listing all habitat types would maybe make the links to other conventions more obvious but would probably not be feasible in a Target text. For a corresponding future CBD Target, keeping the expression 'all natural habitats' in the Target text and listing the habitat types in a rational or annex could be an option.

Since forest habitats are specifically highlighted in Aichi Target 5, there are clear links to UNFCCC and the Paris Agreement, which is encouraging its parties to take action to conserve and enhance forests

as sinks and reservoirs of for CO₂ (UNFCCC, 2015, p. 4). The REDD+ mechanism can also contribute to stop forest degradation (see Target 15 for synergies between the Targets and REDD+).

The United Nations strategic plan for forests 2017–2030, developed by the UN Forum on Forests (UNFF) and adopted by the UN General Assembly in 2017, sets the goal to increase forest areas by three per cent and is calling on governments and stakeholders for voluntary actions to reach this target (UNGA, 2017b). However, the focus of UNFF is to ensure the sustainable management of forests and not the conservation of habitats.

“1. Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change.

1.1 Forest area is increased by 3 per cent worldwide.

1.2 The world’s forest carbon stocks are maintained or enhanced.

1.3 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

1.4 The resilience and adaptive capacity of all types of forests to natural disasters and the impact of climate change is significantly strengthened worldwide” (ECOSOC, 2017b).

There are many links between the 2018–2030 Strategic Framework of the United Nations Convention to Combat Desertification (see Annex of UNCCD, 2017) and Aichi Target 5. Especially the Target Setting Programme for national voluntary land degradation neutrality (LDN) targets will contribute to archive the current or a new CBD Target with a focus to stop degradation (UNCCD, 2016).

The Ramsar Convention on Wetlands is addressing the issue in most of the goals and targets of its 4th strategic plan 2016-2024 (Ramsar Convention, 2015).

5.5.3. Recommended options and further suggestions for Aichi Target 5

5.5.3.1. Suggestion by ibn: add the aspect of non-natural habitats

Recommended option (ibn): Keep but modify Target 5.
--

By **2030**, the rate of loss of all natural habitats, ~~including forests, is at least halved and where feasible brought as well as their degradation and fragmentation, are brought~~ close to zero, ~~and degradation and fragmentation is significantly reduced. Where this is not achieved, these rates are at least reduced by 75 per cent.~~

By **2030**, *the loss of biodiversity in non-natural habitats (such as urban or agricultural areas and managed forests) is halted.*

Rationale:

Aichi Target 5 is very comprehensive and ambitious as it includes all natural habitats. As such, it is very important and should be kept. However, in a new Target, ambiguous or vague wording should be avoided to clarify, and potentially increase, the level of ambition. In addition, specificity could also be increased by underpinning milestones and it could be considered to address also biodiversity in non-natural habitats. If such habitats are included, the '*biodiversity in habitats*' should be addressed rather than the 'habitats' themselves because it would not make sense to call for halting the loss of non-natural habitats. Instead, it could make sense to call for not losing the biodiversity of such habitats, which would be in line with the aim for managing such systems sustainably expressed in Target 7.

5.5.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep but modify Target 5.

By 2030, the ~~rate of~~ loss, degradation and fragmentation of ~~all~~ natural and semi-natural habitats, ~~including forests~~, is ~~halted at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.~~

Explanatory comments:

- Loss of habitats is a main driver of biodiversity loss and has to be addressed. Therefore the Target should be kept.
- Level of ambition should be kept high and the extension of the timeline until 2030 allows for calling for a complete halt of loss of habitats.
- Percentages, as proposed by the ibn, would constitute a loss of ambition and should not be introduced into the Target text.
- Not only the rate of loss should be reduced, but the loss as such should be halted. – *Note:* It was argued by some that not only the loss of habitats should be halted but that also the coverage of natural habitats should be increased. Others argued that this is too ambitious and unrealistic.
- Semi-natural habitats can also have a high biodiversity and should be included in the Target text.
- Although forests can hold a high biodiversity they should not be singled out in the Target text.
- Urban areas should not be mentioned explicitly (as it was suggested by ibn).

5.5.3.3. *Suggestions by participants of the international expert workshop*

The participants of the international workshop did not explicitly work on changing the Target text but discussed more freely to come up with the following aspects:

- Fragmentation, degradation and loss are steps in a process of decline. Formulate the Target following that process.
- Formulate a broad headline Target and name specific habitat types in sub-targets /milestones with urgent requirements: halt loss of primary forests, no conversion of natural grasslands, no net loss of wetlands.....
- Halving the loss of natural habitats is still ambitious with the current population growth in many world regions.
- Halting the loss is not possible as this would mean to stop economic growth. Therefore, concentration should be on Key Biodiversity Areas and EBSAs (link to Aichi Target 11).
- Reaching Aichi Target 5 needs close cooperation with stakeholders and other MEAs that care for specific habitat types, e.g. Ramsar for wetlands, the Arctic Council etc.
- The loss of semi-natural habitats has also to be halted as they harbour high biodiversity especially in old cultural landscapes (e.g. in Europe) and are highly threatened by modern agricultural production.
- The loss of soil is a growing problem and should explicitly be mentioned.
- Integrated land use planning is a valuable policy tool for the implementation of Target 5.

5.5.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.5.4.1. Options that could facilitate progress toward Aichi Target 5

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁴²).
- These milestones could, like the entire Target, demand certain levels of reduction.

5.5.4.2. Suggested milestones

- By 2025, the ~~rate of~~ loss, **degradation and fragmentation** of all natural **and semi-natural** habitats is at least reduced by **7560** per cent., ~~and degradation and fragmentation are reduced by 50 per cent.~~
- ~~By 2025, the rate of loss of biodiversity in non-natural habitats (like urban or agricultural areas) is reduced by 60 per cent.~~ – **Note: Participants recommended deleting that milestone completely.**

5.5.4.3. Other issues

- UNCCD's national voluntary land degradation neutrality (LDN) targets are reflected in SDG 15.3, aiming for a land degradation-neutral world by 2030. The LDN concept and its indicators could be reflected in several new biodiversity Targets (that correspond e.g. to Targets 5, 7, 14 and/or 15).

⁴² For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>



5.6. Aichi Target 6

By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

5.6.1. Introduction

Aichi Target 6 addresses the overexploitation of the natural resources in marine and freshwater ecosystems. It is dedicated to the management and harvest of wild aquatic species, as the management and harvest of cultivated species is addressed elsewhere in the Strategic Plan of the CBD (in Target 7, see below). Target 6 stresses in particular the role of fisheries, which is currently in many cases detrimental. Overfishing is not only a severe threat to many target species they also cause “side-effect damage” to many non-target species and ecosystems, e.g. in the form of by-catches or through the application of techniques that impact the seabed. At the same time, the demand for fish is steadily increasing and the capture fishery production is projected to remain high (FAO, 2016). Target 6 further states that the use of marine resources should comply with legal rules, pinpointing at the fact that uncouncted illegal, unreported and unregulated activities are going on in the oceans, which also pose serious risks to many marine species.

5.6.1.1. Structural overview

Aichi Target 6 consists of four elements (GBO 4):

All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches
Recovery plans and measures are in place for all depleted species
Fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems
The impacts of fisheries on stocks, species and ecosystems are within safe ecological limits, i.e. overfishing avoided

The aspirational components are “sustainably managed fish stocks”, “sustainably managed invertebrate stocks”, “sustainably managed aquatic plants”, “sustainably harvested fish stocks”, “sustainably harvested invertebrate stocks”, “sustainably harvested aquatic plants”, “recovery plans in place”, “recovery measures in place”, “threatened species unharmed by fisheries”, “vulnerable ecosystems unharmed by fisheries”, and “safe ecological limits for stocks”, “safe ecological limits for species” and “safe ecological limits for ecosystems”.

Trend according to the Global Environment Outlook 4 (GBO 4):

"Globally there is relatively little information on the management and harvest of aquatic invertebrates and plants, and there is little globally consistent information on inland water fisheries (CBD Secretariat, 2014, p. 57)." With regard to the first Target element, there is “great regional variation; positive for some countries but data [is] limited for many developing countries”. With respect to the second Target element, the trends are “variable” with “progress in some regions”.

With regard to the third Target element, “some progress” has been observed “e.g. on long-lining used in tuna fisheries, but practices still impacting vulnerable ecosystems”. With respect to the fourth Target element, “overexploitation remains an issue globally, but with regional variation” (ibid., p. 19).

Trend according to the IPBES ECA Assessment:

“Contributions toward Targets 6 (sustainable management of marine living resources) and 10 (pressures on vulnerable ecosystems reduced) for the deep-sea are hampered by increased habitat degradation, and declines in biodiversity and ecosystem functioning. More effective fisheries management and increasing protected areas could improve this situation” (IPBES/6/15/Add.4, 2018, p. 28).

5.6.2. Analysis

5.6.2.1. Relationship to previous CBD framework and to other Targets

There had been no equivalent to Aichi Target 6 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for sustainable fisheries into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 4, 10, 12, 13 and 14 are strongly affected by progress toward Aichi Target 6, while Target 6 itself is particularly strongly affected by progress toward Targets 2, 3, 4 (addressing underlying causes, Strategic Goal A), Targets 11, 14 (addressing protected areas and the safeguarding of ecosystems), and Target 20 (addressing the mobilization of financial resources).

5.6.2.2. Smartness

S (specific): Aichi Target 6 is complex and comprehensive, mentioning three different groups of aquatic organisms (fish, invertebrates, aquatic plants), several aspects of the use of marine and freshwater natural resources (e.g. harvesting, management, recovery plans, overfishing) and multiple desired outcomes (sustainable, legal, no adverse effects). This results in a comparatively large number of Target elements (4) and aspirational components (13) and in a relatively low overall specificity. However, the specificity of the single elements and aspirational components of Target 6 is relatively high (however somewhat compromised by the unspecific term “safe ecological limits” in the fourth Target element).

Likewise, Butchart et al. (2016) argue that the term “safe ecological limits”, used in Aichi Target 6 is ambiguous and decreases its specificity. Furthermore, they criticise that Aichi Target 6 contains a redundancy in that “Fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems” is encompassed by “the impacts of fisheries on stocks, species, and ecosystems are within safe ecological limits”.

M (measurable): To date, 21 specific Target-6-indicators have been recognized by the CBD, of which one measures “trends in certified sustainable fisheries”, two measure “trends in proportion of depleted, target and bycatch species with recovery plans”, eight measure “trends in population and extinction risk in target and bycatch species”, seven measure “trends in fishing practices”, one measures “trends in proportion of fish stocks outside safe biological limits” and two measure “trends in catch per unit effort” (CBD/COP/DEC/XIII/28, 2016). Seven of these 21 indicators are still in development and therefore not yet available.

In their fifth National Reports, parties used most commonly indicators that are “related to the size of fish catches/landings. [...] These types of indicators generally address issues related to the first part of the Target [...]. There were relatively few reports which contained indicators related to the other elements of the Target” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that all four elements of Aichi Target 6 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 6. However, the “CBD Quick Guide” to Target 6⁴³ states that “the main drivers of overexploitation [of marine resources], such as over capacity, inadequate surveillance and control, or other consequences of poor governance generally can be mitigated, at least in part, by improved governance at international, regional and national levels”. Thus, regulative approaches are needed, e.g. to apply “the Ecosystem Approach; the elimination of destructive fishing practices; the establishment of representative networks of marine protected areas; and time/area closures for the protection of nursery grounds” (ibid.). Governments and other authorities at different administrative levels are the actors mainly responsible for setting up and enforcing such regulative approaches. At the same time, compliance with rules, changed management practices and voluntary commitments are required from actors within the private sector, e.g. by fishing companies. Consumers, specifically in the developed world, should also play their part, e.g. by consciously choosing certified seafood.

5.6.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.6 gives an overview over how Aichi Target 6 is linked with different policies at the national, European and global scale.

Table 5.6: Reflection of Aichi Target 6 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.2.2, chapter B 1.2.3 and chapter B 1.2.4 (see BMUB, 2014, p. 35).
EU	EU Biodiversity target 4 is highly equivalent to Aichi Target 6 ⁴⁴ . It reads: “Ensure the sustainable use of fisheries resources” (European Commission, 2011). Both actions proposed under EU Biodiversity target 4 relate very closely to Aichi Target 6: “Action 13: Improve the management of fished stocks” and “Action 14: Eliminate adverse impacts on fish stock, species, habitats, and ecosystems” (European Commission, 2011).
SDG framework	<u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016): Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development. 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land based activities, including marine debris and nutrient pollution. 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans. 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics. 14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and

⁴³ <https://www.cbd.int/doc/strategic-plan/targets/T6-quick-guide-en.pdf>

⁴⁴ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation. 14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.</p> <p><u>Missing elements:</u></p> <p>“The SDG targets address only the unsustainable use of fish populations, whereas Aichi Biodiversity Target 6 also covers the harvesting of marine invertebrates and plants, as well as any other marine life or habitats negatively affected by such harvesting. The term ‘maximum sustainable yield’ is not equivalent to ‘within safe ecological limits’” (Aarssen, 1997; Schultz et al., 2016)</p> <p><u>Considerations about how (a modified) Target 6 could better support one or more SDGs:</u></p> <p>The current Aichi Target’s timeline of 2020 is consistent with the timelines in SDG targets 14.2, 14.4, and 14.6. Therefore, the failure to reach Aichi Target 6 means automatically also a failure to reach these targets under SDG 14.</p> <p>A new CBD Target or even the simple postponement of the existing Aichi Target 6 would have to be paralleled with respective targets und SDG 14, e.g. by their respective postponement along matching timelines.</p>
--	---

5.6.2.4. *Links to other conventions and further processes*

As marine organisms provide a major source of food for a growing population any target on fisheries has close links to FAO programmes. Within the SDGs Target 6 is not only linked to SDG 14 but also to SDG 2 on ending hunger and providing food security. This link could be expressed if the Target text would be modified.

Aichi Target 6 is commonly referred to as a 'marine' Target, although this word is not mentioned in the text and the Target also includes fresh water species. Therefore, the Target has also a clear link to the Ramsar Convention on wetlands. As already mentioned under Target 3, FAO is addressing sustainable fishery with its Code of Conduct for Responsible Fishing from 1995 as well as the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, adopted in 2009 and in force since 2016. Both are included in FAO’s Blue Growth initiative launched in 2013, addressing the management of marine and freshwater resources in order to safeguard food security.

The Seafood Business for Ocean Stewardship (SeaBOS) initiative, an initiative of ten of the largest seafood companies in the world to contribute to SDGs, started in 2016, facilitated by Stockholm Resilience Centre. The companies pledge to make efficient use of aquaculture feed and to use feed from sustainably harvested stocks, to develop fish health management systems, to apply existing certification standards and to prevent habitat destructions. They also want to “actively work together with governments to improve existing regulations” and “encourage governments to end overfishing and rebuild depleted stocks” (SeaBOS, 2017). According to the pledge, scientific advice on fishing quota should be respected and the companies call on governments to join the FAO Port State Measures Agreement to end unreported and unregulated fishing. A progress report is scheduled for June 2018.

The voluntary certification standard Marine Stewardship Council (MSC) was launched as an initiative of Unilever and the WWF in 1997 registered as an independent not-for-profit organization. According to its latest annual report, MSC has certified 315 fisheries in 34 countries, 86 are currently in the assessment process (MSC, 2017). MSC is contributing to Target 6, however according to the IPBES Assessment on the Americas, the amount of MSC certified catch in all regions except Asia and the Pacific is declining. The IPBES Americas Assessment also states, that “...the scheme has received some criticism regarding sustainability of the target fish stock, low impacts on the ecosystem, and effective responsive management” (Christian et al., 2013 as referred to in IPBES/6/INF/4, 2018).

The UN Ocean conference addressed the safeguarding of fish stocks in paragraph 13(m) in its call for action: “End destructive fishing practices and illegal, unreported and unregulated fishing, addressing their root causes and holding actors and beneficiaries accountable by taking appropriate actions, so as to deprive them of benefits of such activities, and effectively implementing flag State obligations as well as relevant port State obligations” (UNGA, 2017c). Over 420 voluntary commitments related to SDG 4.4 were registered by different actors, however as mentioned in chapter 4, it remains unclear if and how these commitments are monitored or evaluated.

See Target 3 for WTO negotiations on fisheries subsidies.

5.6.3. Recommended options and further suggestions for Aichi Target 6

5.6.3.1. Suggestion by ibn: accentuate freshwater biodiversity

Recommended option (ibn): Keep but modify Target 6.
--

By **2025, all fishery subsidies harmful to biodiversity have been eliminated and** all fish and invertebrate stocks and aquatic plants **in marine and freshwater ecosystems** are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Rationale:

Aichi Target 6 is commonly referred to as a 'marine' Target, although this word is not mentioned in the text and the Target also includes freshwater species. This focus could be emphasized explicitly in a modified Target. Underpinning the Target with milestones that specify certain quota for these organism groups would be a clear loss of ambition compared to the Target as it stands, because it currently addresses explicitly “all fish and invertebrate stocks and aquatic plants”. Alternatively, the Target could be maintained as it is but postponed until e.g. 2025 (instead of 2030) to emphasize its urgency. As unsustainable harvesting is clearly linked to subsidies harmful to biodiversity (see also Target 3) a milestone could refer to such subsidies (e.g. by inviting pledges for their reduction). Finally, Aichi Target 6 contains some expressions that lack clear definitions.

5.6.3.2. Suggestions by participants of the national expert workshop

Recommended option (participants): Keep but modify Target 6.

By **2025, all fishery subsidies harmful to biodiversity have been eliminated and** all fish and invertebrate stocks and aquatic plants **in marine and freshwater ecosystems** are managed and

harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is **halted avoided**, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Explanatory comments:

- The drivers of loss mentioned in Target 6 are still not under control and the Target is still valid.
- Freshwater ecosystems should be accentuated so that the Target is not only seen as a marine Target.
- The wording 'halted' sounds stricter than 'avoided'.
- A timeline until 2025 instead of 2030 would set the appropriate level of ambition.

5.6.3.3. Suggestions by participants of the international expert workshop

Instead of formulating concrete Target text the participants of the international workshop discussed with the following output:

- Target was seen as “the fisheries Target” that is harvest oriented (as opposed to Aichi Target 11 which is area based).
- A combination of both approaches might be useful: 70% of the oceans under sustainable management (under Aichi Target 6) and 30% under protection (under Aichi Target 11) as no-take zones.
- The Target would need defined standards for sustainable yields or stock reference limits. As well timeframes for the recovery of depleted species would have to be defined.
- Illegal, unreported and unregulated (IUU) fishery is a major problem.
- Insert after legally 'in a precautionary, transparent, inclusive and predictable manner'.
- Current marine protected areas have very little no-take zones (where no commercial fishery would be allowed). Such areas would be urgently needed for recovery and conservation.
- Concentrate Target 6 on fisheries and put other marine issues in another Targets (e.g. Aichi Targets 11, 12, 7, 8).
- Target 6 does not include water vertebrates like whales, turtles or amphibians. This might be good as there is no sustainable harvesting of such species. They should not be used at all.
- Deep sea fishing should be mentioned.
- Problem of by-catch should be mentioned and the other “side-effect” risks that fisheries have, e.g. birds or mammals dying in drifting nets.
- Keep in mind the role of Regional Fishery Management Organizations: on the one hand they are important stakeholders, on the other hand they are lobby organizations, which also contributed to the current over-exploitation.
- Link to Aichi Target 6 to Aichi Target 18: there are data needs for many stocks.

5.6.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.6.4.1. Options that could facilitate progress toward Aichi Target 6

- Underpin Target with quantitative milestones and include responsibilities, where appropriate (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁴⁵).
- Avoid ambiguities in the wording. If the formulations are maintained, an explanation could be added specifying “no significant adverse impacts” or “safe ecological limits”, using e.g.
 - the capacity of stocks and species to fully recover from harvesting
 - the avoidance of habitat destruction through fishing practices
 - the avoidance of releasing invasive alien species for fishing purposes
 -

5.6.4.2. Suggested milestones

- By 2022, ...per cent of the Parties have made pledges under Target 3 that relate to the elimination of harmful subsidies in the fisheries sector.
- By 2022, Parties have developed road maps on how to implement existing standards for sustainable fishing and how to stop illegal, unregulated fishing (e.g. FAO Code of Conduct for Responsible Fishing, FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing).
- **By 2022, Parties have developed plans and mechanisms to support sustainability in small-scale fisheries.** – **Note: Some participants argued that small-scale fisheries can also have negative effects on biodiversity and that plans and mechanisms are needed to create or support the sustainability of such fisheries.**

5.6.4.3. Other issues

- The level of ambition for the Target should be above the current SGD 14.6 and consider the outcome of current WTO negotiations on fisheries subsidies⁴⁶.
- **Target 6 has direct links to Target 14 (e.g. small scale fisheries), to Target 4 (sustainable production and consumption) and to Target 8 (water pollution, plastic and micro-plastics).**
- **For many regions there is a significant lack of data (e.g. on by-catch, on species composition, on non-fish species) and existing data is often not widely shared. So better data sharing between institutions and better monitoring is needed.**

⁴⁵ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

⁴⁶ Decision expected at the 12th Ministerial Conference of the WTO (WTO 2017, WT/MIN(17)/64)



5.7. Aichi Target 7

By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

5.7.1. Introduction

Agriculture, aquaculture and forestry are three of the four major ways in which biodiversity is used for subsistence or commercial purposes. Fisheries are missing here, because Aichi Target 6 is separately devoted to this type of use (see above). All of the three uses addressed by Aichi Target 7 are major drivers of biodiversity loss because unsustainable practices prevail. As the demand for food, fibre and fuel is steadily increasing worldwide, a transformation toward ecologically sustainable practices is pivotal. With regard to safeguarding biodiversity and ecosystem services, major challenges related to agriculture, aquaculture and forestry include the expansion of agricultural land into pristine areas, the intensification of land-use and management practices (including increased application of fertilizers, pesticides, pharmaceuticals and forage material) as well as the erosion of genetic diversity in cultivated species (decreasing inter- and intraspecific variation). The globally growing demand for fish is increasingly met by aquaculture, a food-producing sector which is currently growing rapidly (FAO, 2016, p. 3). The “significant growth in fish consumption has enhanced people’s diets around the world through diversified and nutritious food” (ibid., p. 4). However, expanding aquaculture goes along with strong pressures on ecosystems, in particular in coastal areas, and is a main driver for the loss of mangrove habitats.

5.7.1.1. Structural overview

Aichi Target 7 consists of three elements (GBO 4):

Areas under agriculture are managed sustainably, ensuring conservation of biodiversity
Areas under aquaculture are managed sustainably, ensuring conservation of biodiversity
Areas under forestry are managed sustainably, ensuring conservation of biodiversity

The aspirational components are “sustainable agriculture”, “sustainable aquaculture”, “sustainable forestry” and “biodiversity conservation”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Unsustainable practices in agriculture, aquaculture and forestry continue to be responsible for substantial environmental degradation, including biodiversity loss. [...] Aquaculture is expanding rapidly, with large environmental impacts, and a small but growing fraction of this activity is adopting sustainability criteria. [...] Overall, GBO-4 can report progress in introducing sustainable management to areas under agriculture, aquaculture and forestry, but not to the extent that would achieve this Target by 2020 given current trends” (CBD Secretariat, 2014, p. 63).

Trend according to the IPBES ECA Assessment:

“Current trends in freshwater and terrestrial biodiversity suggest that it is highly unlikely that Europe and Central Asia will be able to fully contribute to Targets 7 (sustainable agriculture, aquaculture and

forestry), 8 (pollution reduced) and 9 (invasive alien species prevented and controlled)” (IPBES/6/15/Add.4, 2018, p. 28)

5.7.2. Analysis

5.7.2.1. *Links to previous CBD framework and to other Aichi Targets*

There had been no equivalent to Aichi Target 7 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for sustainable agriculture, aquaculture and forestry into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 4, 5, 8, 10, 12, 13, 14 and 15 are strongly affected by progress toward Aichi Target 7, while Target 7 itself is particularly strongly affected by progress toward Target 2, 3 and 4 (addressing underlying causes of biodiversity loss), 5 (addressing habitat loss, degradation and fragmentation), Targets 14 and 15 (addressing ecosystem services and ecosystem restoration) and Target 20 (addressing the mobilisation of financial resources).

One could further argue that Aichi Target 7 is intrinsically and most strongly linked to Target 4 (sustainable production and consumption), as discussed above.

5.7.2.2. *Smartness*

S (specific): Aichi Target 7 is very comprehensive, addressing agriculture, aquaculture and forestry. These terms refer surely to very broad concepts. Although definitions for these three terms may vary in their details, there is a common understanding of what these terms describe in general and that certain practices clearly fall into these categories (e.g. crop and livestock farming are aspects of “agriculture”, planting and harvesting of trees are aspects of “forestry”, etc.). Thus, the issues that are dealt with in Target 7 are relatively specified. However, Target 7 may be interpreted in several different ways with regard to the areas in focus (all or specific areas under agriculture, aquaculture and forestry?). The word “sustainable” is somewhat clarified by the addition “ensuring conservation of biodiversity” because this last part of the Target rules out that “sustainably” is interpreted in a social or economic sense at the expense of biodiversity. This is, however, only an insufficient specification of “sustainable” in the context of Target 7 (see also below).

M (measurable): To date, seven specific Target-7-indicators have been recognized by the CBD, of which three measure “trends in proportion of area of agriculture under sustainable practices”, one measures “trends in extinction risk and populations of agro-ecosystem associated species”, and three measure “trends in proportion of area of forest production under sustainable practices” (CBD/COP/DEC/XIII/28, 2016). One of these seven indicators is still in development and therefore not yet available. No specific indicators have yet been identified that could measure “trends in proportion of production of aquaculture under sustainable practices” (corresponding to the second Target element) or “trends in extinction risk and population of forest-specialist species in production forest” (corresponding to part of the third Target element).

In their fifth National Reports, “Parties have used a variety of indicators in their national reports to assess progress towards this Target. The indicators used have tended to focus on issues related to agriculture and forestry. By comparison there were relatively few indicators related to aquaculture” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that all three elements of Aichi Target 7 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 7. However, the “CBD Quick Guide” to Target 7⁴⁷ names some of the mainly responsible actor groups by stating that “there are many efforts by governments, indigenous and local communities, NGOs and the private sector to promote good agricultural, aquaculture and forestry practices and to apply law and governance mechanisms”. Thus, regulative approaches and law enforcement are needed on the one hand (put forward and applied by governments and other authorities at different administrative levels). On the other hand, compliance, changed management practices and voluntary commitments are required from actors within the private sector. Consumers, specifically in the developed world, should also play their part, e.g. by consciously choosing certified products.

5.7.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.7 gives an overview over how Aichi Target 7 is linked with different policies at the national, European and global scale.

Table 5.7: Reflection of Aichi Target 7 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.2.1, chapter B 1.3.2 and chapter B 2.4 (see BMUB, 2014, p. 35).
EU	The EU Biodiversity target 3 corresponds closely to the first and third element of Aichi Target 7. It reads: „Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity“ (European Commission, 2011) ⁴⁸ . EU Biodiversity target 3 proposes several actions that relate to Aichi Target 7, e.g.: “Action 8: Enhance CAP direct payments to reward environmental public goods such as crop rotation and permanent pastures; improve cross-compliance standards for GAEC (Good Agricultural and Environmental Conditions) and consider including the Water Framework in these standards” and “Action 11: Encourage forest holders to protect and enhance forest biodiversity” (European Commission, 2011). Furthermore, EU Biodiversity target 4 is relevant to the second element of Aichi Target 7, it reads: “Ensure the sustainable use of fisheries resources”. Neither this EU target nor the respective actions mention aquaculture. However, support for the implementation of the Marine Strategy Framework Directive is part of Action 14 that is proposed under EU Biodiversity target 4. This framework directive generally aims at the conservation at marine ecosystems, mentions marine protected areas as an important instrument and aquaculture as one serious pressure.
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.</p> <p>2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources.</p>

⁴⁷ <https://www.cbd.int/doc/strategic-plan/targets/T7-quick-guide-en.pdf>

⁴⁸ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land based activities, including marine debris and nutrient pollution.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.</p> <p><u>Missing elements:</u></p> <p>“The SDGs lack the explicit qualification that sustainable agriculture, aquaculture and forestry must ensure the conservation of all biodiversity in these ecosystems, not just achieving sustainability regarding the resource itself” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 7 calls for sustainability by 2020, while the SDG targets (2.4; 12.2) indicate 2030” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 7 could better support one or more SDGs:</u></p> <p>A clear definition of sustainable management and reference to certification schemes would also improve measurability of progress to SDG goal 2 and SDG target 2.4 on sustainable food production.</p>
--	---

5.7.2.4. *Links to other conventions and further processes*

A newly formulated Target on sustainable management of areas under agriculture, forestry and aquaculture could have a guiding function for Food and Agriculture Organization (FAO). As unsustainable management of areas under agriculture is a main driver of land degradation such a Target would also build a direct link to the Zero-Net-Land-Degradation activities under UNCCD (UNCCD, 2016). The FAO is working on all three Target areas of Aichi Target 7 with own departments, programmes and strategies due to its ultimate vision of “a world free from hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner” (FAO website⁴⁹). In 2014, FAO published a tools and guidance report on how their work is supporting the Targets (FAO, 2014b). Besides its work on genetic resources (see Target 13), FAO is referring to its activities promoting sustainable management of forests and woodlands, fishery practices and aquaculture as well as to its climate-smart agriculture approach and the Sustainability Assessment of Food and Agriculture systems (SAFA) (FAO, 2014b, p. 6). The same year FAO released their common vision to sustainability across agriculture, forestry and fisheries. The vision recognizes the many trade-offs and conflicts between agriculture and increasing food production and biodiversity conservation as well as the limited success of former strategies to overcome these challenges. The vision document describes five complementary principles, that should become the basis for national decision-making: “1) improving efficiency in the use of resources; 2) conserving, protecting and enhancing natural ecosystems; 3) protecting and improving rural livelihoods and social well-being; 4) enhancing the resilience of people, communities and ecosystems; and 5) promoting good governance of both natural and human systems” (FAO, 2014a, p. 7). To support principle 2, FAO is recommending several policies and practices that are recognizing biodiversity conservation within the different sectors, e.g.

⁴⁹<http://www.fao.org>

to apply the ecosystem approach for aquacultures (ibid., p. 25). FAO offers its member states to support them to develop appropriate policies and practices and help with priority setting. Regarding the implementation of the Agenda 2030 and the SDGs, FAO has a focus on SDG 1 and 2, however can contribute to most of the SDGs. They are custodian UN agency for 21 SDG indicators, across SDGs 2, 5, 6, 12, 14 and 15. To implement SDG 14 and 15, FAO sees its role as facilitator of “international fora and contributing to negotiations that strengthen policies on ecosystem services and biodiversity for food and agriculture” and to provide “policy assistance aimed at enhancing both agricultural productivity and sustainability, including protecting crops, limiting chemical contamination, managing biodiversity and ecosystem services, and strengthening livelihoods” (FAO, 2017a, p. 36). FAO’s biodiversity-related activities are also highlighted one of its revised publication “Sustainable Agriculture for Biodiversity – Biodiversity for Sustainable agriculture”, reiterating three key messages “1) Biodiversity is key to food security and nutrition, 2) Agricultural sectors are major users of biodiversity but also has the potential to contribute to the protection of biodiversity, 3) Good governance, enabling frameworks, and stewardship incentives are needed to facilitate mainstreaming of biodiversity” (FAO, 2018, p. 6).

In addition to its programmes, FAO is also providing relevant data on the implementation of current and future biodiversity Targets. The “State of The World’s Biodiversity for Food and Agriculture” report, expected for 2018, should “enhanced knowledge of biodiversity for food and agriculture” and contribute information on activities to achieve Target 7 and 11 (FAO website⁵⁰).

As mentioned above, the land degradation neutrality approach (LDN) of the UNCCD can contribute to a new CBD Target on agriculture since it is aiming for “a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems” (UNCCD, 2016, p. 1; see also chapter 4 and section on Aichi Target 15).

See also the corresponding sections for Aichi Targets 3, 4 and 6 on processes against perverse subsidies, on sustainable production and consumption, and on fishery and aquaculture, respectively.

5.7.3. Recommended options and further suggestions for Aichi Target 7

5.7.3.1. Suggestion by ibn: accentuate “area” as a key factor

Recommended option (ibn): Keep but modify Target 7.

By **2030, all** areas under agriculture, aquaculture and forestry are managed sustainably, ensuring **to halt the loss ~~conservation~~ of biodiversity in such areas and allowing recovery of natural biodiversity.**

By **2030, the rate at which areas are newly claimed for agriculture, aquaculture and forestry is drastically reduced (ensuring also progress toward Target 5).**

Rationale:

The formulation of Aichi Target 7 leaves room for interpretation: it could mean 'all' areas under agriculture etc. are managed sustainably or a certain but undefined percentage of areas are managed sustainably. Furthermore, there is no definition what 'sustainably' means, except the qualifier 'ensuring the conservation of biodiversity'. It is not clear to which baseline this refers. If it refers to a

⁵⁰ <http://www.fao.org/nr/cgrfa/biodiversity/sowbfa/en>

level of biodiversity that was still there before intensification of agriculture started it is probably impossible to reach this level again. If it refers to current levels in high intensified agriculture the Target loses its meaning. Therefore, sustainable management would need a definition. Furthermore, the claiming of new areas for agriculture, aquaculture and forestry poses serious threats to biodiversity. This should also be addressed in a modified Target (and cross-linked to Target 5).

5.7.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep but modify Target 7.

Option A

By **2030** areas under agriculture, aquaculture and forestry are managed sustainably, ensuring **to halt the loss conservation of biodiversity in such areas and encouraging recovery of biodiversity.**

Explanatory comments:

- “Halt the loss” seems more appropriate because the wording “conservation of biodiversity” actually requires a baseline to be meaningful in the context of Target 7 (see rationale provided by ibn above).
- Furthermore, it seems important to also encourage explicitly measures for an increase of biodiversity because some areas under agriculture, aquaculture and forestry have lost a large number of species already.
- Whether the Target should address “all” areas under the specified types of management (as suggested by ibn) seems debatable: Consistent with a “land sharing” approach, it may be more feasible and effective to maintain high levels of production (or even to intensify the management and to accept low levels of biodiversity) on certain areas while fostering biodiversity at other, more extensively managed areas.
- The additional sentence suggested by ibn that refers to areas “newly claimed for agriculture, aquaculture and forestry” should be deleted, because this aspect is captured by Target 5. The dependency of the progress toward Target 7 on progress toward Target 5 and the importance that areas addressed under Target 7 do not encroach protected areas (addressed under Target 11) should however be highlighted somehow (see below under ‘Options that could facilitate the implementation).

Option B

By **2030 landscapes and seascapes dominated by areas under** agriculture, aquaculture and forestry are managed **to ensure sustainably, sustainable functioning of a healthy ecosystem and to halt the loss of biodiversity in such areas and encouraging recovery of natural conservation of biodiversity.**

Explanatory comments:

- It is very important to address the effects of agriculture, aquaculture and forestry on adjacent areas, i.e. the lateral effects caused e.g. by drift of pesticides, run-off of nutrients etc., which might be captured by the insertion “landscapes and seascapes”. – *Note:* While this point was generally well taken by the group, participants discussed the suggested wording controversially for three reasons: a) The term “landscape” may be associated with different meanings, dependent on the linguistic and cultural context; b) “seascapes” does not adequately capture all areas under aquaculture; c) referring to wider areas than the ones actually under management may lead to a decreased sense of responsibility among the managers.

- The wording “managed sustainably” seems too vague. One option to specify its meaning is to refer to “the functioning of healthy ecosystems”. Another option is to provide some criteria, such as “land degradation neutrality” or indicators such as a certain minimal area that is extensively managed. – *Note:* “Healthy” may also be interpreted in different ways. Furthermore, it was discussed whether or not to use the wording “the functioning *and services* of healthy ecosystems” but some participants cautioned against it because the word “services” implies an anthropocentric view and holds the risk of being restrictively related to the *producing* services of managed areas.

5.7.3.3. *Suggestions by participants of the international expert workshop*

Due to time constraints Aichi Target 7 was only very briefly discussed during the international expert workshop. Issues that were raised during this limited amount of time were:

- The socio-economic dimensions of Target 7 could be addressed more explicitly.
- The terminology should be consistent, e.g. the wording “are managed sustainably” could be replaced by “keeping impacts within safe ecological limits” (to be consistent with Aichi Target 4). However, it was also noted that the wording is the result of negotiations, which sets limits to the consistency.
- A definition for “sustainably” is needed with a focus on biodiversity impacts. Current indicators are not sufficient (e.g. in the agricultural sector); operationalization needs to be improved.

5.7.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.7.4.1. *Options that could facilitate progress toward Aichi Target 7*

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁵¹), but ensure that they are linked to concrete levels of sustainability, e.g. expressed via certification standards. This would need a baseline stating how big the area already is that is sustainably managed today. Otherwise, there is the risk of decreasing the level of ambition from “areas” (in general, which could mean “all areas”) to specific areas.
- **Effective monitoring strategies, verification systems and adequate baseline data are needed.**
- **There are very intense cross-links between Target 7 and several other Targets (3, 5, 11, 14 and 15). These should be highlighted and taken into account when measures to implement Target 7 are designed and carried out.**

⁵¹ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

5.7.4.2. *Suggested milestones*

- By 2022, the CBD has published guidelines for sustainable agriculture, aquaculture, fisheries and forestry that have been approved by all member states and that provide them with a framework for implementing Target 7.
- By 2025, ... per cent of all areas under and products derived from agriculture, aquaculture and forestry are certified with standards for sustainable management including lateral effects like pollution and pesticides. – *Objection:* The timeline seems too ambitious given the difficulties that are linked to the implementation of certification schemes. Thus, the term “certification” may be better replaced by a reference to guidelines for sustainable management practices, e.g. provided by the CBD.
- ~~By 2025, all fish products consumed in developed countries comply with standards for sustainable management; ... per cent of all fish and invertebrates that are consumed by humans have been produced by aquaculture certified with standards for sustainable management (milestone also under Target 6).~~ – *Note:* Participants argued that this duplicates the previous milestone and that both should be integrated.
- By 2025, the loss of species caused by agricultural practices has been reduced by ... per cent.

5.7.4.3. *Other issues*

- It is crucial to stress the currently often detrimental large-scale effects of consumption and production patterns (e.g. by telecoupling and/or globalization). This issue is addressed under Target 4 but should also be kept in mind in the context of Target 7 because many of these effects are intrinsically linked to agriculture, aquaculture or forestry.



5.8. Aichi Target 8

By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

5.8.1. Introduction

Aichi Target 8 addresses pollution as a serious threat to biodiversity. Pollution may be caused by any (potentially) harmful substance (e.g. by chemicals or plastics) and may affect water, air or soil. Thus, Target 8 has a very wide scope. It puts, however, special emphasis on pollution through excess nutrients, which is also stressed in the “technical rationale” for this Target: “nutrient loading, primarily of nitrogen and phosphorus, is a major and increasing cause of biodiversity loss and ecosystem dysfunction, particularly in wetland, coastal and dryland areas, including through eutrophication and the creation of hypoxic “dead zones” associated with severe losses of valuable ecosystem services” (CBD/COP/10/INF/12/Rev.1, 2011). The strong negative impact of excess nutrients on biodiversity had already been highlighted by the Millennium Ecosystem Assessment (see e.g. MA, 2005, p. 69). Among other types of pollutions, plastics and other solid waste in marine ecosystems and air pollution are frequently mentioned as important drivers for the loss of biodiversity and ecosystem function (Derraik, 2002; MA, 2005; Costello et al., 2010; WWF, 2012, as cited in Talberth and Gray 2012, p. 13).

5.8.1.1. Structural overview

Aichi Target 8 consists of two elements (GBO 4):

Pollutants (of all types) have been brought to levels that are not detrimental to ecosystem function and biodiversity
Pollution from excess nutrients has been brought to levels that are not detrimental to ecosystem function and biodiversity

The aspirational component is “non-detrimental pollution levels”

Trend according to the Global Environment Outlook 4 (GBO 4):

“Nitrogen and phosphorus pollution continues to pose a very significant threat to biodiversity and ecosystem services globally. Measures taken in some regions to limit release of nutrients to the environment have caused a stabilization of nutrient pollution, especially in Europe and North America, but at levels that are still detrimental to biodiversity. Globally, the surplus of nitrogen and phosphorus in the environment is projected to continue rising beyond 2020, with growth concentrated in Asia, South and Central America, and sub-Saharan Africa. [...] the overall evaluation is that current trends are moving us further away from the Target of bringing excess nutrients to levels not detrimental to ecosystem function and biodiversity (CBD Secretariat, 2014, p. 67).

Trend according to the IPBES ECA Assessment:

“Current trends in freshwater and terrestrial biodiversity suggest that it is highly unlikely that Europe and Central Asia will be able to fully contribute to Targets 7 (sustainable agriculture, aquaculture and

forestry), 8 (pollution reduced) and 9 (invasive alien species prevented and controlled)” (IPBES/6/15/Add.4, 2018, p. 28).

5.8.2. Analysis

5.8.2.1. *Links to previous CBD framework and to other Aichi Targets*

There had been no equivalent to Aichi Target 8 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of pollution into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 10 and 14 are strongly affected by progress toward Aichi Target 8, while Target 8 itself is particularly strongly affected by progress toward Target 3 (addressing harmful incentives), Target 4 (addressing sustainable production and consumption), and Target 7 (addressing sustainable agriculture, aquaculture and forestry).

Furthermore, one could argue that progress toward Aichi Target 8 would also significantly enhance progress toward Target 10 (minimizing impact on vulnerable ecosystems) and Target 12 (conserving threatened species).

5.8.2.2. *Smartness*

S (specific): Aichi Target 8 is unspecific, because it explicitly encompasses “pollutants (of all types)” (Target text, see above). This includes: land, air and water pollution; solid and liquid waste (e.g. waste water); multiple pollution pathways and multiple different substances, e.g. plastics, micro-plastic, oil, chemicals (incl. pesticides), nutrients (in particular N and P), and as air pollutants also “nitrogen oxides, sulfur dioxide, particulate matter, ozone, carbon monoxide, and lead” (Talberth and Gray, 2012, p. 14).

Butchart et al. (2016) criticise that Aichi Target 8 contains a redundancy, in that “including from excess nutrients” is encompassed by “pollution”.

M (measurable): To date, sixteen specific Target-8-indicators have been recognized by the CBD, of which nine measure “trends in pollutants”, one measures “trends in extinction risk and populations driven by pollution”, one measures “trends in ecosystems affected by pollution”, and five measure “trends in nutrient levels” (CBD/COP/DEC/XIII/28, 2016). All of these sixteen indicators are available.

In their fifth National Reports, Parties reported most commonly on indicators related to nitrogen and phosphorus to assess progress toward Aichi Target 8. However, these indicators are not always comparable due to different methodologies and because some refer to specific but varying ecosystems. “Some Parties have used indicators in their national reports which are relatively broad, such as the import or use of fertilizers, pesticides and insecticides, the amount of untreated waste water or the amount of waste material generated. However, while these indicators are relevant to this Target, they do not necessarily indicate if levels of nutrients or other pollutants are at or above levels which are detrimental to biodiversity” (CBD/SBSTTA/20/INF/34, 2016). Butchart et al. (2016) conclude that both elements of Target 8 are not quantifiable. This is corroborated by the fact that element 1 of Target 8 could not clearly be evaluated for the GBO4, partly due to highly variable trends between pollutants (CBD Secretariat, 2014, p. 20).

A (assignable): No actor is explicitly addressed in Aichi Target 8. However, as pollution is a direct driver to biodiversity loss which is caused by individual behaviour (consumers, farmers, industry) it

can be tackled by environmental legislation and proper enforcement, by setting and controlling standards and by the polluter-pays principle. Such legislation can be national or can also be agreed upon in regional environmental agreements e.g. between states along one river or around a certain ocean where such conventions exist. Accordingly, the “technical rationale” to Target 8 (CBD/COP/10/INF/12/Rev.1, 2011) speaks of regulations and guidelines that are necessary to improve the “control of sources of pollution”. Thus, regulative approaches and law enforcement are needed on the one hand (put forward and applied by governments and other authorities at different administrative levels). On the other hand, compliance, changed management practices and voluntary commitments are required from actors within the private sector, whereby the agricultural sector plays a crucial role: “common causes of excessive nutrients are sewage and agricultural runoff” (CBD quick guide to Target 8⁵²).

5.8.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.8 gives an overview over how Aichi Target 8 is linked with different policies at the national, European and global scale.

Table 5.8: Reflection of Aichi Target 8 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 3.1 (see BMUB, 2014, p. 36); the “Naturschutz-Offensive 2020” (BMUB, 2015) had announced a national “nitrogen report”, which was published in May 2017 (BMUB, 2017b).
EU	Aichi Target 8 is included in target 2 of the EU Biodiversity Strategy: Maintain and restore ecosystems and their services. By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15 % of degraded ecosystems ⁵³ .
SDG framework	<p>Related targets can be found in following SDGs and SDG sub-targets (Schultz et al., 2016):</p> <p>Goal 3. Ensure healthy lives and promote well-being for all at all ages. 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.</p> <p>Goal 6. Ensure availability and sustainable management of water and sanitation for all. 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p>Goal 12. Ensure sustainable consumption and production patterns. 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed inter- national frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development. 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p> <p>According to CBD Secretariat et al. (2016), Aichi Target 8 also contributes to SDG Goals 10 and 11(10: Reduce inequality within and among countries; 11: Make cities and human settlements inclusive, safe, resilient and sustainable).</p>

⁵² <https://www.cbd.int/doc/strategic-plan/targets/T8-quick-guide-en.pdf>

⁵³ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p><u>Missing elements:</u></p> <p>“The SDGs aim to reduce pollution, whereas Aichi Target 8 explicitly quantifies the degree of pollution reduction to levels that are not detrimental to ecosystem function and biodiversity” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 8 has a target date of 2020 and applies to terrestrial, freshwater and marine ecosystems, while the SDG target 14.1 indicates 2025 and applies to pollution in the marine environment only. Both targets emphasize nutrient pollution, the SDG target also highlights marine debris” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 8 could better support one or more SDGs:</u></p> <p>Different SDG targets mention different pollutants, e.g. 3.9 addresses hazardous chemicals with a 2030 timeline, 6.3 speaks of water quality improvement by better wastewater management by 2030, and 12.4 cares for waste management by 2020. Together with the above mentioned 14.1 and its 2025 deadline, there are various SDGs which would benefit from a CBD Target on reducing or halting pollution, especially if there were defined and measurable levels of reduction. Aichi Target 8 itself has close relationships to Aichi Target 14 calling for safeguarding ecosystems that provide essential services, including those related to water. Pollution is one major threat to many of such ecosystems and their services, so that failure to reach Aichi Target 8 is automatically a hurdle to reach Aichi Target 14.</p>
--	---

5.8.2.4. *Links to other conventions and further processes*

Due to the broad scope of Aichi Target 8, there are links to several UN processes and work areas. The CBD is covering pollution e.g. in the programmes of work for agricultural biodiversity, the biodiversity of inland waters and marine and coastal biodiversity. Conventions dealing with different other aspects of pollution have been established before the three Rio Conventions in 1992, e.g. the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention, 1972⁵⁴), the International Convention for the Prevention of Pollution from Ships (MARPOL, 1973⁵⁵), the Convention on the Prevention of Marine Pollution from Land-Based Sources (Paris, 1974⁵⁶), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention, 1979⁵⁷) or the Convention on Long-range Transboundary Air Pollution (CLRTAP, 1979⁵⁸).

Air pollution and the substantial reduction of greenhouse gas emissions are of course addressed by the UNFCCC, the Kyoto Protocol as well as the Paris Agreement on Climate Change.

The CBD quick guide on Aichi Target 8⁵⁹ states that the Target “is consistent with, and complementary to, work under the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade [1998] and Stockholm Convention on Persistent Organic Pollutants, Stockholm [2001] and the target established in the Johannesburg Plan of Implementation to achieve, by 2020, a situation where chemicals are used and

⁵⁴ <http://www.imo.org/en/ourwork/Environment/LCLP/Pages/default.aspx>

⁵⁵ <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-%28MARPOL%29.aspx>

⁵⁶ <https://treaties.un.org/doc/Publication/UNTS/Volume%201546/volume-1546-I-26842-English.pdf>

⁵⁷ <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>

⁵⁸ <https://www.unece.org/fileadmin/DAM/env/lrtap/full%20text/1979.CLRTAP.e.pdf>

⁵⁹ <https://www.cbd.int/doc/strategic-plan/targets/T8-quick-guide-en.pdf>

produced in ways that lead to the minimization of significant adverse effects on human health and the environment”.

IPBES identified pollution as one of the “anthropogenic direct drivers” in its conceptual framework which are addressed explicitly in all the IPBES Regional Assessments completed in 2018 as well as in the IPBES Global Assessment to be completed in 2019. The Summary for Policymakers of the IPBES Assessment on Pollinators, Pollination and Food Production identifies pollution as a direct driver in key message 14 and highlights specifically the role of pesticides in key messages 18 and 19 (IPBES, 2016, Summary for Policymakers). The FAO has launched a voluntary International Code of Conduct on Pesticide Management in 2013 to reduce the application of pesticides (FAO and WHO, 2014).

Pollution in wetlands and in coastal areas is addressed by Ramsar and UN GPA. The Ramsar Convention on Wetlands (Ramsar) has linked its 4th strategic plan 2016-2024 to the Strategic Plan of the CBD and identifies synergies for Target 8 (Ramsar Convention, 2015, Targets 2 and 3). The Convention is also cooperating with the CBD in the implementation of the Targets in its 5th CBD-Ramsar Joint Work Plan (CBD and Ramsar Convention, 2011), recommending for example to coordinate the development and implementation of NBSAPs and National Wetland Policies. Ramsar Convention’s resolutions also provide guidance on the use of pesticides in wetlands (also related to Target 3, 4 ,7) (UNEP-WCMC, 2015). The UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (UNEP, 1995), including the Global Partnership on Nutrient Management (GPNM) launched by the United Nations Commission on Sustainable Development in May 2009, provides a policy database with an overview of various policy instruments and guidelines for policy making and investments that are ‘nutrient proofed’⁶⁰.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) recommends that Parties develop and implement national plans of action that address the negative impacts of marine debris, encourages parties to identify and address the sources and impacts of marine debris (UNEP-WCMC, 2015).

Especially pollution through plastic was lately an international recognised challenge. The UN General Assembly supported the declaration of UN Oceans conference “Our ocean, our future: call for action” which is stating that the participants want to “...accelerate actions to prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris, plastics and microplastics, nutrient pollution, untreated wastewater, solid waste discharges, hazardous substances, pollution from ships and abandoned, lost or otherwise discarded fishing gear...” and to “implement long-term and robust strategies to reduce the use of plastics and microplastics, in particular plastic bags and single-use plastic...” (UNGA, 2017c, p. 4).

The UN Environment Assembly (UNEA 3) in Kenya 2017 chose pollution as the main theme for the meeting and presented several initiatives. The Assembly adopted the declaration “Towards a pollution free planet” reiterating the link between pollution and climate change as well as biodiversity loss and promising to “...target pollution through tailored actions, including environmental agreements” as well as to “accelerate the implementation and promote cooperation among existing multilateral agreements, conventions, regulations and programmes to prevent, control and reduce pollution” (UNEA, 2017, p. 1).

⁶⁰ www.nutrientchallenge.org

For the World Environmental Day 2018, UNEP released the “State of Plastic” report proposing a 10-step roadmap for governments to curb single-use plastics and their mixed impact (UNEP, 2018).

5.8.3. Recommended options and further suggestions for Aichi Target 8

5.8.3.1. Suggestion by ibn: accentuate different kinds of pollution

Recommended option (ibn): Keep but modify Target 8.

By **2030**, **air** pollution **by (name substances or sources particularly relevant for biodiversity), including from excess nutrients**, has been **halted brought to levels that are not detrimental to ecosystem function and biodiversity**.

By **2030**, **soil** pollution **by (name substances or sources particularly relevant for biodiversity), including from excess nutrients**, has been **halted brought to levels that are not detrimental to ecosystem function and biodiversity**.

By **2030**, **water** pollution **by (name substances or sources particularly relevant for biodiversity), including from excess nutrients**, has been **halted brought to levels that are not detrimental to ecosystem function and biodiversity**.

Rationale:

Aichi Target 8 calls for reducing pollution to levels that are not detrimental to ecosystem functions and biodiversity, without defining such levels any further. But even with this vague definition (and not calling for halting pollution) the Target has not been reached and in many areas pollution is still increasing, including the excess nutrients specifically mentioned in the Target text. Overall, the scope of Target 8 seems vast and splitting it up either in different Targets or by underpinning it with sub-Targets could be worth considering.

5.8.3.2. Suggestions by participants of the national expert workshop

- Due to time constraints, Target 8 was not discussed in a break-out group but in plenary. The Target was only discussed in general and the workshop participants proposed no alternative wording. The modified Target and milestones suggested by ibn were not discussed in detail.
- One participant highlighted, that a focus on excess nutrients is especially important for Europe. There might be a political window of opportunity to address this issue, since the next world nitrogen conference will be held in Germany in late 2019/early 2020 (8th Conference of the International Nitrogen Initiative – INI)⁶¹.
- Participants suggested that the Target needs concrete milestones as well as supporting guidance documents to ease the implementation.
- Participants proposed that the Target should include further causes for pollution/sources of substances, however it was not clarified whether this aspect should be incorporated in the Target text or addressed in a milestone.

Issues/substances that could/should be covered by a new Aichi Target 8:

- Plastic waste and microplastic;

⁶¹ Conference of the International Nitrogen Initiative – INI, <http://www.initrogen.org/content/international-nitrogen-conferences>

- Insecticides (negative impacts on e.g. pollinators have been shown in the IPBES Assessment on Pollination and Pollinators)⁶²;
- All substances with a negative impact on reproduction (endocrine disrupting substances) should be banned (a call for a ban could be included in an amendment to the current Target text).

5.8.3.3. *Suggestions by participants of the international expert workshop*

Recommended option (ibn): Keep Target as it stands.

By **2030, pollution [of air, water and soil]**, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Explanatory comment:

Participants of the international expert workshop recommended keeping the Target text as it stands and just alter the timeline to 2030. If air, water and soil should be mentioned at all, the words 'of air, water and soil' could be inserted after pollution in the original text.

5.8.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **international** expert workshop are printed in bold. There was no time during the national expert workshop to discuss these options and milestones.

5.8.4.1. *Options that could facilitate progress toward Aichi Target 8*

- Milestones could be set with respect to the different environmental compartments, defined levels of reduction, or in relation to specific sources of pollution (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁶³).
- Explanation could be added specifying the sources of pollution, e.g.:
 - Excess nutrients
 - Chemicals
 - Waste, including plastic waste
 - Oil spill
- Voluntary commitments: More specific (sub-)Targets or milestones would allow for pledges, e.g. for reducing the use of excess nutrients in agriculture or reducing the pollution caused by plastic waste in defined watersheds.

5.8.4.2. *Suggested milestones*

- By 2025, air pollution by (name substances or sources particularly relevant for biodiversity), has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- By 2025, soil pollution by (name substances or sources particularly relevant for biodiversity), has been brought to levels that are not detrimental to ecosystem function and biodiversity.

⁶² IPBES (2016): Summary for Policy Makers of the Assessment Report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on Pollinators, Pollination and Food Production.

⁶³ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

- By 2025, water pollution by (name substances or sources particularly relevant for biodiversity), has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- **By 2025, reduce the use of excess nutrients in agriculture.**



5.9. Aichi Target 9

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

5.9.1. Introduction

The interaction and movement of people and goods has substantially increased all around the world. At the same time, more and more ecosystems become degraded and thus more vulnerable to disturbances. Both processes facilitate the introduction and distribution of alien species, of which some have the potential to be invasive. The fraction of introduced alien plant and animal species that actually become invasive is small, but once a species has become invasive, the harm to the native flora and fauna can be tremendous. Currently, biological invasions seem to become increasingly problematic in aquatic ecosystems and especially for ecosystems of smaller islands invasive alien species are a main driver of biodiversity loss.

Invasive processes are often described of including three different stages: introduction, colonisation and establishment. In non-island states, eradicating fully established invasive species has proven largely unsuccessful. Therefore, proactive and preventive measures such as controlling pathways and hindering introduction are of crucial importance for minimizing the detrimental effects of invasive alien species on native biodiversity.

5.9.1.1. Structural overview

Aichi Target 9 consists of four elements (GBO 4):

Invasive alien species identified and prioritized
Pathways identified and prioritized
Priority species controlled or eradicated
Introduction and establishment of IAS prevented

The aspirational components are “identification of IAS”, “prioritization of IAS”, “identification of pathways”, “prioritization of pathways”, “control of IAS”, “eradication of IAS”, “prevention of introduction of IAS” and “prevention of establishment of IAS”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“The number of invasive alien species continues to increase globally as do their impacts on biodiversity. [...] Governments are increasingly taking steps to prevent, control and eradicate alien species invasions. [...] Generally the reports suggest that actions tend to be concentrated on control and eradication, with relatively few examples of actions to identify, prioritize and manage the pathways of introduction” (CBD Secretariat, 2014, p. 71). “Overall, there has been some progress towards achieving Target 9 but additional actions are required if it is to be met by the 2020 deadline” (ibid., p. 72).

Trend according to the IPBES ECA Assessment:

“Current trends in freshwater and terrestrial biodiversity suggest that it is highly unlikely that Europe and Central Asia will be able to fully contribute to Targets 7 (sustainable agriculture, aquaculture and forestry), 8 (pollution reduced) and 9 (invasive alien species prevented and controlled)” (IPBES/6/15/Add.4, 2018, p. 28).

5.9.2. Analysis

5.9.2.1. Links to previous CBD framework and to other Aichi Targets

There has been no equivalent to Aichi Target 9 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of invasive alien species into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 10, 12 and 14 are strongly affected by progress toward Aichi Target 9 while the effect of all other Targets on 9 is only low or intermediate.

5.9.2.2. Smartness

S (specific): Compared to other Aichi Targets, Target 9 is rather specific: Its four elements are formulated clearly, address issues that are well described in the comprehensive scientific literature about invasive alien species and no blurring language is used. The Target acknowledges that controlling the early stages of an invasive process promises more success than attempts to eradicate established species later and therefore calls explicitly for the control of the pathways and the prevention of the introduction. The technical rationale for Target 9 suggests concrete measures for such control, e.g. “improved border control and quarantine” and “early warning systems” (CBD/COP/10/INF/12/Rev.1, 2011). The only term with a vague meaning is “controlled” which may mean a great number of different measures. Among the four Target elements, the third one has therefore the lowest specificity.

M (measurable): To date, four specific Target-9-indicators have been recognized by the CBD, of which one measures “trends in eradication of priority invasive alien species”, one measures “trends in extinction risk and populations driven by invasive alien species impacts”, one measures “trends in the numbers of invasive alien species introduction and establishment events”, and one measures “trends in implementation of policy responses preventing the introduction and establishment of invasive alien species” (CBD/COP/DEC/XIII/28, 2016). All of these four indicators are available. But no specific indicators have been identified for “trends in identification and prioritization of invasive alien species” (first Target element), “trends in the distribution and populations of invasive alien species” (first Target element) and “trends in impacts of invasive alien species on ecosystems” (first and third Target element) (CBD/COP/DEC/XIII/28, 2016). Notably, none of the indicators listed by the CBD addresses the introduction and distribution pathways of IAS. Another drawback is that the indicator used for assessing “trends in eradication of priority invasive alien species” rests only on vertebrate data. So overall, the Target appears to be measurable in principle but to date, indicators are only operable for some of its elements.

In their fifth National Reports, Parties reported most commonly on indicators related to the number of invasive alien species in their country to assess progress toward Aichi Target 9. Some Parties also “provided information on issues associated with the impact of invasive alien species and the areas they affect” (CBD/SBSTTA/20/INF/34, 2016). But: “There were few indicators related to the management of pathways or control and eradication efforts” (ibid.).

Butchart et al. (2016) conclude that all four elements of Aichi Target 9 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 9. However, as the prevention of biological invasions need regulative approaches and law enforcement, governments and other authorities at different administrative levels have a high responsibility to act. In addition, compliance, changed management practices and voluntary commitments are required from actors within the private sector, in particular where activities involve the movement of people and goods, such as “travel, trade and tourism” (CBD quick guide to Target 9)⁶⁴.

5.9.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.9 gives an overview over how Aichi Target 9 is linked with different policies at the national, European and global scale.

Table 5.9: Reflection of Aichi Target 9 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets in the German NBSAP in chapter B 1.1.2, chapter B 1.2.2 and chapter B 1.2.3 (see BMUB, 2014, p. 36).
EU	The EU Biodiversity target 5 corresponds to Aichi Target 9. It is entitled: „Help combat Invasive Alien Species“ (European Commission, 2011) ⁶⁵ . However, the actions which are proposed under this EU target don’t address the phases of biological invasions as explicitly as Aichi Target 9 does. Instead, the “development of a dedicated instrument on Invasive Alien Species” is proposed (Action 16, the other action being: “Action 15: Strengthen the EU Plant and Animal Health Regimes”).
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.</p> <p><u>Missing elements:</u></p> <p>“The identification and management of pathways is not specifically mentioned” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“The SDG target aims to introduce measures, whereas Target 9 demands results of such measures by 2020” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 9 could better support one or more SDGs:</u></p> <p>The 2020-timeline of Aichi Target 9 is consistent with the timeline of SDG target 15.8 which also deals with invasive alien species. This means a failure to fulfil Aichi Target 9 is also a failure to reach SDG 15.8. Any new CBD Target on invasive alien species or the extension of the timeline of the existing Aichi Target 9 would have to be paralleled with a respective target under SDG 15. As invasive alien species also occur in marine habitats, control or eradication of such species would also foster the implementation of SDG 14.</p>

⁶⁴ <https://www.cbd.int/doc/strategic-plan/targets/T9-quick-guide-en.pdf>

⁶⁵ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

5.9.2.4. *Links to other conventions and further processes*

As invasive alien species occur in nearly all types of habitats a Target on such species provides links to many MEAs, e.g. to the Ramsar Convention on Wetlands regional agreements on specific marine areas like for the Baltic Sea, or for inland waters like transboundary rivers. Some invasive alien species endanger ecosystem services, including food, so that their eradication could also help to implement plans for food security under e.g. the FAO.

Since international trade is a major pathway for invasive alien species, the issue need to be addressed in related fora. The CBD is collaborating with the WTO, FAO and other organisation through its inter-agency liaison group on invasive alien species. A report by the Standards and Trade Development Facility (STDF) shows, how the issue of IAS is linked to the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) through the International Plant Protection Convention (IPPC) and the World Organisation for Animal Health (OIE), which are recognised standard-setting bodies under the SPS Agreement and makes recommendations how IAS could better addressed in this context (STDF, 2013). A successful example how IAS can be addressed in the context of trade and traffic is the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention) that was adopted in 2014 and is in force since September 2017⁶⁶.

5.9.3. Recommended options and further suggestions for Aichi Target 9

5.9.3.1. *Suggestion by ibn: Aichi Target 9 with modified timeline*

Recommended option (ibn): Keep Target as it stands.
--

By **2030**, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Rationale:

Aichi Target 9 is formulated as a series of actions that have to be taken to deal with the problem of invasive alien species. This series of actions would make it quite easy to define milestones along the individual actions. Depending on the status of implementation it might be possible to extend the overall timeline, eliminate steps that have already been taken by a majority of countries (e.g. identification of pathways) and then assign milestones to the following steps of the series. As prevention is the most efficient and effective measure against the establishment and spread of invasive alien species, it should be prioritized.

5.9.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep Target 9 as it stands.

Explanatory comment:

- Invasive alien species are still a driver of biodiversity loss, so the Target is still valid. It already mentions all important steps and there is no urgent need to amend the text.

⁶⁶ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-\(BWM\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-(BWM).aspx)

5.9.3.3. Suggestions by participants of the international expert workshop

Due to time constraints, Aichi Target 9 was not discussed in detail during the international expert workshop.

5.9.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.9.4.1. Options that could facilitate progress toward Aichi Target 9

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁶⁷).
- Prioritize prevention and enhance respective co-operations (e.g. among MEAs and toward the trade, travel and tourism sectors).
- Consider and implement recommendations produced by IPBES Assessments, especially 3(b)(ii) on invasive alien species.

5.9.4.2. Suggested milestones

- By 2022, the co-operations among relevant agreements and / or sectors have been agreed on or have been enforced, where appropriate, to combat effectively and efficiently the introduction, establishment and spread of invasive alien species.
- By 2022, measures (including legislation) and resources are in place to manage pathways of invasive alien species as to prevent their introduction and establishment.
- By **2022⁵** priority species **(those with the highest adverse impact on biodiversity)** are **identified and by 2030 controlled through effective management** or eradicated.
- **By 2025 intentional release of potentially invasive alien species into the wild is halted.**

5.9.4.3. Other issues

- **The identification of pathways can be complicated, especially when environmental conditions change, e.g. through climate change.**
- **Full eradication is often impossible and might only be feasible on islands.**
- **One problem is that the definition of a species being invasive includes that it does harm to other species. To prove invasiveness one has to wait until the damage becomes obvious which then might be too late to control or eradicate the invasive alien species.**
- **What are 'priority species'? The one with the highest adverse impacts or e.g. the ones that can be controlled most efficiently?**

⁶⁷ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>



5.10. Aichi Target 10

By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

5.10.1. Introduction

Aichi Target 10 is dedicated to the conservation of particularly vulnerable ecosystems that suffer from climate change impacts and ocean acidification (that is also caused by increased atmospheric CO₂). The assumption is that if these ecosystems are relieved from other pressures, they are more likely able to cope with stresses related to rising atmospheric CO₂ levels; and that many anthropogenic “drivers can be addressed more easily than climate change or ocean acidification” (CBD quick guide to Target 10)⁶⁸. Target 10 puts emphasis on the conservation of coral reefs, probably due to their charismatic nature and the fact that they have already strongly suffered from rising ocean temperatures, pollution and acidification. In order to acknowledge the urgency with regard to coral reefs, Target 10 is the only Target (except the procedural Targets 16 and 17) that had a timeline until 2015 instead 2020.

5.10.1.1. Structural overview

Aichi Target 10 consists of two elements (GBO 4):

Multiple anthropogenic pressures on coral reefs are minimized, so as to maintain their integrity and functioning
--

Multiple anthropogenic pressures on other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning
--

The aspirational components are “minimized pressures on coral reefs”, “integrity of coral reefs”, “functioning of coral reefs”, “minimized pressures on other vulnerable ecosystems”, “integrity of other vulnerable ecosystems” and “functioning of other vulnerable ecosystems”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Multiple pressures on coral reefs, including pressures from both land-based and marine activities, continue to increase. This makes it unrealistic to believe that the Target will be met by 2015 (CBD Secretariat, 2014, p. 77). “Insufficient information [was] available to evaluate the Target for other vulnerable ecosystems including seagrass habitats, mangroves and mountains” (ibid., p. 76).

As the timeline for Aichi Target 10 was 2015, it is already clear that the Target has been missed by far.

Trend according to the IPBES ECA Assessment:

“In spite of some progress, current trends in biodiversity make it highly unlikely that the region will be able to contribute fully to achieving Targets 10, 11 and 12 (extinction prevented) (IPBES/6/15/Add.4, 2018, p. 28).

⁶⁸ <https://www.cbd.int/doc/strategic-plan/targets/T10-quick-guide-en.pdf>

5.10.2. Analysis

5.10.2.1. *Links to previous CBD framework and to other Aichi Targets*

There had been no equivalent to Aichi Target 10 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of coral reefs and other vulnerable ecosystems impacted by climate change or ocean acidification into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 5, 11, 12 and 14 are strongly affected by progress toward Target 10, while Target 10 itself is particularly strongly affected by progress toward Targets 2, 3, 4, 5, 6, 7, 8, 9, 11 (addressing underlying causes and direct drivers of biodiversity loss), Target 14 (addressing ecosystem services), and Target 20 (addressing the mobilization of financial resources). In our view, there are also strong links and a mutual dependency between Target 10 and Target 15 (addressing ecosystem resilience and restoration as contributions to climate change mitigation), as also suggested by the CBD quick guide to Target 10⁶⁹.

5.10.2.2. *Smartness*

S (specific): Aichi Target 10 is on the one hand very specific in mentioning coral reefs as one particular vulnerable ecosystem type in need of protection. On the other hand, Target 10 remains vague with regard to the question which other ecosystems exactly classify as ‘vulnerable’ and what ‘minimized’ actually means. The latter leaves the level of ambition unclear, which decreases the specificity of Target 10. The same two terms (vulnerable and minimized) are identified as “ambiguous” by Butchart et al. (2016). The same authors point out that also the term ‘multiple anthropogenic pressures’ is blurry and “all-encompassing”. On these grounds, they suggest that “Target 10 is perhaps the most problematic to interpret”. They furthermore criticise that the Target contains the redundancy “or ocean acidification” as this “is a consequence of greenhouse gas emissions and climate change, so singling it out for extra emphasis is somewhat confusing” (Butchart et al., 2016).

M (measurable): To date, five specific Target-10-indicators have been recognized by the CBD, of which one measures “trends in extent and condition of coral reefs”, one measures “trends in extinction risk and populations of coral and coral-reef dependent species”, one measures “trends in pressures on coral reefs”, and two measure “trends in species extinction risk and populations or condition of other vulnerable ecosystems impacted by climate change or ocean acidification” (CBD/COP/DEC/XIII/28). One of these indicators is still under development and therefore not yet available. Furthermore, no specific indicators have yet been identified that could measure “trends in responses to reduce pressures on coral reefs” (Target element one), “trends in extent and condition of other vulnerable ecosystems impacted by climate change or ocean acidification” (Target element two), “trends in pressures on other vulnerable ecosystems impacted by climate change or ocean acidification” (Target element two) and “trends in responses to reduce pressures on other vulnerable ecosystems impacted by climate change or ocean acidification” (Target element two).

In their fifth National Reports, Parties reported on indicators that “focused almost entirely on issues associated with the extant and health of coral reefs. There were few indicators related to the multiple anthropogenic pressures on coral reefs or other ecosystems vulnerable to climate change” (CBD/SBSTTA/20/INF/34, 2016).

⁶⁹ <https://www.cbd.int/doc/strategic-plan/targets/T10-quick-guide-en.pdf>

Butchart et al. (2016) conclude that both elements of Aichi Target 10 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 10. However, the technical rationale to Target 10 states that activities for approaching Target 10 could include “reducing pollution, overexploitation and harvesting practices” (CBD/COP/10/INF/12/Rev.1, 2011). Thus, all actors that are involved in these activities (and that are also addressed in Targets 6, 7 and 8) have a special responsibility with regard to Target 10. These include: governments and other authorities at different administrative scales and actors within the private sector, such as industry, agriculture, fishery, aquaculture and forestry (see also above).

5.10.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.10 gives an overview over how Aichi Target 10 is linked with different policies at the national, European and global scale.

Table 5.10: Reflection of Aichi Target 10 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 3.2 (see BMUB, 2014, p. 36).
EU	There is no direct equivalent of Aichi Target 10 within the EU Biodiversity Strategy. However, EU targets 2 and 4 are of high relevance for Aichi Target 10. They are entitled: „2: Maintain and restore ecosystems and their services“ and „4: Ensure the sustainable use of fisheries resources“ (European Commission, 2011) ⁷⁰ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 13. Take urgent action to combat climate change and its impacts.</p> <p>13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p> <p>13.2 Integrate climate change measures into national policies, strategies and planning.</p> <p>13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.</p> <p>Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant, adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.</p> <p><u>Missing elements:</u></p> <p>“Coral reefs and other vulnerable ecosystems not specifically mentioned” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 10 could better support one or more SDGs:</u></p> <p>Given the mixture of timelines in the respective SDG targets and the long exceeded timeline of Aichi Target 10, a newly formulated CBD Target could install milestones and timelines fitting to the SDGs.</p>

⁷⁰ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

5.10.2.4. Links to other conventions and further processes

Aichi Target 10 explicitly mentions climate change and ocean acidification as anthropogenic pressures which have to be minimized. Therefore, there is an immediate link to any measures agreed under UNFCCC, including the Paris Agreement. Beyond that the Target speaks of multiple anthropogenic pressures on coral reefs, which include also pollution, overfishing and unsustainable tourism. Therefore, there are many links to agreements dealing with marine protection, reducing pollution or fostering the sustainability of tourism.

All initiatives that lead to marine protected areas covering coral reefs are and will contribute to Target 10 (Wilkinson et al., 2016, p. 18).

The Sustainable Oceans Initiative (SOI), hosted by the CBD Secretariat, was launched 2010 as platform to share best practice, support capacity building, improve the scientific basis and monitor the process towards Target 6, 10 and 11. Its current plan for action is focusing on capacity building activities between 2015 and 2020 (Sustainable Ocean Initiative, 2014).

The 4th strategic plan of the Ramsar Convention intends to contribute to increasing the number of areas managed as Ramsar sites (Goal 2, Target 6); by 2015, 95 coral reefs were designated Ramsar sites (Ramsar Convention, 2015).

The Convention on International Trade of Endangered Species and Wild Fauna and Flora (CITES) recommends to apply the principles and practice of an ecosystem approach, when permitting the trade of corals (CITES, 2015).

The FAO Code of Conduct for Responsible Fisheries (CCRF) (FAO, 1995) is calling in article 6.8 to protect critical fisheries habitats such as mangroves, reefs, lagoons, nursery and spawning areas from destruction, degradation, pollution and other significant impacts resulting from human activities and for its rehabilitation. To support the CCRF and to combine efforts against pollution, overfishing and illegal fishing, the FAO has launched the Blue Growth Initiatives in 2013.

The 50 reefs initiative was launched by private foundations in spring 2017, aiming to identify 50 coral reefs that are less vulnerable, to support the development of a “curated list of strategies that could be used to achieve effective, long-term protection of coral reefs in the face of the inevitable impacts of climate change” and to create awareness and mobilize resources. A study that prioritizes reefs worldwide lead University of Queensland was supposed to be published in the end of 2017, however it is still in the review process⁷¹.

The International Coral Reef Initiative (ICRI) was launched as a loose partnership of states NGOs and IGOs in 1995 has currently over 60 members. Its main focus is to create awareness e.g. through campaigns for the International Year of the Reef (IYOR) 2018, which took place two times before (1997 & 2008)⁷².

Capacity building activities facilitated by the Nutrient Challenge, part of the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (UNEP, 1995), can also contribute to create awareness for pressure on coral reefs. The initiative provides training on

⁷¹ <https://50reefs.org>

⁷² <https://www.icriforum.org>

e.g. nutrient flows from the source to the sea and is building up a data base on policy instruments and investments that are “nutrient proofed”⁷³.

5.10.3. Recommended options and further suggestions for Aichi Target 10

5.10.3.1. Suggestion by ibn: specify pressures and vulnerable ecosystems

Recommended option (ibn): Keep but modify Target 10.

By **2025**, the multiple anthropogenic pressures, **including climate change, ocean acidification, unsustainable fisheries and unsustainable tourism**, on coral reefs, and other vulnerable ecosystems ~~impacted by climate change or ocean acidification~~, are minimized, so as to maintain their integrity and functioning.

By **2030**, the multiple anthropogenic pressures on ~~coral reefs, and other~~ vulnerable ecosystems impacted by climate change, **including marine ecosystems, mountain ecosystems and ecosystems under permafrost**, are minimized, so as to maintain their integrity and functioning.

Rationale:

Aichi Target 10 does not only deal with coral reefs but generally with 'vulnerable ecosystems impacted by climate change or ocean acidification'. These would preferably be placed into a new and separate Target, which would emphasize that ecosystems other than coral reefs are also severely threatened by the anthropogenic pressures. Furthermore, the Target on coral reefs should be more specific about the relevant anthropogenic pressures.

5.10.3.2. Suggestions by participants of the national expert workshop

Recommended option (participants): Keep, but modify Target.
--

By **2030**, the multiple anthropogenic pressures **especially human-induced greenhouse gas emissions on biodiversity and ecosystem services (inter alia coral reefs) which are increasingly impacted by climate change through droughts, fires and ocean acidification, are strongly decreased (meeting the 1.5 degrees target)** so as to ~~on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to~~ maintain their integrity and functioning.

Explanatory comments:

- The Target should not only highlight the impact of climate change on biodiversity but also the contributions of biodiversity to mitigate climate change, at the moment only the first aspect is covered by Target 10.
- Coral reefs being highly vulnerable ecosystems affected by anthropogenic pressures should be kept as an example.
- The Target should show the link between the CBD and UNFCCC and incorporate the climate Targets of the Paris Agreement.
- The need to meet the 1.5 degrees target of the Paris Agreement should be highlighted especially with regards to coral reefs (The Target should be supplemented by the latest scientific knowledge on tipping points. What is the maximum increase of ocean temperature that warm water coral reefs could adapt to? Temperature changes between 1 and 2 degrees are considered to have an impact (see also TEEB study: “New scientific evidence points to the

⁷³ www.nutrientchallenge.org

fact that coral reef recovery is seriously hampered by CO₂ concentrations above 350 ppm")⁷⁴.

- The Target should reflect the urgency with regard to coral reefs (max. 1 or 1.5 degrees ocean temperature increase).
- Anthropogenic pressures/drivers should be addressed.

5.10.3.3. Suggestions by participants of the international expert workshop

The participants of the international expert workshops discussed the options provided by ibn and by the participants of the national expert workshop (mentioned above) and found most merits in the second option:

By **2030**, the multiple anthropogenic pressures on ~~coral reefs, and other~~ vulnerable ecosystems impacted by climate change, **including marine ecosystems, mountain ecosystems and ecosystems under permafrost**, are minimized, so as to maintain their integrity and functioning. It was also discussed that redundancies with other targets should be avoided.

With respect to the suggested milestones (see below), participants argued that a 2022 timeline is too ambitious and unrealistic and should be shifted to 2025, and that further milestones could be set for specific ecosystems other than coral reefs.

5.10.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.10.4.1. Options that could facilitate progress toward Aichi Target 10

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁷⁵).
- These milestones and respective timelines could relate to other multilateral agreements e.g. the Paris Agreement on climate and initiatives such as the "50 reefs"⁷⁶, and possibly clarify the ambiguous term "minimized".

5.10.4.2. Suggested milestones

- By 2022, coral reefs are safeguarded effectively (no further loss). Key reef areas are identified and conservation plans are in place.
- By 2025, multiple anthropogenic pressures on coral reefs are minimized, so as to maintain their integrity and functioning.
- By **2025**, the multiple anthropogenic pressures on coral reefs, (and other vulnerable ecosystems) impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning, **taking under consideration that for warm water reefs (1.0/1.5) degrees are lethal.**

⁷⁴ TEEB (2009): TEEB Climate Issues Update. September 2009.

⁷⁵ For the milestones, see the Technical Rationales for the Aichi Targets:

<https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see

<https://www.cbd.int/sp/actions.shtml>

⁷⁶ <https://50reefs.org>



5.11. Aichi Target 11

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

5.11.1. Introduction

Aichi Target 11 is dedicated to one of the central elements of conservation of biodiversity: protected areas and so called other effective area-based conservation measures. “Well governed and effectively managed protected areas are a proven method for safeguarding both habitats and populations of species and for delivering important ecosystem services” (CBD/COP/10/INF/12/Rev.1, 2011). The Target gives clear percentages of terrestrial and inland water areas, as well as marine and coastal areas that should be under protection. The Target also takes into account that the pure percentage alone is not the only criterion to make protected areas useful for conservation, but that they should be placed in areas of particular importance for biodiversity and ecosystem services, that they should be ecologically representative and well connected. It also takes into account that protected areas are most effective if they are not just cut off from the surrounding seascape or landscape (e.g. fenced), but well integrated, e.g. by buffer zones. The percentages in Target 11 were heavily discussed at CBD COP-10 in Nagoya and are the result of a political compromise rather than a science-based optimum level.

5.11.1.1. Structural overview

Aichi Target 11 consists of six elements (GBO 4):

At least 17 per cent of terrestrial and inland water areas are conserved
At least 10 per cent of coastal and marine areas are conserved
Areas of particular importance for biodiversity and ecosystem services conserved
Conserved areas are ecologically representative
Conserved areas are effectively and equitably managed
Conserved areas are well connected and integrated into the wider landscape and seascape

The aspirational components are “conservation status for at least 17 percent of terrestrial areas”, “conservation status for at least 17 percent of inland water”, “conservation status for at least 10 percent of coastal areas”, “conservation status for at least 10 percent of marine areas”, “conservation status for areas of particular importance”, “ecological representativeness of conservation areas”, “effective management”, “equitable management”, “connectivity of conserved areas”, “integration of conserved areas”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Taking current commitments into account, the element of Target 11 on conserving 17 per cent of terrestrial areas by 2020 is likely to be met globally, although protected area networks remain

ecologically unrepresentative and many critical sites for biodiversity are poorly conserved. The element to protect 10% of coastal and marine areas is on course to be met in coastal waters, although open ocean and deep sea areas, including the high seas, are not well covered. Inadequate management of protected areas remains widespread” (CBD Secretariat, 2014, p. 14).

Trend according to the IPBES ECA Assessment:

“Progress has been made toward improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity (Strategic Goal C) through protected areas. [...] Overall trends in biodiversity are still negative, however. Europe and Central Asia appears to achieve protected area coverage of 17 per cent of its terrestrial surface (Target 11), notwithstanding great variability in the level of protection. The European Union already protects about 25 per cent of its terrestrial surface. There has been a general increase in the number and extent of marine protected areas in the region. In 2017, 15 countries protected more than 10 per cent of their marine waters, and 11.8 per cent of the Baltic Sea area is protected [...]. Other marine systems, especially those further from the coast, are less protected [...]. The ecological representativeness, connectivity and management of protected areas have improved, but most still lack management measures to protect biodiversity, such as no-take zones [...]. In spite of some progress, current trends in biodiversity make it highly unlikely that the region will be able to contribute fully to achieving Targets 10, 11 and 12 (extinction prevented) (IPBES/6/15/Add.4, 2018, p. 28).

5.11.2. Analysis

5.11.2.1. Links to previous CBD framework and to other Aichi Targets

There had been no equivalent to Aichi Target 11 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for a distinct amount of protected land- and seascapes, as well as some quality indicators for this protection into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 5, 6, 10, 12, 13 and 14 are strongly affected by progress toward Target 11, while Target 11 itself is particularly strongly affected by progress toward Target 2 (addressing the integration of biodiversity values), Target 5 (addressing habitat loss), Target 10 (addressing ecosystems vulnerable to climate change and ocean acidification), Target 17 (addressing NBSABs), and Target 20 (addressing the mobilization of financial resources).

5.11.2.2. Smartness

S (specific): Aichi Target 11 is, compared to other Targets, very specific because it addresses one particular response option to biodiversity loss (i.e. protected areas) and quantifies the level of ambition in numbers (17 % and 10 % of area). Thus, the specificity of Target 11 is high, although it contains quite a high number of Target elements (6) and aspirational components (10). Nonetheless, Butchart et al. (2016) regard three phrases within Target 11 as ambiguous: “Areas of particular importance for biodiversity and ecosystem services”, “other effective area-based conservation measures” and “integrated into the wider landscapes and seascapes”. The usage of such vague terms decreases the specificity of Target 11 to some extent.

M (measurable): To date, thirteen specific Target-11-indicators have been recognized by the CBD, of which four measure “trends in area of terrestrial and inland water areas conserved”, two measure “trends in area of coastal and marine areas conserved”, one measures “trends in areas of particular importance for biodiversity conserved”, three measure “trends in ecological representativeness of

areas conserved”, two measure “trends in effectiveness and/or equitability of management of conserved areas”, and one measures “trends in connectivity and integration of conserved areas” (CBD/COP/DEC/XIII/28, 2016). Three of these indicators are still under development and therefore not yet available, and the information whether available or under development is missing for another three of the indicators in the respective COP decision (ibid). Furthermore, no specific indicators have yet been identified that could measure “trends in areas of particular importance for ecosystem services conserved” (part of Target element three).

In their fifth National Reports, Parties mostly reported on indicators that were related to “the number of protected areas in a country or the overall proportion of national territory protected. [...] By comparison relative few Parties included indicators related to the size of areas particularly important for biodiversity and ecosystem services protected, protected areas connectedness, the integration of protected areas into the wider landscapes and seascapes and the management effectiveness of protected areas” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that the first two elements of Aichi Target 11 are quantifiable (numerically), whereas the other four Target elements are not.

Notably, there is a UN institution dedicated to the collection of data about protected areas: the World Conservation Monitoring Centre of UNEP (UNEP-WCMC)⁷⁷ – such a dedicated institution does not exist for the other Targets. This allows a much better overview on the global implementation of Aichi Target 11 than for most other Targets (see section below “Links to other conventions and further processes”).

A (assignable): No actor is explicitly addressed in Aichi Target 11. The Target calls for the designation and effective management of protected areas, thus those that are responsible for these activities are mainly responsible for making progress toward Target 11. These are primarily governments, the private sector (sometimes engaging in public-private-partnerships), and indigenous and local communities (see CBD/COP/10/INF/12/Rev.1, 2011). For an effective management, the enforcement of regulations is crucial, which results in a strong responsibility for authorities at different administrative scales.

5.11.2.3. Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs

Table 5.11 gives an overview over how Aichi Target 11 is linked with different policies at the national, European and global scale.

Table 5.11: Reflection of Aichi Target 11 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.3, chapter B 1.2.2 and chapter B 1.2.6 (see BMUB, 2014, p. 37).
EU	The EU Biodiversity target 1 corresponds to Aichi Target 11. It is entitled: „Fully implement the Birds and Habitats Directives“ (European Commission, 2011) ⁷⁸ .
SDG framework	<u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016): Goal 6. Ensure availability and sustainable management of water and sanitation for all. 6.5 By 2030, implement integrated water resources management at all levels, including through

⁷⁷ <https://www.unep-wcmc.org/>

⁷⁸ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>transboundary cooperation as appropriate.</p> <p>6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.</p> <p>Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.</p> <p>11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.</p> <p>11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p> <p>15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.</p> <p>15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.</p> <p>15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.</p> <p><u>Missing elements:</u></p> <p>"Protected areas are not comprehensively covered across all terrestrial biomes, and there is a focus on provision of ecosystem services instead of importance for biodiversity. No mention of 17% global terrestrial target, and indirect mention of 10% of coastal and marine areas conserved through protected areas. Connectivity, ecological representativeness and management are not specifically mentioned" (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>"The 10% quantitative target and 2020 completion date of Aichi Biodiversity Target 11 is reflected in the corresponding marine SDG target 14.5 but there is no corresponding quantitative terrestrial target under Goal 15. However, SDG target 15.1 provides for the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems in line with obligations under international agreements" (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 11 could better support one or more SDGs:</u></p> <p>Next to the above mentioned SDG targets 14.5 and 15.1 further SDG targets include protection components, e.g. 6.5 on water resources by 2030 or 6.6. on water-related ecosystems by 2020 or 14.2 on protection of marine and coastal ecosystems by 2020. A CBD Target including timelines and components on effective management, connectivity and permanence would therefore help the implementation of several SDGs.</p>
--	---

5.11.2.4. *Links to other conventions and further processes*

On their own territory (including their coastal zones) countries are sovereign to designate protected areas. In the open seas the designation of protected areas requires action at UN level (see below). There are also private or public-private initiatives that decide to protect certain areas and to follow international standards for its management.

International organisations, research institutions and NGOs like IUCN⁷⁹, UNEP-WCMC or the Alliance for Zero Extinction (AZE) provide crucial information on existing protected areas as well as recommendations where protection is especially urgent. The AZE is an initiative by 88 NGOs launched in 2005, aiming to “...prevent species extinctions by identifying and safeguarding the places where species evaluated to be Endangered or Critically Endangered under IUCN-World Conservation Union criteria are restricted to single remaining sites”⁸⁰. In 2010, the AZE initiative had identified and mapped 587 sites. The database with sites was updated in November 2017 and the dataset is currently under review.

IUCN administers the World Commission on Protected Areas (WCPA), a large network of protected area expertise, spanning 140 countries. IUCN further hosts the World Parks Congress, a global forum to facilitate the exchange of knowledge and to support protected areas conservation efforts. The last of these congresses took place 2014 in Sydney, the outcomes were summarized in the “The Promise of Sydney” (IUCN, 2014b, see also chapter 4). At the congress, IUCN also presented first results of the development process towards a voluntary global standard for good management practice. Twenty-five protected and conserved areas received a provisional ‘Green List’ certificate and after standard was reviewed again, the latest version was released as “The Green List of Protected and Conserved Areas Programme (IUCN Green List Programme) in the end of 2017 (IUCN and WCPA, 2016).

The online portal “protectedplanet.net”⁸¹, run by UNEP-WCMC with support of IUCN and its World Commission on Protected Areas (WCPA) is collecting and presenting information from around the world in the World Database on Protected Areas (see Table 5.11b below for the current status). According to this portal, it might be possible to reach Target 11 by 2020; although, there is a delay between the national designation of protected areas and the reporting to the database and not all protected areas might be registered 2020⁸².

The Key Biodiversity Area Partnership (KBA) of twelve large conservation organisations is following a similar approach. The partnership was launched in 2016 to “...enhance global conservation efforts by systematically mapping internationally important sites and ensuring that scarce resources are directed to the most important places for nature”⁸³. The partnership collaborates with IUCN with regard to the development of a Global Standard for the identification of Key Biodiversity Areas in a (IUCN, 2016a and see above), and it is maintaining the World Database of Key Biodiversity Areas⁸⁴.

⁷⁹<https://www.iucn.org/>

⁸⁰<http://www.zeroextinction.org/>

⁸¹<https://protectedplanet.net/>

⁸²<https://protectedplanet.net/c/increased-growth-of-protected-areas-in-2017>

⁸³www.keybiodiversityareas.org

⁸⁴<http://www.keybiodiversityareas.org/kba-partners>

Table 5.11b: Protected area change between December 2016 and December 2017. Source: UNEP WCMC / IUCN, Protectedplanet.net 2018

Type	Protected Area Coverage (%)	Protected Area Coverage (%)	Change in protected area coverage (km2)
	December 2016	December 2017	
Land	14.8	15	263,932
Marine- National Waters	12.7	16.02	4,630,267
Marine- High Seas	0.25	1.18	2,060,037
Ocean	5.12	6.96	6,690,303

One example for the good progress towards Aichi Target 11 is the Ross Sea Region Marine Protected Area, where 598,000 square-miles of water off Antarctica were protected 2016 after negotiations in the Commission for the Conservation of Antarctic Marine Living Resources. The commission comprises 24 countries (Howard, 2016). A drawback for the global conservation movement was the failure of the internationally recognised Yasuní initiative. The government of Ecuador had offered to promise to not drill for oil in the Yasuní national park area, if the international community would pay \$3.6bn into a trust fund for compensation. The requested amount was not raised in 2016, the government allowed oil drilling in the area under restrictions (Vidal, 2016).

Private initiatives or public-private partnerships can help to increase the amount of protected areas on national territories and IUCN highlighted their contribution to achieving objectives of the CBD with a resolution at the World Conservation Congress in 2016 (IUCN, 2016b). One of the most recent examples for private initiatives that designate privately owned land to become protected area is the Tompkins Conservation organisation, which has, according to their own data, protected 13 million acres of land to parks systems in Chile and Argentina⁸⁵. Another inspiring example for a public-private partnership for protected areas is the Seychelles Marine Spatial Plan Initiative⁸⁶ that is aiming to expand marine protected areas to 30 % of the Seychelles Exclusive Economic Zone and Territorial Sea by 2020. The unique approach of the initiative is that the American NGO 'The Nature Conservancy (TNC)'⁸⁷ and the Seychelles government, together with an international debt-relief group, were able to convert a portion of the nation's foreign debt into a \$22-million investment in expanded marine conservation. A Seychelles' Conservation & Climate Adaptation Trust was created by the government, which purchased the debt with a loan from TNC and it is expected that the trust will be able to maintain marine conservation and climate adaptation activities in the future⁸⁸.

"Marine areas beyond national jurisdiction (ABNJ) encompass nearly half of the planet's surface and a significant amount of its biodiversity" (Rochette et al., 2014). To protect ABNJ on the high seas, a negotiation process was launched under the umbrella of the UN Oceans and the United Nations

⁸⁵ <http://www.tompkinsconservation.org/home.htm>

⁸⁶ <https://seymsp.com/>

⁸⁷ <https://www.nature.org/>

⁸⁸ <https://www.nature.org/ourinitiatives/regions/africa/wherewework/seychelles.xml>

Convention on the Law of the Sea (UNCLOS). The CBD was calling for more cooperation with regards to marine ABNJ at CBD COP-7 in 2004 (CBD/COP/DEC/VII/5, 2004). In 2015, UNGA decided to start the process to develop an international legally binding instrument under the UNCLOS on the conservation and sustainable use of marine biological diversity of ABNJ. In July 2017, a preparatory committee presented their recommendation for elements of such a new regime, highlighting that some divergent views remained among the delegations involved in the preparations (UNGA, 2017a). The recommendations call for the provision of clear guidance for measures such as area-based management tools, including the identification and designation of marine protected areas, highlight the need for environmental impact assessment for all activities in ABNJ and stress that the regime, once installed, would contribute to Aichi Target 11 as well as to SDG 14. The CBD is invited to cooperate with the new regime from the start and to align their strategies and targets for marine ABNJ.

5.11.3. Recommended options and further suggestions for Aichi Target 11

5.11.3.1. *Suggestion by ibn: accentuate EBSAs in the open seas*

Recommended option (ibn): Keep but modify Target 11.

By **2030**, at least **22** ~~17~~ per cent of terrestrial and inland water, **at least 15** ~~10~~ per cent of coastal and **at least 15 per cent of** marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected system of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Rationale:

The concrete percentages of protected land and sea cover at which Aichi Target 11 aims have actually been reached or nearly reached in many regions of the world, which is of course a success. However, this does not mean that the Target has been fully implemented. The Target has more components which are still not implemented: designation of new protected areas rarely followed the priority of protecting areas of high biodiversity value, pure designation does not guarantee effective management, connectivity is not automatically given and integration into the wider landscapes and seascapes is also often not the case. If milestones should be agreed upon they should not only concentrate on the pure percentages of protected areas but also relate to the other components of the Target, e.g. to management, placement in areas important for biodiversity, or connectivity.

Furthermore, Aichi Target 11 mentions marine areas as opposed to coastal areas but for the time being, most protected areas exist in coastal zones and not in Areas Beyond National Jurisdiction (ABNJ). The CBD process of defining ‘Ecologically and Biologically Significant Marine Areas’ (EBSAs) could be helpful for the identification of areas “of particular importance for biodiversity and ecosystem services” in ABNJ. If the EBSA concept arrives at a legal status in due course, it would make sense to mention it in a milestone for the marine areas (see below).

5.11.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep but modify Target 11.
--

By 2030, at least **30 [27]** per cent of terrestrial and inland water, **at least 30 [20]** per cent of coastal and **at least 30 [20] per cent of** marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably

managed, ecologically representative and well-connected system of protected areas and other effective area-based conservation measures, **especially community based conservation areas**, and integrated into the wider landscapes and seascapes.

Explanatory comments:

- Protected areas are a valuable measure to halt the loss of biodiversity and therefore the Target is still valid, especially as it does not only call for a certain percentage (which has been reached in parts of the world) but for effective management and for protecting areas of particular importance for biodiversity.
- The level of ambition should be kept high and IUCN lists arguments why 30 per cent would be needed. The option in brackets would mean a 10 per cent increase compared to the Target as it stands and could be used as a fall back option. The mentioning of a percentage for both, coastal AND marine areas, should help to accentuate the need for protected areas in ABNJ and not only in coastal waters under national jurisdiction. – **Note:** Participants discussed controversially whether it is strategically wise to call for the same percentage for terrestrial and coastal/marine areas or whether it would be wiser to go for different percentages, as they are different in the Target as it stands.

5.11.3.3. Suggestions by participants of the international expert workshop

Instead of formulating alternative Target text, the workshop participants came up with the following aspects:

- The naming of percentages did put a focus on figures while other elements of Aichi Target 11 were neglected, but at least it pushed for progress and therefore was a success. A percentage-Target should be retained while keeping also the other elements.
- A 30-by-30 solution seemed to have support (meaning 30% terrestrial/inland water and 30% marine). Scientific evidence on what would be the conservation results of such an approach would strengthen such a 30-by-30-Target.
- One element not yet implemented is connectivity of protected areas. Conservation networks need more attention in implementation.
- Use Key Biodiversity Areas as framework for new protected areas, close cooperation is needed with other area-based agreements like Ramsar, UNESCO's Man and the Biosphere Programme, World Heritage Convention, ...
- Implementation of elements like effective management needs resources that have to be provided both nationally and internationally.
- CBD COP-14 might find a definition for 'other effective area-based conservation measures' (OECM). Based on this definition it should be investigated which difference there are in quality compared to formally protected areas and which potentials for the implementation of Aichi Target 11 OECMs have. If they are as effective as protected areas there should not be a separate Target on them but both concepts should be kept in the same Target.
- Keep in mind that protected areas are a top-down approach that does not work well everywhere. Community-based conservation areas as a bottom-up approach are also a valuable instrument.
- There is a close link to Aichi Target 6.
- There is also a close link to the concept of EBSAs.

5.11.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.11.4.1. *Options that could facilitate progress toward Aichi Target 11*

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁸⁹).
- **Percentages called for in a modified Target should be backed by scientific evidence and not just be presented as political claims.**
- **To assess the effectiveness of protected areas it is important to consider the intensity of biodiversity threats caused by human activities regulated by governing systems, therefore, important aspects to assess are political output, social outcome and ecological impacts.**

5.11.4.2. *Suggested milestones*

- By 2025, at least ... per cent of terrestrial areas are conserved through protected areas.
- By 2025, at least ... per cent of inland water areas are conserved through protected areas.
- By 2025, at least ... per cent of marine areas, especially areas of particular importance for biodiversity and ecosystem services, [including EBSAs in ABNJ,] are conserved through protected areas.
- By 2025, it is ensured that protected areas are effectively and equitably managed, in line with standardized guidelines.

⁸⁹ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>



5.12. Aichi Target 12

By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

5.12.1. Introduction

Aichi Target 12 addresses the core problem that the CBD is responsible for: the extinction of species. To halt or at least reduce this loss of biodiversity is the main reason why the CBD was formed. In order to make the Target more specific it concentrates on the prevention of the extinction of known threatened species and particularly of those most in decline. Therefore, this Target tries to tackle the most urgent cases first. Furthermore, it aims at not just preventing the extinction (which could be done by safeguarding some individuals in captivity) but also at improving and sustaining the conservation status. It is very broad in the sense that it encompasses *all* threatened species, not only some charismatic animals. The Target does not explicitly mention through which measures it could be implemented as this would be very case specific depending on the species.

5.12.1.1. Structural overview

Aichi Target 12 consists of two elements (GBO 4):

Extinction of known threatened species has been prevented
The conservation status of those species most in decline has been improved and sustained"

The aspirational components are "prevention of the extinction of known threatened species", "improved conservation status for species most in decline" and "sustained conservation status for species most in decline".

Trend according to the Global Environment Outlook 4 (GBO 4):

"Multiple lines of evidence give high confidence that based on our current trajectory, this Target would not be met by 2020, as the trend towards greater extinction risk for several taxonomic groups has not decelerated since 2010. Despite individual success stories, the average risk of extinction for birds, mammals, amphibians and corals shows no sign of decreasing" (CBD Secretariat, 2014, p. 87).

Trend according to the IPBES ECA Assessment:

"In spite of some progress, current trends in biodiversity make it highly unlikely that the region will be able to contribute fully to achieving Targets 10, 11 and 12 (extinction prevented). Downward trends in the Red List Index (increasing aggregate extinction risk) and Living Planet Index (decreasing population trends) also indicate that Europe and Central Asia will not be able to fully contribute to meeting Target 12" (IPBES/6/15/Add.4, 2018, p. 28-29).

5.12.2. Analysis

5.12.2.1. Links to previous CBD framework and to other Aichi Targets

Aichi Target 12 was covered by the Mission of the Strategic Plan that the CBD had adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): "Parties commit themselves to a more effective and coherent implementation of the three objectives of the Convention, to achieve by 2010

a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth.”

Marques et al. (2014) conclude that Aichi Target 13 (addressing genetic diversity) is strongly affected by progress toward Target 12, while Target 12 itself is particularly strongly affected by progress toward Target 2 (addressing the integration of biodiversity values), Target 5 (addressing habitat loss), Target 6, 7, 9, 10 (addressing several direct pressures), Target 11 (addressing protected areas) and Target 20 (addressing the mobilization of financial resources).

5.12.2.2. *Smartness*

S (specific): As Aichi Target 12 does not speak of all species but of “known threatened species”, it is very specific.

M (measurable): To date, eight specific Target-12-indicators have been recognized by the CBD, of which one measures “trends in number of extinctions”, one measures “trends in extinctions prevented”, and six measure “trends in extinction risk and populations of species” (CBD/COP/DEC/XIII/28, 2016). Two of these eight indicators are still under development and therefore not yet available (ibid.).

In their fifth National Reports, Parties reported on a comparatively large number of different indicators that addressed “issues related to the conservation status or population size of species. [...] The indicators used in the national reports tended to focus on terrestrial species and in particular mammals and birds. By comparison there were relatively few indicators related to amphibians, reptiles, invertebrates or aquatic species” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that both elements of Aichi Target 12 are quantifiable (by a binary variable).

A (assignable): No actor is explicitly addressed in Aichi Target 12. As outlined below, a great number of processes and therefore also numerous different actors can contribute to progress toward or away Target 12.

5.12.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.12 gives an overview over how Aichi Target 12 is linked with different policies at the national, European and global scale.

Table 5.12: Reflection of Aichi Target 12 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.2 (see BMUB, 2014, p. 37).
EU	The EU Biodiversity target 1 corresponds to Aichi Target 12. It is entitled: „Fully implement the Birds and Habitats Directives“ (European Commission, 2011) ⁹⁰ .
SDG framework	<u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016): Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development. 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management

⁹⁰ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.</p> <p>15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.</p> <p><u>Missing elements:</u></p> <p>“Non-economic marine species are not considered” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 12 could better support one or more SDGs:</u></p> <p>SDG target 15.2 calls for protection and for prevention of extinction of threatened species by 2020, well aligned with Aichi Target 12 and therefore also doomed to be clearly missed.</p> <p>Next to SDG 15.2 also 14.4 (on marine issues) has a 2020 timeline and any new CBD Target on halting the loss of biodiversity would have to be paralleled in SDG targets again.</p>
--	--

5.12.2.4. Links to other conventions and further processes

As the extinction of a species is the final point of decline and caused by a multitude of drivers, a CBD Target to stop extinction is relevant for all environmental agreements, or, vice versa, all agreements tackling drivers are relevant for the CBD Target. To halt the loss and decline of biodiversity is the very reason why the CBD was established and if this Target would finally be reached the CBD could declare its mission accomplished. All conventions and initiatives that contribute to stop the decrease of habitats and the loss of biodiversity are linked to Aichi Target 12 (Ramsar Convention, UNFCCC, UNCCD, initiatives started at the UN Ocean Conference or a new framework on marine biological diversity of ABNJ under UNCLOS etc.).

The Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES) included the Targets and the SGDs in the latest revision of its Strategic Vision 2018-2020 (CITES, 2016). A new CITES strategic plan for 2021-2030 is under development (CITES, 2017) and a new biodiversity Target and milestones to protect endangered species should reflect the new goals and objectives. The number of countries with legislation that is believed to meet the requirements for implementation of CITES is currently an indicator for Target 4.

The strategic plan for migratory species 2015-2023 of the CMS was developed using the Strategic Plan of the CBD and its Aichi Targets as a framework and its target 8 (The conservation status of all migratory species, especially threatened species, has considerably improved throughout their range) corresponded with Aichi Target 12 (CMS, 2014).

As for Aichi Target 10, initiatives like the IUCN Red List Index, the KBA Partnership and AZE provide valuable data for monitoring of the current trends toward or away Aichi Target 12. KBA and AZE sites and the Red List Index are recognized indicators for the Targets, the Red List Index also for SDG 15.5.

Last but not least, numerous governmental and non-governmental conservation projects at various scales contribute to Aichi Target 11 and Aichi Target 12 (e.g. the IUCN Save our Species initiatives⁹¹).

⁹¹ <http://www.saveourspecies.org/our-projects/sos-initiatives>

5.12.3. Recommended options and further suggestions for Aichi Target 12

5.12.3.1. *Suggestion by ibn: Aichi Target 12 with modified timeline*

Recommended option (ibn): Keep Target as it stands.

By **2025**, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Rationale:

Aichi Target 12 is at the very heart of the CBD and is a direct follow-up of the 2010 biodiversity Target, which was to 'significantly reduce the rate of loss of biodiversity until 2010'. Missing this Target by far in 2010 was a main cause for the formulation of a much more detailed Strategic Plan until 2020, including the 20 Targets. Nevertheless, Target 12 will be as widely missed as the 2010 Target was, as the drivers of biodiversity loss have not diminished since then. Any milestone like defining reduction levels or mentioning percentages of threatened species to be conserved would express a major reduction of the level of ambition that the CBD had even more than 10 years ago. To keep up the urgency the timeline should not be extended until 2030, but only to 2025.

5.12.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep Target 12 as it stands.

By 2030, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Explanatory comments:

- Halting extinction is at the core of the CBD and the Target is still needed.
- The suggestion by ibn to extend the timeline only to 2025 might be too ambitious.

5.12.3.3. *Suggestions by participants of the international expert workshop*

Participants discussed the following aspects:

- Aichi Target 12 contains the overall goal of the whole Strategic Plan. Could be mentioned in a more prominent place, not only in a single Target.
- Reaching Aichi Target 12 needs the tackling of all drivers mentioned in other Aichi Targets. This provides links to agreements that deal with specific drivers, e.g. to CITES that deals with trade.
- Don't look at extinction only as this is only the final step of a decreasing trend. Look also at abundance and necessary genetic diversity to keep a species alive.
- Milestones or commitments could be built around qualifiers as e.g. to bring x% of threatened species into a better IUCN category by (year).
- There are huge knowledge and data gaps for many species in many regions. Thus, there is a direct link to Aichi Target 18 and strong needs for capacity building, data infrastructure, monitoring, teaching of taxonomists, ... all these needs include financial needs.
- As many threatened species are restricted to small territories national or sub-national action plans are crucially important.
- There are also other species (e.g. pollinators) not yet threatened but vital for ecosystem services. Their decline should also be halted before they run the risk of extinction.

- Use this Aichi Target for communication of the whole Strategic Plan as this is the best communicable Target.

5.12.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **national** expert workshop are printed in bold. There was no time during the international expert workshop to discuss these options and milestones.

5.12.4.1. *Options that could facilitate progress toward Aichi Target 12*

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020⁹²).
- Prioritise conservation efforts and resources for Alliance for Zero Extinction (AZE) sites and Key Biodiversity Areas (KBA)⁹³. **Possible alternative: Prioritize the conservation of habitats of known threatened species.**
- Integrate all relevant sectors into conservation measures.
- Implementation of the other Targets – this is of course a circular argumentation.....
- **In order to fill knowledge gaps, funding agencies are encouraged to engage in biodiversity exploration and governments are encouraged to set up monitoring programmes.**

5.12.4.2. *Suggested milestones*

- By 2025, the conservation status of at least ... per cent of known threatened species has been improved.
- **By 2025, the conservation status of threatened species and of at least 10 per cent of known critically endangered species has been improved.**

⁹² For the milestones, see the Technical Rationales for the Aichi Targets:
<https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see
<https://www.cbd.int/sp/actions.shtml>

⁹³ AZE - Alliance for Zero Extinction sites (<http://www.zeroextinction.org>) / KBA - Key Biodiversity Areas
(<http://www.keybiodiversityareas.org>)



5.13. Aichi Target 13

By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

5.13.1. Introduction

Aichi Target 13 is addressing in situ and ex situ conservation of crop plants and farm animals and their wild relatives, as well as selected species e.g. with specific socio-economical or cultural value. Furthermore, it aims at minimizing the genetic erosion, and through this, the Target addresses the third level of diversity that the CBD aims to conserve: the genetic diversity within species (as opposed to the diversity of species and the diversity of ecosystems). Intraspecific variability is maintaining the evolutionary potential of species because it is the prerequisite for an adaptation to changing environmental conditions. Intraspecific variability in domesticated/cultivated species is also important as an “insurance” against pests or diseases (to which certain varieties are usually more susceptible than others). Genetic pauperization, on the contrary, increases the extinction risks for populations.

5.13.1.1. Structural overview

Aichi Target 13 consists of five elements (GBO 4):

The genetic diversity of cultivated plants is maintained
The genetic diversity of farmed and domesticated animals is maintained
The genetic diversity of wild relatives is maintained
The genetic diversity of socio-economically as well as culturally valuable species is maintained
Strategies have been developed and implemented for minimizing genetic erosion and safeguarding genetic diversity

The aspirational components are “maintenance of genetic diversity of cultivated plants”, “maintenance of genetic diversity of farmed animals”, “maintenance of genetic diversity of domesticated animals”, “maintenance of genetic diversity of wild relatives”, “maintenance of genetic diversity of socio-economically valuable species”, “maintenance of genetic diversity of culturally valuable species”, “development of strategies”, and “implementation of strategies”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Considerable crop genetic diversity continues to be maintained on farms, in the form of traditional crop varieties. However, there is currently limited support to ensure long-term conservation of local varieties of crops in the face of changes in agricultural practices and market preferences that are tending, in general, to promote a narrowing genetic pool. The wild relatives of domesticated crop species are increasingly threatened by habitat loss and fragmentation and climate change, and few protected areas or management plans address these threats. [...] Genetic diversity of domesticated livestock is eroding, with more than one sixth of the assessed breeds at risk of extinction” (CBD Secretariat, 2014, p. 91).

Trend according to the IPBES ECA Assessment:

“Europe and Central Asia are contributing to Target 13 (genetic diversity maintained) through the development of safeguards for rare domestic breeds and germplasms of cultivated plants. The extinction risk of domestic animal breeds is increasing, however, and there is evidence of the genetic erosion of cultivated plants under modern production systems” (IPBES/6/15/Add.4, 2018, p. 29).

5.13.2. Analysis

5.13.2.1. *Links to previous CBD framework and to other Aichi Targets*

There had been no equivalent to Aichi Target 13 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for the conservation of genetic diversity into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that none of the other Targets is strongly affected by progress toward Aichi Target 13, while Target 13 itself is particularly strongly affected by progress toward Aichi Target 2 (addressing the integration of biodiversity values), Target 4 (addressing sustainable production and consumption), and Targets 6, 7 and 11 (addressing several direct drivers), 12 (addressing species extinction), 16 (addressing the Nagoya protocol) and 20 (addressing the mobilization of financial resources).

Additionally, one could further argue that progress toward Aichi Target 13 would remarkably impact Target 12; the overall strength of this effect would depend on the relation between species extinctions that occur in wild species and species extinctions that occur in cultivated species.

5.13.2.2. *Smartness*

S (specific): Aichi Target 13 is specific because it clearly states one desired outcome of primary importance: the maintenance of genetic diversity. The Target is comprehensive, and thus less specific, with regard to the organisms groups addressed, encompassing cultivated plants, domesticated animals, wild animals and plants and socio-economically as well as culturally valuable species. This explains why the number of Target elements (5) and aspirational components (8) of Target 13 is relatively high.

M (measurable): To date, nine specific Target-13-indicators have been recognized by the CBD, of which four measure “trends in genetic diversity of cultivated plants”, one measures “trends in genetic diversity of farmed and domesticated animals”, two measure “trends in extinction risk and populations of wild relatives”, one measures “trends in protected area coverage of wild relatives (to be resolved)” and one measures “trends in development and implementation of strategies for minimizing genetic erosion and safeguarding genetic diversity” (CBD/COP/DEC/XIII/28, 2016). Seven of these nine indicators are still under development and therefore not yet available. Furthermore, no specific indicators have been identified yet that could measure “trends in genetic diversity of socio-economically as well as culturally valuable species” (fourth Target element) (ibid.).

In their fifth National Reports, few Parties reported on indicators related to Aichi Target 13. If such indicators were included, they “generally covered issues related to the condition of livestock breeds or to the number of gene bank/seed bank accessions. There are few indicators, in the national reports related to socio-economical or culturally valuable species or issues related to genetic erosion” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) conclude that none of the five elements of Aichi Target 13 are quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 13. The Target is, however, assignable to all actors dealing to a significant degree with one or more of the targeted organism groups. “Dealing with” may encompass activities from a wide spectrum, including administrative or practical activities, in particular from the agricultural sector. Consumers can also play an important role with respect to Target 13 when they influence production patterns through their choices.

5.13.2.3. Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs

Table 5.13 gives an overview over how Aichi Target 13 is linked with different policies at the national, European and global scale.

Table 5.13: Reflection of Aichi Target 13 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.4 (see BMUB, 2014, p. 37).
EU	The EU Biodiversity target 3 relates strongly to Target 13. It is entitled: „Target 3: Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity“ (European Commission, 2011) ⁹⁴ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.</p> <p><u>Missing elements:</u></p> <p>“Other socio-economically and culturally-important species are not included” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 13 could better support one or more SDGs:</u></p> <p>As cultivated plants and domesticated and farmed animals are a major source of food the loss of the genetic diversity of such species would endanger SDG goal 2 (to end hunger and achieve food security) as a whole. Without food security other SDGs like SDG 1 (no poverty) or SDG 16 (peace and justice) will not be achieved either. A CBD Target on maintenance of genetic diversity therefore is a central base for the 2030 agenda of the SDGs.</p>

5.13.2.4. Links to other conventions and further processes

As genetic diversity is a fundamental requirement of food security and modern agriculture is a major driver of the loss of such genetic diversity the links to FAO are very strong. Accordingly, several FAO

⁹⁴ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

strategies and plans deal with issues addressed in Aichi Target 13 and foresee close cooperation in the implementation of this and other Targets and FAO plans (see below). Furthermore, the UNCCD's strategic framework and the land degradation neutrality targets also contribute to Target 13 by tackling land degradation and biodiversity loss and thereby also improving living conditions and food security of affected populations (UNCCD, 2017).

The FAO's Commission on Genetic Resources for Food and Agriculture (CGRFA) negotiates and oversees global plans of action for implementing the International Treaty on Plant Genetic Resources for Food and Agriculture⁹⁵ adopted in 2001. In 2007, the commission identified four strategic priority areas: the mapping and monitoring of animal genetic resources, actions for sustainable use, recommendations for national policies and conservation as well as capacity building⁹⁶ (CGRFA/FAO, 2007). A second version of the "The State of the World's Animal Genetic Resources for Food and Agriculture" was published in 2015, indicating that the diversity of global genetic resources was still at risk, but also that 112 states were preparing or intended to prepare national strategies and action plans (FAO, 2015a, p. 6). FAO's "Domestic Animal Diversity Information System (DAD-IS)" was updated at the end of 2017 to provide data for SDG 2.5.

The CGRFA is following a strategic plan, currently for the time period 2014-2023, as well as a Multi-Year Programme of Work (MYPOW), which was last amended in 2013. With the "Voluntary guidelines to support the integration of genetic diversity into national climate change adaptation planning", CGRFA is addressing another driver for the loss of diversity (FAO, 2015b). A "The State of The World's Biodiversity for Food and Agriculture" report was scheduled for 2017 and currently postponed to 2018 (FAO, 2017b). The first state of the world's report on aquatic genetic resources was scheduled for the end of 2017 and is now expected for 2018. The report is expected to provide knowledge to support the implementation of Aichi Target 6, 7 and 13.

The Crop Trust, formally the Global Diversity Crop Trust, was established in 2004 by the global research-for-development organisation Biodiversity International⁹⁷ on behalf of the CGIAR global agricultural research partnership⁹⁸ and FAO. Its objective is to ensure long-term grants to safeguard collections of unique and valuable crop diversity held in gene banks around the world e.g. in the Svalbard Global Seed Vault⁹⁹. A project to collect, conserve and initiate the use of the wild relatives of crops started in 2011 (The Crop Trust, 2016).

Initiatives like the multi-country and multi-partner project Biodiversity for Food and Nutrition¹⁰⁰, coordinated by Biodiversity International and funded by GEF, have contributed to the identification and recognition of wild relatives. The project, which is running since 2012, has a focus on the identification and conservation of wild edible plants and traditional food in four countries (Brazil, Kenya, Sri Lanka and Turkey).

⁹⁵ <http://www.fao.org/plant-treaty/en/>

⁹⁶ <http://www.fao.org/docrep/010/a1404e/a1404e00.htm>

⁹⁷ <https://www.biodiversityinternational.org/>

⁹⁸ <https://www.cgiar.org/>

⁹⁹ <http://www.seedvault.no/>

¹⁰⁰ <http://www.b4fn.org/about-us/>

5.13.3. Recommended options and further suggestions for Aichi Target 13

5.13.3.1. Suggestion by ibn: Aichi Target 13 with modified timeline

Recommended option (ibn): Keep Target as it stands.

By **2025**, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Rationale:

Aichi Target 13 consists of several components and progress can only be claimed for a part of it. Seed banks and plant banks have been growing so that a larger part of the genetic diversity is at least documented and stored, but the wild relatives of cultivated plants and domesticated animals are still declining and strategies for minimizing the genetic erosion have not been fully developed and are far from implementation. Milestones could relate e.g. to certain species groups or to certain percentages of genetic varieties. Pledges could be done e.g. for certain regions or a group of countries as the wild relatives of cultivated plants often are restricted to comparatively small areas.

5.13.3.2. Suggestions by participants of the national expert workshop

Recommended option (participants): No particular wording was suggested.

General comments:

- Target 13 was not very intensely discussed by the break-out group.
- It was mentioned, that in-situ conservation should be addressed more clearly in the Target.
- One participant raised the question, to what extent species used for forestry are included in the Target and stated, that if not, they should be included or they could be highlighted or specifically addressed in a milestone.
- One participant raised the question, if a link to the Nagoya protocol could or should be included in the Target or in a milestone. Other participants said, that this issue is already covered in Target 16 and it could be counter-productive to mix these two issues and debates.
- The question was raised, if the issue of synthetic biology should be addressed in Target 13. One participant stated, synthetic biology should be better dealt with in the context of the Nagoya protocol e.g. as part of Target 16.

5.13.3.3. Suggestions by participants of the international expert workshop

Recommended option (participants): Keep Target as it stands.

By **2030**, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Explanatory comments:

Participants of the international expert workshop proposed to keep the Target as it stands with a 2030 timeline. The milestones proposed by ibn were largely supported (see below).

5.13.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **international** expert workshop are printed in bold. There was no time during the national expert workshop to discuss these options and milestones.

5.13.4.1. Options that could facilitate progress toward Aichi Target 13

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020¹⁰¹).
- With regard to commercially used species, highlight the responsibility of the private sector and the consumers.
- Additional efforts / resources are needed to ensure the diversity of wild relatives of cultivated plants and domesticated animals.

5.13.4.2. Suggested milestones

- By 2025, Parties have developed and ~~implemented~~**started implementing** roadmaps for minimizing genetic erosion and safeguarding their genetic diversity.
- By 2025, the numbers of **traditional** varieties that are used commercially in significant proportions have increased by ~~... per cent.~~
- By 2025, the share of consumers that value and request variation in food crops and bred animals has increased by ... per cent.
- By 2025, the share of wild relatives saved in gene banks and seed vaults has increased / has increased by ... per cent.

¹⁰¹ For the milestones, see the Technical Rationales for the Aichi Targets:
<https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see
<https://www.cbd.int/sp/actions.shtml>



5.14. Aichi Target 14

By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

5.14.1. Introduction

Aichi Target 14 is the most anthropocentric Target, as it gives a reason why certain ecosystems should be safeguarded: for human benefits. Such systems should be restored and safeguarded, whereby – depending on the local circumstances – restoring may be even more ambitious than halting further degradation. The Target is very broad and also calls for the consideration of specific needs of certain under-privileged parts of the human population.

5.14.1.1. Structural overview

Aichi Target 14 consists of two elements (GBO 4):

Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded ...

... taking into account the needs of women, indigenous and local communities, and the poor and vulnerable

The aspirational components are “restoration of ecosystems that provide essential services”, “safeguarding of ecosystems that provide essential services”, “restoration of ecosystems that contribute to health”, “safeguarding of ecosystems that contribute to health”, “restoration of ecosystems that contribute to livelihoods”, “safeguarding of ecosystems that contribute to livelihoods”, “restoration of ecosystems that contribute to well-being”, “safeguarding of ecosystems that contribute to well-being”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Overall, available evidence shows little sign of progress towards meeting this Target by the deadline of 2020, and in the case of services of particular importance to local and indigenous communities, women, the poor and vulnerable, trends appear to be moving in the wrong direction” (CBD Secretariat, 2014, p. 97).

Trend according to the IPBES ECA Assessment:

“Owing to biodiversity trends in freshwater, marine and terrestrial ecosystems, it is highly unlikely that Europe and Central Asia will fully contribute to achieving Target 14 (ecosystems and essential services safeguarded)” (IPBES/6/15/Add.4, 2018, p. 29).

5.14.2. Analysis

5.14.2.1. Links to previous CBD framework and to other Aichi Targets

There had been no equivalent to Aichi Target 14 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of ecosystem services and the call to protect the ecosystems that provide them into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 6, 7, 10 and 15 are strongly affected by progress toward Aichi Target 14, while Target 14 itself is particularly strongly affected by progress toward most other Targets (2, 3, 4, 5, 6, 7, 8, 9, 10 addressing underlying causes as well as direct drivers; 11 and 15 addressing protected areas, ecosystem resilience and restoration; 18, addressing indigenous and local knowledge; and 20, addressing the mobilization of financial resources).

5.14.2.2. *Smartness*

S (specific): Aichi Target 14 focuses specifically on such ecosystems that are “particularly important for human wellbeing because of the services they provide” (CBD Quick Guide for Target 14)¹⁰². It is, however, difficult to determine which ecosystems fall into this category. The degree to which ecosystems contribute to human wellbeing certainly differs, but a judgement on which ecosystem is more important than another very much depends on the services or benefits in focus, local and cultural circumstances and personal preferences. Furthermore, even uninhabited ecosystems like high mountains can provide essential services (e.g. mountain ecosystems providing water for foothills and lowlands). Thus, the scope of Target 14 is potentially very broad and the call for taking into account the needs of women, ILKs and the poor and vulnerable is even further widening its scope.

Butchart et al. (2016) mention that Aichi Target 14 contains an ambiguous term, i.e. “essential” as a qualifier for “services”. They regard the clause “including services related to water, and contribute to health, livelihoods, and well-being” as a redundancy (being encompassed by “essential services”). Furthermore, they criticise that the Target contains an unnecessary complexity, i.e. “Taking into account the needs of women, indigenous and local communities, and the poor and vulnerable”.

M (measurable): To date, nine specific Target-14-indicators have been recognized by the CBD, of which three measure “trends in extinction risk and populations of species that provide essential services”, four measure “trends in benefits from ecosystem services” and two measure “trends in the degree to which ecosystem services provides for the needs of women, indigenous and local communities, and the poor and vulnerable” (CBD/COP/DEC/XIII/28, 2016). Two of these nine indicators are still under development and therefore not yet available. Furthermore, no specific indicators have been identified yet that could measure “trends in safeguarded ecosystems that provide essential services” (part first Target element) and “trends in restoration of ecosystems that provide essential services” (part of first Target element) (ibid.).

In their fifth National Reports, “Very few Parties included indicators directly related to this Target in their national report. However many reports included indicators that were relevant to a certain extent. These included indicators related to the trends in pollination insects, the designation of key habitats, the restoration of degraded habitats or the conservation of critical habitats. Many of these indicators were relevant to other Aichi Biodiversity Targets” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that both elements of Aichi Target 14 are not quantifiable.

A (assignable): A first step toward the implementation of Aichi Target 14 is the mapping and valuation of ecosystem services. As the CBD Quick Guide to Target 14 specifies, “resulting information should be integrated into development plans”. The responsibility for these tasks lies largely with authorities, whereby the civil society can make significant contributions: in particular,

¹⁰² <https://www.cbd.int/doc/strategic-plan/targets/T14-quick-guide-en.pdf>

the research community by generating and providing the necessary information and private land-owners by commissioning or financing respective efforts and measures to conserve areas of particular importance.

5.14.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.14 gives an overview over how Aichi Target 14 is linked with different policies at the national, European and global scale.

Table 5.14: Reflection of Aichi Target 14 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	No specific corresponding targets can be found in the German NBSAP, Target 14 is addressed “in general” (see BMUB, 2014, p. 38).
EU	The EU Biodiversity target 2 relates strongly to Aichi Target 14. It is entitled: „Maintain and restore ecosystems and their services“ (European Commission, 2011) ¹⁰³ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 1. End poverty in all its forms everywhere.</p> <p>1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.</p> <p>2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and nonfarm employment.</p> <p>2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.</p> <p>Goal 5. Achieve gender equality and empower all women and girls.</p> <p>5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.</p> <p>Goal 6. Ensure availability and sustainable management of water and sanitation for all.</p> <p>6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.</p> <p>Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</p> <p>8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p>

¹⁰³ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p> <p>15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.</p> <p>15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.</p> <p><u>Missing elements:</u></p> <p>“Consideration of indigenous peoples and local communities focuses on their economic livelihood. Ecosystem function is tangentially covered by economic considerations” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 14 could better support one or more SDGs:</u></p> <p>If a new CBD Target comparable to Aichi Target 14 would be formulated, potential milestones could refer to the timelines of the above mentioned SDG targets, some of which would also have to be paralleled to the new CBD Target.</p>
--	--

5.14.2.4. Links to other conventions and further processes

Due to the broadness of Aichi Target 14 it relates to nearly all MEAs, including the Ramsar Convention on wetlands (which provide essential services), the UNFCCC under which e.g. reforestation is a measure to counteract climate change (and thereby potentially restore forest ecosystems), the UNCCD that tries to combat the loss of dryland habitats (which give home to many poor and vulnerable), as well as any agreements on certain parts of oceans which try to safeguard the livelihoods of fishermen. A strong similar future CBD Target, including milestones or definitions, could therefore have a guiding function for many other agreements and their programmes.

The CBD cooperates with the World Health Organisation (WHO) on the biodiversity-health linkage, e.g. the CBD decided to recognize the “One Health” approach and to develop guidance to include biodiversity and ecosystem management in the design and implementation of related strategies, plans and policies (CBD/SBSTTA/21/4, 2017). CBD and WHO published a State of Knowledge Review on “Biodiversity and Human Health” in 2015 (WHO and CBD, 2015). An Interagency Liaison Group on Biodiversity and Health including the WHO, CGIAR, FAO, Future Earth, IUCN, OIE, UN Environment, UNFCCC, UNISDR, United Nations University met the same year for the first time. CBD COP-13 recognized the key messages of the State of Knowledge Review and invited parties and governments to make use of its findings e.g. to address the common drivers of biodiversity loss and ecosystem degradation and ill health or to include the role of terrestrial and inland water ecosystems in supply and sanitation policies and programmes (CBD/COP/DEC/XIII/6, 2016).

The Framework for Disaster Risk Reduction 2015-2030 of the UNISDR is recommending to strengthen the sustainable management ecosystems and natural resources on national and local level as an investment for disaster risk reduction for resilience (UNISDR, 2015).

Furthermore, the IPBES Regional Assessments are expected to present the latest knowledge on nature’s contribution to people and human well-being.

5.14.3. Recommended options and further suggestions for Aichi Target 14

5.14.3.1. *Suggestion by ibn: Aichi Target 14 with modified timeline (and without reference to the under-privileged)*

Recommended option (ibn): Keep Target nearly as it stands.

By **2030**, **all** ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are **fully** restored and safeguarded, ~~taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.~~

Rationale:

It is undoubted that women, indigenous peoples and local communities (IPLCs) and the poor and vulnerable have specific needs that should be taken into account. But this is not only true for Aichi Target 14 and could be added to other Targets as well (e.g. in Target 7, that aims at sustainability of agriculture which should also take into account specific needs, or in Target 19 which talks about sharing of knowledge). Instead of mentioning this necessity in a single Target, a preamble text could state that the implementation of the whole Strategic Plan/biodiversity framework has to take into account such specific needs of certain groups.

Moreover, the formulation 'restored and safeguarded' is not very specific and does not define any concrete levels of ambition. Therefore, milestones, which refer to certain levels of restoration or criteria for safeguarding, could help to foster implementation of this Target.

5.14.3.2. *Suggestions by participants of the national expert workshop*

Recommended option (participants): Keep but modify Target 14.

By **2030**, ecosystems that provide essential services, including services related to water, **including a just access to water and other natural ecosystem services that contribute** ~~and contribute~~ to health, livelihoods and well-being, **and Disaster Risk Reduction**, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the **(poor and)** vulnerable.

Explanatory comments:

- Healthy and intact ecosystems are a precondition to provide ecosystem services for humans (see element 2 of the Target).
- The question of access to ecosystem services is also a question of environmental justice and the access can be limited through the monetisation of such services.
- It was proposed to switch the order of Target 14 and 15, since 15 should include and explain necessary definitions and the current Target 14 could address social issues such as health and access to ecosystem services.
- It was common ground, that it is important to name and address affected groups and to keep this element of the Target. It was suggested, that the “poor” are included in the “vulnerable” and would not need to be addressed in particular. Other participants said, that the poor should be addressed as individual group, since they are specifically affected by the loss of ecosystem services.
- It was questioned, if and how rural communities could be addressed and highlighted in the Target or in a milestone.

- A milestone should be formulated that addresses the rights to ecosystem services and the intrinsic value of nature and that takes into account the discussions currently taking place in IPBES expert groups on that issues.
- The term „essential services“ is too broad, key services should be identified to clarify which services should be mapped (Annex 1 of the CBD could be extended). A milestone should address the need for mapping (the latest Mapping and Assessment of Ecosystems and their Services report (MAES) for the European Union was just published and could be used as case/best practice for such an exercise, see Maes et al., 2018). The contribution of ecosystem services to climate change mitigation and Disaster Risk Reduction (DDR) should be addressed in the Target (UNISDR, 2015).
- The question was raised, how the concept of resilience could be included in the Target or a sub-Target. However, it was not discussed in detail how that could be done.

5.14.3.3. *Suggestions by participants of the international expert workshop*

Recommended option (participants): Keep Target as it stands.

By **2030**, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Explanatory comments:

The participants of the international expert workshop preferred to keep Aichi Target 14 as it stands with a 2030 timeline. They argued that the insertion of the words 'all' (ecosystems) and 'fully' (restored) lead to a level of ambition that cannot be met because it would mean to undo all changes to ecosystems done so far.

The participants also argued in favour of keeping the mentioning of vulnerable groups in the Target text as this Target has a specifically strong link to the needs of such groups. Nevertheless, mentioning the needs of such groups in an overarching manner or chapeau text was also supported but without deleting the phrase in the text of Target 14.

The discussed option to insert 'just access to water' was seen as going beyond the mandate of the CBD and should therefore not be proposed.

5.14.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **two expert workshops** are printed in bold.

5.14.4.1. *Options that could facilitate progress toward Aichi Target 14*

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020¹⁰⁴).

¹⁰⁴ For the milestones, see the Technical Rationales for the Aichi Targets: <https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see <https://www.cbd.int/sp/actions.shtml>

5.14.4.2. *Suggested milestones*

- By 2022, Parties have mapped their ecosystems, identified those with impaired capacities to provide essential services and prioritized them for restoration efforts.

Remark and suggestion by participants of the national expert workshop: **This milestone should be more specific, e.g. what are key ecosystem services for different ecosystems / habitats that should be mapped. The CBD Annex for species and habitats could be used and modified to support the Target (CBD, 1992, Annex 1).**

- *Suggestion by participants of the international expert workshop:* By **2025**, Parties have mapped their ecosystems **for informing decision-making, with input provided by women, indigenous and local communities, and the poor and vulnerable** identifying those with impaired capacities to provide essential services. The CBD Annex for species and habitats could be used and modified to support the target (CBD 1992, Annex I. Identification and Monitoring). – *Rationale: participation of indigenous and local communities (etc.) needs to be explicitly anchored.*

By 2025, ... per cent of ecosystems with impaired capacities to provide essential services have been fully restored.

Remark by participants of the national expert workshop: **This milestone is not specific enough: what does “capacities to provide essential services have been fully restored” mean? What does “fully” restored mean? What is the reference point? Also: “fully” remains unclear.**

- *Suggestion by participants of the national expert workshop:* By, the Convention is taking into consideration the results of the IPBES Assessment of Diverse Conceptualization of Values of Biodiversity and Nature’s Benefits to People (IPBES/6/INF/9, 2018) for the implementation of Target 14.
- *Modification by participants of the international expert workshop:* By **2025**, Parties **have prioritized their restoration efforts and set percentage goals for restoring ecosystems with impaired capacities to provide essential services, taking into consideration the results of the IPBES assessment of diverse conceptualization of values of biodiversity and nature’s benefits to people (IPBES deliverable 3 (d) for the implementation of Target 14.** – *Rationale: Level of implementation varies nationally; retain flexibility.*



5.15. Aichi Target 15

By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

5.15.1. Introduction

Aichi Target 15 addresses links between biodiversity and climate change by highlighting the contribution of biodiversity to carbon stocks and calling for restoration of degraded ecosystems as a contribution to climate change mitigation and adaptation. It acknowledges that the degradation of ecosystems can on the one hand contribute to climate change (e.g. deforestation) and on the other hand increase the vulnerability of these ecosystems to climate change effects or other disturbances. The Target therefore demands to conserve ecosystems and to restore a substantial amount of those that have been degraded.

5.15.1.1. Structural overview

Aichi Target 15 consists of two elements (GBO 4):

Ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced through conservation and restoration
At least 15 per cent of degraded ecosystems are restored, contributing to climate change mitigation and adaptation, and to combating desertification

The aspirational components are “enhancement of ecosystem resilience”, “enhancement of the contribution of biodiversity to carbon stocks”, and “restoration of at least 15 per cent of degraded ecosystems”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“The combined initiatives currently under way or planned may put us on track to restore 15% of degraded ecosystems, but it is hard to assess and we cannot be confident that this part of the Target will be met by 2020 on our current trajectory. Despite restoration and conservation efforts, there is still a net loss of forests, a major global carbon stock, suggesting no overall progress on this component of the Target” (CBD Secretariat, 2014, p. 101).

Trend according to the IPBES ECA Assessment:

Aichi Target 15 was not specifically addressed in the Summary for Policy Makers of the IPBES ECA Assessment (IPBES/6/15/Add.4, 2018, p. 29).

5.15.2. Analysis

5.15.2.1. Links to previous CBD framework and to other Aichi Targets

There had been no equivalent to Aichi Target 15 in the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002). Thus, the uptake of a call for the enhancement of ecosystem resilience and the restoration of a distinct amount of degraded ecosystems into the Strategic Plan was a real innovation in 2010.

Marques et al. (2014) conclude that Aichi Targets 5, 7 and 14 are strongly affected by progress toward Target 15, while Target 15 itself is particularly strongly affected by progress toward Targets 2, 3 and 4 (addressing underlying causes), 5 (addressing habitat loss), 7 (addressing agriculture, aquaculture and forestry), 14 (addressing resilience and restoration), and 20 (addressing the mobilization of financial resources).

5.15.2.2. *Smartness*

S (specific): The call to restore at least 15% of degraded ecosystems is ambitious and in providing a particular number, Aichi Target 15 is quantitative and specific. However, the Target does not specify what kind of ecosystems should be restored. Efforts could concentrate on those ecosystems most in decline (like in Target 12) or those of particular importance to biodiversity (as in Target 11) or those that provide the most essential services (like in Target 14). Furthermore, Target 15 contains vague vocabulary that decreases its specificity. It remains unclear whether resilience relates to pressures caused by climate change or to any other pressure as well.

Butchart et al. (2016) identify three ambiguous terms used in Target 15: “enhanced”, “degraded ecosystems” and “restoration”.

M (measurable): To date, two specific Target-15-indicators have been recognized by the CBD, of which both measure “trends in carbon stocks within ecosystems” (CBD/COP/DEC/XIII/28, 2016). These two indicators are both still under development and therefore not yet available. Furthermore, no specific indicators have been identified yet that could measure “trends in ecosystem resilience” (part of first Target element) (ibid.).

In their fifth National Reports, few Parties included indicators directly measured progress toward Target 15. Relevant information that was provided was either “related to the area restored” or “to carbon stocks” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that the first element of Aichi Target 15 is not quantifiable whereas the second element is (by a numeric variable).

A (assignable): No actor is explicitly addressed in Aichi Target 15. However, as the Target mentions “conservation and restoration” as means to achieve it, it is clear that all actors involved in or affected by respective efforts have the potential to contribute to progress toward the Target. As laid out e.g. in the sections “Links to other conventions and further processes” above, various regulative frameworks, programmes, actions and actors play an important role, including those related to MEAS, national and sub-national regulations, private-public partnerships or entirely private initiatives.

5.15.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.15 gives an overview over how Aichi Target 15 is linked with different policies at the national, European and global scale.

Table 5.15: Reflection of Aichi Target 15 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.2.1, chapter B 1.2.5 and chapter B 3.2 (see BMUB, 2014, p. 38).
----------------	---

EU	The EU Biodiversity target 2 relates strongly to Aichi Target 15. It is entitled: „Maintain and restore ecosystems and their services“ (European Commission, 2011) ¹⁰⁵ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 1. End poverty in all its forms everywhere.</p> <p>1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.</p> <p>Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.</p> <p>11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels.</p> <p>Goal 13. Take urgent action to combat climate change and its impacts.</p> <p>13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p> <p>13.2 Integrate climate change measures into national policies, strategies and planning.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.1 By 2020, ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.</p> <p>15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.</p> <p>15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.</p> <p><u>Missing elements:</u></p> <p>“The role of ecosystems as carbon sinks. The 15% target is not given” (Schultz et al., 2016).</p> <p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 15 refers to 2020, while the SDG target 15.3 aims for 2030. However, the scope of the targets is different and therefore they are potentially compatible” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 15 could better support one or more SDGs:</u></p> <p>Several SDG targets have links to Aichi Target 15, as they speak of resilience (1.5, 11.b, 13.1, 14.2), climate change (13.2), or restoration (15.1, 15.3). These targets differ in their timelines, including 2020, 2030 or none at all. A more concrete CBD Target could therefore relate to these timelines in an attempt to parallel efforts.</p>

5.15.2.4. Links to other conventions and further processes

Aichi Target 15 explicitly mentions climate change mitigation and combating desertification, which provides clear linkages to UNFCCC and UNCCD. Other agreements, e.g. the Ramsar Convention on

¹⁰⁵ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

wetlands, also include restoration efforts into their programmes and a CBD Target could have a guiding function here.

The Paris Agreement of the UNFCCC is addressing the conservation of carbon stocks in article 5 and the REDD+ mechanism is aiming to support projects that protect or restore forests as carbon sinks: “Article 5:

1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.
2. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches” (UNFCCC, 2015, p. 4).

According to Miles et al. (2013), there are many synergies between REDD+ activities and the Aichi Targets. However, the implementation of REDD+ projects can also lead to trade-offs and several risks for biodiversity conservation, that need to be considered (Table 5.15b).

Table 5.15b: Key synergies between the five Aichi Targets considered here and the UNFCCC’s REDD+ Decisions. Promoting synergies in international forest conservation efforts. Copied from: Miles et al. (2013)

Aichi Biodiversity Targets (CBD Decision X/2)	REDD+ elements (UNFCCC Decision 1/CP.16) (activities, guidance and safeguards)
5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced	<i>Reducing emissions from deforestation</i> <i>Reducing emissions from forest degradation</i> <i>Conservation of forest carbon stocks</i>
7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity	<i>Sustainable management of forests</i> REDD+ actions are to be consistent with conservation of natural forests and biological diversity and are to incentivize the protection and conservation of natural forests and their ecosystem services
11: By 2020, at least 17% of terrestrial areas are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas	<i>Conservation of forest carbon stocks</i> <u>REDD+ activities should be consistent with the objective of environmental integrity and take into account the multiple functions of forests and other ecosystems</u>
14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	<i>Conservation of forest carbon stocks</i> <i>Enhancement of forest carbon stocks</i> REDD+ activities should promote and support full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities
15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	<i>Reducing emissions from deforestation</i> <i>Reducing emissions from forest degradation</i> <i>Conservation of forest carbon stocks</i> <i>Sustainable management of forests</i> <i>Enhancement of forest carbon stocks</i>

The United Nations Convention to Combat Desertification (UNCCD) is aiming to maintain and restore land and soil productivity, and to mitigate the effects of droughts since its establishment in 1994. Its latest 2018–2030 Strategic Framework addresses the restoration of degraded ecosystems in line with SDG 15.3 in its strategic objective 1, including indicators for trends in land cover, land productivity and carbon stocks in and above ground. A key element to reach the objective are the national voluntary land degradation neutrality (LDN) targets that 115 countries have committed to in February 2018 (UNCCD, 2017). The LDN concept is a “dual-pronged approach of measures to avoid or reduce degradation of land, combined with measures to reverse past degradation” aiming for “a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems” (UNCCD, 2016).

Elements of Aichi Target 15 are also reflected in United Nations strategic plan for forests 2017–2030, developed by the UN Forum on Forests (UNFF) and adopted by the UN General Assembly in 2017 (ECOSOC, 2017b).

The Ramsar Convention is referring to strong synergies between Aichi Target 15 and activities of target 12 of Ramsar’s 4th strategic plan, “Restoration is in progress in degraded wetlands, with priority to wetlands that are relevant for biodiversity conservation, disaster risk reduction, livelihoods and/or climate change mitigation and adaptation” (Ramsar Convention, 2015).

CBD, UNFCCC and UNISDR have developed new voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction, for consideration by the next SBSTTA meeting in 2018. To highlight the importance of ecosystem resilience for climate change adaptation in Target 15 will help to strengthen the link with UNFCCC and the UNISDR processes (CBD/SBSTTA/22/8, 2018).

5.15.3. Recommended options and further suggestions for Aichi Target 15

5.15.3.1. Suggestion by ibn: clarify terms, separate Target elements

Recommended option (ibn): Keep but modify Target 15.

By **2030**, ecosystem resilience ***against multiple anthropogenic pressures, including climate change, and the contribution of biodiversity to carbon stocks*** has been enhanced, through ~~conservation and~~ restoration, including restoration of at least ~~15~~**20** per cent of degraded ecosystems, ***and the contribution of biodiversity to carbon stocks has been enhanced, through conservation***, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Rationale:

Aichi Target 15 is on the one hand very specific as it mentions the margin of at least 15 per cent of degraded ecosystems to be restored. On the other hand, “degradation” is not defined and it is a serious challenge to identify baselines against which a “level of degradation or restoration” may be determined. Especially in ecosystems that have been used by humans for centuries, several potential baselines are plausible, e.g. the (presumed) pre-human condition, a certain degree of human influence or the loss or gain of some ecological function.

Furthermore, the Target gives no guidance on the question which 15 per cent of degraded ecosystems should be restored, options could include the most valuable share, the easiest to restore,

the rarest, or the most threatened. Similarly, more specification is needed with regard to the term “resilience”: against which pressures should the ecosystems be resilient, which measures could effectively enhance it?

5.15.3.2. Suggestions by participants of the national expert workshop

Recommended option (participants): Keep but modify Target 15.
--

By **2030**, ecosystem resilience and the contribution of biodiversity to carbon stocks **and(carbon sinks)** **[include ecological and social safeguards]** has been enhanced, through conservation and restoration, **including restoration and rehabilitation as defined in IPBES Assessment on Land Degradation and Restoration**, including restoration ~~of at least 15 per cent~~ **of at least 350 mha** of degraded ecosystems **[see New York Declaration on Forests]**, thereby contributing to climate change mitigation and adaptation and to combating **land degradation and** desertification.

Explanatory comments:

- The percentage within the Target (at least 15 per cent of degraded ecosystems) is not clear and it is difficult to implement. Alternatively, the 350 mha reforestation Target of the Bonn Challenge/UN Declaration on Forests could be included¹⁰⁶.
- The used terms and definitions should be in line with the thematic IPBES Assessment on Land Degradation and Restoration. IPBES definitions could be included e.g. “avoid, reduce and reverse land degradation” (IPBES/6/15/Add.5, 2018, p. 3).
- There should be one Target element for restoration and one Target element for rehabilitation to be able to have an honest debate about these issues. The difference of the terms “restoration” and “rehabilitation” should be clear. Rehabilitation is a step towards ecosystem restoration, “restoration” is defined as any intentional activity that initiates or accelerates the recovery of an ecosystem from a degraded state. “Rehabilitation” is used to refer to restoration activities that may fall short of fully restoring the biotic community to its pre-degradation state” (IPBES/6/15/Add.5, 2018, p. 7-8).

5.15.3.3. Suggestions by participants of the international expert workshop

Participants of the international expert workshop supported rather the option suggested by ibn (see above) than the one suggested by the national experts, which was seen as too technical and hard to communicate.

5.15.4. Further considerations

Below, considerations by ibn are printed in plain font (these were provided to the experts at the two workshops as a basis for the discussion), while suggestions that were derived by participants of the **two expert workshops**.

5.15.4.1. Options that could facilitate progress toward Aichi Target 15

- Underpin Target with quantitative milestones (revisit also the milestones and actions provided by the CBD for the period 2011–2020¹⁰⁷).

¹⁰⁶ “Restore 150 million hectares of degraded landscapes and forestlands by 2020 and significantly increase the rate of global restoration thereafter, which would restore at least an additional 200 million hectares by 2030.” UN-NYDF (2014): New York Declaration on Forests in FORESTS - Action Statements and Action Plans - UN Climate Summit 2014, New York.

- These milestones could address particular types of ecosystems.
- Such milestones would also allow for concrete pledges, e.g. for the restoration of a certain ecosystem type in a given region (like e.g. the coral reefs in the Caribbean, or the bogs in Western Europe as identified carbon sinks, etc.).
- Give guidance on which 20 per cent of degraded ecosystem should be given priority when taking restoration measures.
- Give guidance on the interpretation of “resilience” (see explanatory comments above), whether it should be primarily related to climate change effects and how it may be enhanced by restoration efforts.
- **The three indicators for SDG 15.3 should be considered for Target 15.**
- **The time line of the Target should go beyond 2030 and it should be more ambitious. SDG 15.3 includes the goal element "to strive to achieve a land degradation-neutral world". A new CBD Target should include this goal, but also strive to maintain a degradation-neutral world. An ambitious addition to the current Target text could therefore be "....strive to achieve and maintain a land degradation-neutral world.**
- **The question was raised, if carbon sinks should be addressed in particular, to make sure that the contributions to climate change mitigation are more prominent in the Targets and to have clear link to the UNFCCC and its terms. The term carbon sinks has a positive connotation in the climate change debates. However, other participants said, that carbon sinks are already included in the term carbon stocks. It was pointed out that one should be careful, since there could be a risk to mix the CBD process and goals too much with the climate process and that the mitigation aspect could be seen as more important than the role of biodiversity.**
- **The role of ecosystems as carbon stocks should be better explained. How do they contribute to reach the 1.5 degrees target of the UNFCCC Paris Agreement? What are the limits from a biodiversity perspective? Which ecological and social aspects should be considered?**
- **Social aspects such as displacement and land tenure should be reflected in the Target or milestones.**
- **Establish a link between rehabilitation and Aichi Target 7 (sustainable agriculture, forestry, aquaculture) (it was not clarified by the group how this could be done).**

5.15.4.2. Suggested milestones

- *Suggestion by participants of the international expert workshop:* **With respect to the milestones suggested below, the respective percentages would have to be based on expert knowledge.**
- By 2025, ... per cent of degraded savanna ecosystems have been restored and their resilience to climate change effects, invasive species and other disturbances has been enhanced.
Suggestion by participants of the international expert workshop: **Mention 'dryland ecosystems' instead of 'savannas' to be more general.**
- By 2025, ... per cent of degraded forest ecosystems have been restored and their resilience to climate change effects, invasive species and other disturbances has been enhanced.

¹⁰⁷ For the milestones, see the Technical Rationales for the Aichi Targets:
<https://www.cbd.int/sp/targets/rationale/default.shtml>, for the proposed actions, see
<https://www.cbd.int/sp/actions.shtml>

- By 2025, ... per cent of degraded wetland ecosystems **(including peatland ecosystems)** have been restored and their resilience to climate change effects, invasive species and other disturbances has been enhanced.
- By 2025, ... per cent of degraded agro-ecosystems have been restored and their resilience to climate change effects, invasive species and other disturbances has been enhanced.
- By 2025, ... per cent of degraded marine ecosystems have been restored and their resilience to climate change effects, invasive species and other disturbances has been enhanced.
- By 2025, ecosystem-based approaches are included in all relevant climate change adaptation measures to enhance ecosystem resilience¹⁰⁸.
- *Suggestion by participants of the national expert workshop: A milestone with a specific focus on wetlands should be included e.g.: By 2025, ... per cent of degraded wetland ecosystems (including degraded peatlands [see Ramsar Convention]) have been restored and their resilience [...] has been enhanced.*

5.15.4.3. *Other issues*

- CBD, UNFCCC and UNISDR have developed new voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction, for consideration by SBSTTA: the last milestone suggested above (by ibn) is inspired by these guidelines.

¹⁰⁸ <https://www.cbd.int/sbstta/sbstta-22-sbi-2/EbA-Eco-DRR-Guidelines-en.pdf>



5.16. Aichi Target 16

By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

5.16.1. Note

Aichi Target 16 was reached in 2014 when the Nagoya Protocol entered into force¹⁰⁹. Aichi Target 16 therefore clearly needs to be either updated in 2020, or removed from the future strategic framework of the CBD. Whether targets related to the implementation of the Nagoya Protocol will be included into the post-2020 CBD framework is an important fundamental structural question that is still under discussion among the CBD member states. However, this question was beyond the scope of the project of which this report resulted from. A detailed analysis of Aichi Target 16 is therefore missing here.

¹⁰⁹ <https://www.cbd.int/abs/>



5.17. Aichi Target 17

By 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

5.17.1. Introduction

Aichi Target 17 is a procedural Target and needs to be put in the historic context of the negotiations in 2010: On the one hand, the obligation to develop National Biodiversity Strategies and Action Plans (NBSAPs) had already existed and many Parties had followed it, whereas on the other hand, the CBD formulated a detailed and specific Strategic Plan for the first time. Therefore, it was necessary to have a Target that pointed at the necessity to transform the global Targets of the newly agreed framework into national policy instruments to allow implementation. The timeline for this transformation process was set to 2015 and the foreseen policy instruments were the NBSAPs. The implementation of such NBSAPs was then regarded as an ongoing process, which was expected to have at least commenced by 2015. In spring 2018, 190 of 196 CBD Parties (97%) had developed NBSAPs (see also below). Out of these, 155 NBSAPs (82 % of 190) were submitted after CBD COP-10 and the adoption of the Aichi Targets¹¹⁰. Parties are also requested to report on the progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020 on a voluntary basis in national reports. At CBD COP-12, it was decided to use an online reporting tool for the upcoming sixth national reports due by 31 December 2018. The new reporting tool should make national progress more comparable on a global level and the results of the sixth national reports will be used for the preparation of the fifth edition of the Global Biodiversity Outlook (GBO-5) (CBD CHM, 2018).

5.17.1.1. Structural overview

Aichi Target 17 consists of three elements (GBO 4):

Submission of NBSAPs to Secretariat by (end of) 2015
NBSAPs adopted as effective policy instrument
NBSAPs are being implemented

The aspirational components are “submission of NBSAPs”, “adoption of NBSAPs”, “effective NBSAPs” and “implementation of NBSAPs”.

Trend according to the Global Environment Outlook 4 (GBO 4):

In 2014, the CBD Secretariat concluded that “about 90%” of the Parties to the Convention “are expected to have completed their NBSAP [...] by the end of 2015” (CBD Secretariat, 2014, p. 111). The first element of the Target is, therefore, expected to be largely met. However, the “degree to which countries are implementing their updated strategies and action plans is [also] variable, suggesting that, while progress can be reported on these components of the Target, they will not be achieved by 2015” (ibid.).

¹¹⁰ <http://www.cbd.int/nbsap/>

Trend according to the IPBES ECA Assessment:

“The Aichi Biodiversity Targets have been translated into national-level targets in all but 13 countries in the region. This suggests progress towards Target 17 (national biodiversity strategies and action plans adopted as policy instruments)” (IPBES/6/15/Add.4, 2018p. 29).

5.17.2. Analysis

5.17.2.1. *Links to previous CBD framework and to other Aichi Targets*

Aichi Target 17 corresponds to “Goal 3” of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): “National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.” This goal was underpinned by subgoal 3.1: “Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.” This shows that there is already a long tradition to regard the NBSAPs as the main implementation instrument that is demanded by the CBD from the member states (Article 6 of the Convention). Thus, with respect to the NBSAPs, the strategic plans of both considered periods (2002-2010 and 2010-2020) are similar. While Target 17 of the current Strategic Plan does not explicitly mention that the NBSAPs should finally result in the achievement of the aims of the CBD, the pre-Aichi Goal 3 highlighted the obligation of the member states to ensure that by implementing the NBSAPs within their territories they make “a significant contribution towards the global biodiversity agenda”.

Marques et al. (2014) conclude that Aichi Targets 1, 2, 5, 11 and 20 are strongly affected by progress toward Target 17, while Target 17 itself is particularly strongly affected by progress toward Target 2 (addressing the integration of biodiversity values into strategies, planning processes and national accounting), and Target 20 (the mobilization of financial resources).

5.17.2.2. *Smartness*

S (specific): The first element of Aichi Target 17 is very specific and measurable as it calls for one particular action by each CBD member state: to submit a particular document, i.e. an NBSAP, to the CBD Secretariat. However, as Butchart et al. (2016) point out, there is an ambiguity within the second Target element: whether an NBSAP may be characterized as “effective” needs to be judged on some criteria and evidence – which are not further specified by the Target. Finally, the specificity of the third Target element is also difficult to determine, as the word “implemented” is clear on the one hand (actions are carried out on the ground) – on the other hand it may mean very different processes in different contexts.

M (measurable): Similar to their specificity (see above), the measurability of the different elements of Aichi Target 17 varies: While progress toward the first Target element can be measured very accurately, trends in the second and third Target elements are subject to interpretations and therefore much more difficult to assess. Nevertheless, Butchart et al. (2016) regard all three elements of Target 17 as quantifiable (by binary variables).

To date, two specific Target-17-indicators have been recognized by the CBD, both measure “trends in development, adoption and implementation of national biodiversity strategies and action plans, as policy instruments” (CBD/COP/DEC/XIII/28, 2016). One of these two indicators is still under development and therefore not yet available (ibid.).

In their fifth National Reports, “few Parties used indicators to directly assess progress towards this Target. The most common indicators were those examining the number of completed or initiated activities” (CBD/SBSTTA/20/INF/34, 2016).

A (assignable): The primary addressees of Aichi Target 17 are clearly national governments as they are responsible for the actions needed to advance the first and second Target element (submission and adoption of NBSAP). For the third element of Target 17 (implementation), the national governments are but one of several responsible actors. Depending on the content of the respective NBSAP, its scope and ambition, various state- and non-state actors across many different sectors may play an important role for its implementation (e.g. authorities, NGOs, educational system, business, etc.).

5.17.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.17 gives an overview over how Aichi Target 17 is linked with different policies at the national, European and global scale.

Table 5.17: Reflection of Aichi Target 17 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	No specific corresponding targets can be found in the German NBSAP, Aichi Target 17 is addressed by the NBSAP “as a whole” (see BMUB, 2014, p. 39).
EU	The EU Biodiversity target 6 relates in part to Aichi Target 17. It is entitled: „Help avert global biodiversity loss“ (European Commission, 2011) ¹¹¹ .
SDG framework	<p>Related targets can be found in following SDGs and SDG sub-targets (CBD/SBSTTA/21/2/Add.1, 2017):</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.</p> <p><u>Missing elements:</u></p> <p>“Specific biodiversity planning” (Schultz et al., 2016).</p> <p>“The absence of a specific mention of national biodiversity strategies and actions plans in the 2030 Agenda is not surprising given its broad scope. However, the general issue of the integration of biodiversity into national plans is well covered in Sustainable Development Goal target 15.9, which closely reflects the wording of Aichi Biodiversity Target 2” (CBD/SBSTTA/21/2/Add.1, 2017, p. 2).</p> <p><u>Considerations about how (a modified) Target 17 could better support one or more SDGs:</u></p> <p>As Aichi Target 17 explicitly aims at a certain policy instrument within the CBD itself it does not directly relate (CBD/SBSTTA/21/2/Add.1, 2017) to the SDGs. Nevertheless, all SDGs need strategies and plans for national implementation.</p>

5.17.2.4. *Links to other conventions and further processes*

Depending on the content of NBSAPs they might relate to many different MEAs. The links and interdependencies between climate change and biodiversity have been shown in many reports and have been recognised by CBD and UNFCCC, both conventions therefore decided to cooperate (e.g.

¹¹¹ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

CBD/COP/DEC/XII/3, 2014). The CBD Secretariat published a report at CBD COP-12 addressing these links and aiming “... to assist national focal points of the CBD to collaborate with their UNFCCC counterparts to strengthen synergies between the conservation and sustainable use of biodiversity and climate change adaptation at the national level through NAP [National Adaptation Plans] and NBSAP design, review and implementation” (CBD/COP/12/INF/29, 2014). One of the main recommendations contained in this document suggests applying the ecosystem-based approaches for adaptation to climate change. Reasons to consider synergies between NAPs and NBSAPs are “meeting international obligations”, “reducing vulnerability to the impacts of climate change by building adaptive capacity and resilience through biodiversity conservation”, and “facilitating the integration of climate change adaptation concerns into biodiversity policies, programmes and activities” (ibid.). Linking NBSAP and NAP would further help use resources more efficiently and to avoid conflicting policies and incentives. Cross-sectoral integration of climate change adaptation and the conservation of biodiversity are common objectives of the NAPs (UNFCCC/CP/2011/9/Add.1, 2012, p. 80) and NBSAPs (CBD, 1992, Article 6b). The need for stronger cooperation and collaboration between the implementation processes of UNFCCC and CBD was also reiterated by scientists in the “The Lima Declaration on Biodiversity and Climate Change” after the release of the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2014 (CBD Secretariat, 2017a).

There are also clear links between the national implementation of the UNCCD and the CBD. Both conventions have launched a joint work programme on the biological diversity of dry and sub-humid lands in 2004, aiming for close cooperation on all levels. CBD COP-10 urged its Parties to “...integrate issues related to dry and sub-humid lands into relevant national strategies, plans and programmes, in particular, revised national biodiversity strategies and action plans, national action programmes to combat desertification, and national adaptation programmes of action with a view to improving and harmonizing implementation where possible, with the full and effective participation of indigenous and local communities” (CBD/COP/DEC/X/35, 2010). Since 2015, also the LDN concept should be reflected in new or updated NBSAPs since this concept is also part of the SDGs.

Furthermore, there are opportunities for taking advantage of the synergies between the national and local disaster risk reduction strategies of the Sendai Framework for Disaster Risk Reduction and the CBD NBSAPs, as shown in the draft guidelines for applying ecosystem-based approaches to climate change adaptation and disaster risk reduction developed by CBD, UNFCCC and UNISDR for consideration by the CBD SBSTTA-22 meeting in July 2018 (CBD Secretariat, 2018, p. 48).

5.17.3. Recommended options and further suggestions for Aichi Target 17

5.17.3.1. *Suggestion by ibn: replace or re-formulate Aichi Target 17 (accentuate EBSAs in the open seas)*

Recommended option 1 (ibn): Target 17 no longer needed.

Rationale:

Aichi Target 17 was to a large extent procedural and its first element has clearly been reached. NBSAPs continue to be a major policy instrument for reaching the 2050 Vision, but the Target as it stands does not put sufficient emphasis on their implementation. Experience shows that the process of developing NBSAPs according to the current Strategic Plan has taken many years and that they have highly variable timelines, partly well beyond 2020. It could be argued that the post-2020 CBD framework should not differ to such extent from the current one that many of the still quite new

NBSAPs become directly outdated again. The need for transforming the global CBD Targets into national strategies could be stated in a preamble text to the new biodiversity framework. This would make a specific Target on this process obsolete.

Recommended option 2 (ibn): Keep but modify Target 17.

~~By 2015 e~~ Each Party continues and does not decrease its efforts to develop and implement ~~has developed, adopted as a~~ policy instruments such as, ~~and has commenced implementing an effective, participatory and updated~~ national biodiversity strategy and action plans in close coordination with the implementation processes of the other Rio Conventions, the Sendai Framework for Disaster Risk Reduction and the SDGs.

Rationale:

The reasoning behind Aichi Target 17 was that the current Strategic Plan adopted in 2010 should be taken up into national action plans as soon as possible to enhance its implementation by the member states. If CBD COP-15 decides upon a post-2020 framework for biodiversity which differs significantly from the current one, it might be necessary to again formulate a Target aiming at the transformation of the new framework into national policy instruments. If such a Target is planned, it could be more general, since most countries have developed their NBSAPs or haven even updated them to reflect the Aichi Targets during the past years. A “new Target 17” could encourage CBD Parties to continue their efforts for implementing global biodiversity Targets across different sectors. It could furthermore refer to links to other agreements e.g. on climate change, wetlands, land use and desertification (including the LDN concept) or risk disaster reduction and their respective national implementation processes. The CBD is already collaborating with these conventions in joined work programmes and in the Joint Liaison Group of the Rio Conventions (JLG, see above).



5.18. Aichi Target 18

By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

5.18.1. Introduction

The respect for indigenous and local knowledge (ILK), innovations and practices is fundamental for the CBD and dealt with already in the basic articles leading to the founding of the CBD, specifically in Article 8j, and a working group on this sub-article has met already ten times over the last 20 years. Therefore, Aichi Target 18 mainly reiterates a basic principle of the Convention but uses stronger language compared to Article 8j, e.g. "fully integrated and respected", with "the full and effective participation" and "at all relevant levels". Nevertheless, all such steps are "subject to national legislation", which lowers the level of this Target's ambition.

5.18.1.1. Structural overview

Aichi Target 18 consists of three elements (GBO 4):

Traditional knowledge, innovations and practices of indigenous and local communities are respected
Traditional knowledge, innovations and practices are fully integrated and reflected in implementation of the Convention ...
... with the full and effective participation of indigenous and local communities

The aspirational components are "respect for traditional knowledge", "respect for traditional innovations", "respect for traditional practices", "integration of traditional knowledge in the implementation of the CBD", "integration of traditional innovations in the implementation of the CBD", "integration of traditional practices in the implementation of the CBD", and "full and effective participation of indigenous and local communities in the implementation of the CBD"

Trend according to the Global Environment Outlook 4 (GBO 4):

"While progress has been made in all components of this Target, current trends as far as they can be assessed suggest that the actions taken to date are insufficient to achieve the Target by 2020" (CBD Secretariat, 2014, p. 115).

Trend according to the IPBES ECA Assessment:

"Enhanced implementation through participatory planning, knowledge management and capacity-building (Strategic Goal E) has been positive where the Aichi Biodiversity Targets have informed the development of national-level targets. This has not been achieved, however, where indigenous and local knowledge and practices have declined or not been fully respected in relation to traditional land use (well established). [...] The practices and knowledge of indigenous peoples and local communities in Western and Central Europe have continued to decline since the 1960s and have often not been fully respected or even marginalized, in contrast to Target 18 (traditional knowledge respected)" (IPBES/6/15/Add.4, 2018p. 29).

5.18.2. Analysis

5.18.2.1. *Links to previous CBD framework and to other Aichi Targets*

Aichi Target 18 corresponds to “Goal 4.3” of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): “Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.” This shows that there is already a long tradition to acknowledge the rights and the knowledge of indigenous and local communities in the CBD (Article 8j). Thus, with respect to the acknowledgement of indigenous and local communities, the Strategic Plans of both considered periods (2002-2010 and 2010-2020) are similar. Target 18 of the current Plan is, however, more detailed than the respective goal of the previous Plan and it calls more strongly for respect for the indigenous and local communities, their knowledge and practices.

Marques et al. (2014) conclude that Aichi Targets 14 and 19 are strongly affected by progress toward Target 18, while Target 18 itself is particularly strongly affected by progress toward Target 2 (addressing the integration of biodiversity values), Target 16 (addressing the Nagoya Protocol), and Target 20 (addressing the mobilization of financial resources).

5.18.2.2. *Smartness*

S (specific): “Traditional knowledge, innovations and practices of indigenous and local communities” may be regarded as a particular – and therefore fairly specific – type of knowledge or practices. However, Aichi Target 18 remains unspecific because the terms used for describing its aims are all vague and multi-faceted: knowledge, innovations and practices are to be “respected”, “fully integrated” and “reflected” – adjectives that can have a large variety of meanings. “Full and effective participation” in the implementation of the CBD is similarly fuzzy.

Butchart et al. (2016) criticise that Aichi Target 18 contains an unnecessary complexity, i.e. “at all relevant levels”. Furthermore, they identify two redundancies: “Innovations and practices” being encompassed by “knowledge” “and reflected” being encompassed by “integrated”.

M (measurable): To date, four specific Target-18-indicators have been recognized by the CBD, of which two measure “trends in land-use change and land tenure in the traditional territories of indigenous and local communities”, one measures “trends in which traditional knowledge and practices are respected through their full integration, safeguards and the full and effective participation of indigenous and local communities in the national implementation of the Strategic Plan”, and one measures “trends of linguistic diversity and numbers of speakers of indigenous languages” (CBD/COP/DEC/XIII/28, 2016). No specific indicators have been identified yet that could measure “trends in the practice of traditional occupations” (part first and second Target element) (ibid).

In their fifth National Reports, “very few Parties assessed progress towards this Target with indicators. Those indicators that were used tended to focus on issues related to the traditional use of resources, the maintenance of traditional customs and the participation of indigenous peoples and local communities in certain processes. While these indicators measure issues which are relevant to the Target, they do not provide information on progress towards the Target specifically” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that none of the three elements of Aichi Target 18 is quantifiable.

A (assignable): The addressees of Aichi Target 18 are all actors that take decisions affecting traditional and local communities as well as all actors involved in the implementation of the CBD.

5.18.2.3. *Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs*

Table 5.18 gives an overview over how Aichi Target 18 is linked with different policies at the national, European and global scale.

Table 5.18: Reflection of Aichi Target 18 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.2, chapter B 1.2.6 and chapter B 2.4 (see BMUB, 2014, p. 39).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that addresses explicitly “traditional knowledge, innovations and practices of indigenous and local communities”; thus, no equivalence to Aichi Target 18. The Biodiversity Information System for Europe (BISE) points out that Aichi Target 18 is captured by the ‘horizontal issue’ called ‘Building on the Biodiversity knowledge base’ ¹¹² .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and nonfarm employment.</p> <p>2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.</p> <p><u>Missing elements:</u></p> <p>“Use of traditional knowledge and practices for broader conservation and sustainable use objectives is missing” (Schultz et al., 2016).</p> <p>“The absence of a specific reference to the role of traditional knowledge (except with reference to genetic resources in SDG target 2.5) appears to be a genuine gap given the importance of traditional knowledge and the customary practices of indigenous people and local communities to many of the Sustainable Development Goals” (CBD/SBSTTA/21/2/Add.1, 2017, p. 2).</p> <p><u>Considerations about how (a modified) Target 18 could better support one or more SDGs:</u></p> <p>Although the SDGs don't mention ILK, a CBD Target on ILK could contribute to many SDGs as ILK can help to enhance sustainable management practices e.g. in agriculture, can contribute to the conservation of genetic diversity of food plants, or can be useful for health-related issues.</p>

5.18.2.4. *Links to other conventions and further processes*

Aichi Target 18 might increase the respect for ILK in IPBES or other bodies performing assessments. IPBES has in fact recognized the importance of ILK for conservation and sustainable use of biodiversity at an unprecedented level. The inclusion of other knowledge systems than science is an important part of its conceptual framework (IPBES/2/17, 2013, Decision IPBES-2/4, p. 39). It is also

¹¹² <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

reflected in the first IPBES work programme e.g. in deliverable 1c: Procedures, approaches and participatory processes for working with indigenous and local knowledge systems and in all Regional, Methodological and Thematic IPBES Assessments. To achieve a better and more adequate account of ILK in IPBES work and related processes, an ILK-task force as well as an ILK-Technical Support Unit (TSU) was established.

Furthermore, UNESCO hosts the LINKS (Local and Indigenous Knowledge Systems) programme, an interdisciplinary and cross-issue initiative that aims to “support the meaningful inclusion of local and indigenous knowledge in biodiversity conservation and management, and climate change assessment and adaptation, in particular through work with the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)”¹¹³.

Organisations representing indigenous peoples and local communities around the world have organised themselves in the CBD context in the International Indigenous Forum on Biodiversity (IIFB) and in a similar structure for IPBES, the International Indigenous Forum on Biodiversity and Ecosystem Services (IIF BES). Both forums try to support the capacity building within the communities and facilitate the engagement of knowledge holders. Centres of Distinction on Indigenous and Local Knowledge were established to contribute to knowledge generation process for the CBD and IPBES (Nauber and Paulsch, 2015; SwedBio, 2016).

The Multiple Evidence Base (MEB) approach was developed in a collaborative process of SwedBio, the Stockholm Resilience Centre and its partner organisations and networks, e.g. the IIFB, and was recognised by the CBD as well as by IPBES. The MEB approach is supposed to ensure equitable participation for indigenous, local and scientific knowledge, considering the different characteristics and contexts of different knowledge systems. The approach is applied by the Community Based Monitoring and Information Systems (CBMIS), a knowledge platform and a bottom-up process for mobilizing indigenous and local knowledge for monitoring e.g. trends toward or away the Targets (Tengö et al., 2014).

5.18.3. Recommended options and further suggestions for Aichi Target 18

5.18.3.1. Suggestion by ibn: Aichi Target 18 with modified timeline

Recommended option (ibn): Keep Target 18 as it stands.

By **2025, at the latest**, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Rationale:

Although ILK is now better respected and reflected in international biodiversity governance processes than in 2010, e.g. in IPBES and the CBD, the 'full and effective participation of indigenous and local communities at all relevant levels' is far from being achieved in many countries. The Target

¹¹³ <http://www.unesco.org/new/en/natural-sciences/priority-areas/links/related-information/about-us/>

could potentially become stronger by being underpinned with milestones related to certain steps of integration or reflection, e.g. with respect to policy instruments like NBSAPs or other planning instruments.



5.19. Aichi Target 19

By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

5.19.1. Introduction

Aichi Target 19 is based on the assumption that a better understanding of all aspects of biodiversity is helpful for reaching the overall goals of the CBD and the Targets. Article 12 of the Convention deals with research and training, and there is also a specific CBD work programme on technology transfer. Thus, Target 19 deals with an issue with a long tradition in the CBD. The most ambitious component of the Target is expressed by the word “apply”: the knowledge base shall not just be improved and shared but also applied. This means in other words that political decision-making should make use of the (improved and shared) knowledge base. Target 19 is therefore a fundamental element of the Strategic Plan, however, it is often – mistakenly – referred to as the Target “just” calling for more research and technology transfer.

5.19.1.1. Structural overview

Aichi Target 19 consists of two elements (GBO 4):

Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved

Biodiversity knowledge, the science base and technologies are widely shared and transferred and applied

The aspirational components are “improved knowledge”, “improved science base”, “improved technologies”, “widely shared knowledge”, “widely shared science base”, “widely shared technologies”, “applied knowledge”, “applied science base” and “applied technologies”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“With the advances made in building systems to share data, information and knowledge on biodiversity, a significant part of this Target is judged to be on track. However, to meet all components of the Target, further efforts are needed on investment in data mobilization and the coordination of models and technologies that can be readily applied to decision-making” (CBD Secretariat, 2014, p. 119).

Trend according to the IPBES ECA Assessment:

Synthesising existing knowledge and identifying knowledge gaps was the main objective of the IPBES Regional Assessments and they contribute to close the knowledge caps. The IPBES ECA Assessment did not identify a global trend in this context (IPBES/6/15/Add.4, 2018, p. 29).

5.19.2. Analysis

5.19.2.1. Links to previous CBD framework and to other Aichi Targets

Aichi Target 19 corresponds partly to “Goal 2” of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): “Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.” This goal is

underpinned by subgoal 2.5: “Technical and scientific cooperation is making a significant contribution to building capacity.” This shows that there is already a long tradition to include a reference to the necessary science base, capacity building and knowledge- as well as technology transfer in the strategic frameworks of the CBD (pre-Aichi). Thus, with respect to the mentioned knowledge- and capacity related issues, the strategic plans of both considered periods (2002-2010 and 2010-2020) are similar. While the current Strategic Plan has a separate Target for financial resources (Target 20, see below), the Strategic Plan of the pre-Aichi period had goals and sub-goals that addressed various kinds of necessary capacities simultaneously.

Marques et al. (2014) conclude that Aichi Target 1 is strongly affected by progress toward Aichi Target 19, while Target 19 itself is particularly strongly affected by progress toward Target 18 (addressing ILK), and Target 20 (addressing the mobilization of financial resources).

5.19.2.2. Smartness

S (specific): Aichi Target 19 uses very broad terms such as “knowledge” and “technology”; it is therefore fairly unspecific. Moreover, the adjectives “improved”, “shared” and “used” leave much room for interpretation; also a baseline or reference for the desired trends is likely difficult to define.

M (measurable): To date, four specific Target-19-indicators have been recognized by the CBD, all of which measure the “number of maintained species inventories being used to implement the Convention” (CBD/COP/DEC/XIII/28, 2016). One of these four indicators is still under development and therefore not yet available (ibid.).

In their fifth National Reports, Parties reported on indicators to assess progress toward Aichi Target 19 that “generally focused on the status of certain processes or activities related to information collection and largely provided information on the improvement of the knowledge and science base related to biodiversity. By comparison, there were few indicators related to the sharing of information, its transfer or its application. It is important to note however that many of the indicators related to other Aichi Biodiversity Targets, in the sense they represent an improvement in the understanding of the status and trends of biodiversity, provide a further indication of progress towards this Target” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that both elements of Aichi Target 19 are not quantifiable.

A (assignable): No actor is explicitly addressed in Aichi Target 19. The addressees of this Target are all actors that are involved in the generation and transfer of biodiversity-related knowledge and technologies. Furthermore, all actors (consciously or unconsciously) in need of such knowledge are also addressed by Target 19.

5.19.2.3. Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs

Table 5.19 gives an overview over how Aichi Target 19 is linked with different policies at the national, European and global scale.

Table 5.19: Reflection of Aichi Target 19 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	Corresponding targets can be found in the German NBSAP in chapter B 1.1.1 and chapter B 4.2 (see BMUB, 2014, p. 39).
EU	There is no target in the EU Biodiversity Strategy (European Commission, 2011) that

	addresses explicitly “knowledge, the science base and technologies relating to biodiversity,”; thus, no equivalence to Aichi Target 19. The Biodiversity Information System for Europe (BISE) points out that Aichi Target 19 is captured by the ‘horizontal issue’ called ‘Building on the Biodiversity knowledge base’ ¹¹⁴ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.</p> <p>Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p> <p>4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development.</p> <p>Goal 12. Ensure sustainable consumption and production patterns.</p> <p>12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.</p> <p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.</p> <p>14.3 Minimize and address the impacts of ocean, acidification, including through enhanced scientific cooperation at all levels.</p> <p>14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p> <p>14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.</p> <p>Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development Technology.</p> <p>17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.</p> <p>17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.</p> <p>17.8 Fully operationalize the technology bank and science technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.</p> <p>17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.</p>

¹¹⁴ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

	<p><u>Missing elements:</u></p> <p>“No mention of information sharing on broader-level biodiversity” (Schultz et al., 2016).</p> <p><u>Considerations about how (a modified) Target 19 could better support one or more SDGs:</u></p> <p>Many of the SDG targets mention enhanced scientific cooperation, sharing of knowledge and technologies as well as expertise and nearly all SDGs would of course benefit from a better understanding of nature, biodiversity and processes in ecosystems. Therefore, a CBD Target on enhancing such understanding would help to implement many SDGs and calling for a better application of knowledge in decision making in a newly formulated CBD Target would also be helpful for the SDGs.</p>
--	---

5.19.2.4. *Links to other conventions and further processes*

The CBD regularly formulates needs for enhanced knowledge generation, identifies knowledge gaps and cooperates with institutions that either fund knowledge generation or collect and distribute existing knowledge.

IPBES was established in 2012 to close biodiversity-related knowledge gaps. IPBES is specifically attentive to knowledge requests raised by the CBD (but other stakeholders are also invited to put forward their knowledge needs), and is therewith contributing to the objectives of Target 19. With its first work programme (and the completion of several thematic, methodological, regional and one global assessment) IPBES helps to synthesize knowledge from science and other knowledge systems and to present it to decision makers (IPBES/2/17, 2013).

The Intergovernmental Panel on Climate Change (IPCC), established 1988 as independent advisory body to the UNFCCC to synthesis and present existing knowledge on climate change, was the blue print for the development of IPBES in the biodiversity context. The latest IPCC Assessment report (AR5) was published 2016 and “outlines several impacts that affect the achievement of the Aichi Targets and Strategic Plan of the CBD” (CBD Secretariat, 2016). The next IPCC Assessment Report (AR6) is scheduled for 2022 and it is expected to show if the efforts and voluntary commitments related to the Paris Agreement are sufficient to reach goal of keeping global warming to well below 2 °C while pursuing efforts to limit it to 1.5 °C¹¹⁵.

Moreover, there are several other attempts to facilitate the generation of biodiversity-related knowledge and to bring together knowledge holders, e.g. the Global Taxonomy Initiative (GTI)¹¹⁶, Global Biodiversity Information Facility (GBIF)¹¹⁷, the Biodiversity Observation Network (GEOBON)¹¹⁸, the Conservation Evidence project of Cambridge University¹¹⁹, or the Biodiversity and Ecosystem Services Network (BES-Net)¹²⁰.

On European level, the EKLIPSE Knowledge and Learning mechanism on Biodiversity and Ecosystems can be named¹²¹.

¹¹⁵ <http://www.ipcc.ch>

¹¹⁶ <https://www.cbd.int/gti/>

¹¹⁷ <https://www.gbif.org/>

¹¹⁸ <https://geobon.org/>

¹¹⁹ <https://www.conservationevidence.com>

¹²⁰ www.besnet.world

¹²¹ www.eklipse-mechanism.eu

5.19.3. Recommended options and further suggestions for Aichi Target 19

5.19.3.1. *Suggestion by ibn: put more emphasis on the application of knowledge and its consideration in political decision making*

Recommended option (ibn): Keep but modify Target 19.

By **2030**, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, **taken up and thoroughly considered in political decision making**.

Rationale:

Aichi Target 19 has been reached in parts while in other parts it has not: Since 2010 the knowledge and the science base have certainly improved, as it is the normal way in science and this progress has not necessarily been influenced by Target 19. The Target element addressing the sharing and transfer of the knowledge base took a major step forward through the founding of IPBES and the completion of its assessments, which were partly asked for by the CBD. It can be expected that the cooperation between CBD and IPBES will go on and that IPBES will take up requests from the CBD also into its second work programme starting in 2019/2020. Nevertheless, the Target 19 element addressing the application of knowledge has not sufficiently been reached and is still a valid Target on the way to the 2050 Vision. And of course it will remain important to further improve the knowledge base and to share it widely.



5.20. Aichi Target 20

By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This Target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

5.20.1. Introduction

Aichi Target 20 has to be seen in the historical context of the negotiations in 2010: The Strategic Plan, the Nagoya Protocol and the Strategy on Resource Mobilization were negotiated as a package deal and many Parties would not have accepted the Strategic Plan without a clear commitment of other Parties for increasing the mobilization of financial resources. As during the negotiation process no specific levels of increase for the financing could be agreed upon, the compromise was to have Target 20 with the addition that this Target will be subject to changes according to the progress under the Resource Mobilization Strategy. The issue was taken up by CBD COP-11 again and the processes of resource mobilization and developing a new biodiversity framework are followed in parallel now.

5.20.1.1. Structural overview

Aichi Target 20 consists of one element (GBO 4):

Mobilization of financial resources implementing the Strategic Plan for Biodiversity 2011–2020 from all sources has increased substantially from 2010 levels

The aspirational component is “substantially increased resources”.

Trend according to the Global Environment Outlook 4 (GBO 4):

“Recent trends and the limited information available, suggest that while some progress has been made towards this Target, progress to date is not sufficient to meet the Target by 2020” (CBD Secretariat, 2014, p. 123).

Trend according to the IPBES ECA Assessment:

“Evidence suggests that the further mobilization of financial resources (Target 20) is key for increasing the success of policy to achieve biodiversity conservation objectives” (IPBES/6/15/Add.4, 2018, p. 29).

5.20.2. Analysis

5.20.2.1. Links to previous CBD framework and to other Aichi Targets

Aichi Target 20 corresponds partly to “Goal 2” of the Strategic Plan that the CBD adopted 2002 for the time span until 2010 (CBD/COP/DEC/VI/26, 2002): “Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.” This shows that there is already a long tradition to include a reference to the necessary financial resources in the strategic frameworks of the CBD (pre-Aichi). The fact that the current Strategic Plan has a separate Target calling for the mobilization of financial resources and the wording “should increase substantially from

the current levels” indicate, that in 2010, the parties to the CBD agreed in 2010, to accentuate the need for a very significant increase in biodiversity-related funding.

Marques et al. (2014) conclude that Aichi Targets 1, 2, 5, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 are strongly affected by progress toward Aichi Target 20, while Target 20 itself is particularly strongly affected by progress toward Target 2 (addressing the integration of biodiversity values) and Target 17 (addressing the adoption and implementation of NBSAPs).

5.20.2.2. Smartness

S (specific): The issue Aichi Target 20 deals with is very specific (financial resources), but the level of ambition remains vague: The aim is a “substantially increase”, but no criterion for “being substantial” is specified. Similarly, Butchart et al. (2016) argue that Target 20 contains two ambiguous terms: “substantially” and “current levels”. Moreover, the specificity of Target 20 is somewhat lowered by the term “from all sources” which leaves much room for interpretation.

Butchart et al. (2016) argue further that there are two unnecessary complexities within this Target: the insertion “consolidated and” as well as the entire last sentence of the Target: “This Target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.”

M (measurable): To date, two specific Target-20-indicators have been recognized by the CBD, both measure “trends in the mobilization of financial resources” (CBD/COP/DEC/XIII/28, 2016).

In their fifth National Reports, Parties reported on indicators to assess progress toward Aichi Target 20 that “tended to focus on government expenditures in relation to things such as funding from central budgets for environmental issues, trends in funding available for certain ministries or for protected areas as well as expenditures related to official development assistance. Some Parties also used indicators related to the number of employees working in environmental sectors. Few reports reported on resources spent by the private sector or non-governmental organizations. Further, a number of countries noted that they will be reporting on progress towards this Target through the reporting framework for the resource mobilization strategy” (CBD/SBSTTA/20/INF/34, 2016).

Butchart et al. (2016) point out that Aichi Target 20 is not quantifiable.

A (assignable): No explicit actor is specified in Aichi Target 20. Instead, the wording “financial resources [...] from all sources” is used which remains somewhat vague. However, one might infer the primary addresses by considering the funding realities for the CBD: major donors are national governments that transfer financial resources to funds (like the GEF and others, see below). Private donors such as foundations and the private sector might become even more important in the future (see e.g. CBD/COP/DEC/XI/4, 2012) and therefore, also actors from the private sector are addressed by Target 20¹²².

5.20.2.3. Links to the German NBSAP, the EU Biodiversity Strategy and the SDGs

Table 5.20 gives an overview over how Aichi Target 20 is linked with different policies at the national, European and global scale.

¹²² See also <https://www.cbd.int/doc/strategic-plan/targets/T20-quick-guide-en.pdf>

Table 5.20: Reflection of Aichi Target 20 (2010) in the content of the German NBSAP (2007), the EU Biodiversity Strategy to 2020 (2011) and in the 2030 Agenda for Sustainable Development (2015):

Germany	“The National Strategy on Biological Diversity naturally contains no relevant target for this, as it was adopted by the German Government in November 2007” (see BMUB, 2014, p. 40).
EU	The EU Biodiversity target 6 partly relates to Aichi Target 20. It is entitled “Help avert global biodiversity loss” (European Commission, 2011) ¹²³ .
SDG framework	<p><u>Related targets can be found in following SDGs and SDG sub-targets</u> (Schultz et al., 2016):</p> <p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p> <p>15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.</p> <p>15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.</p> <p>15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.</p> <p><u>Inconsistencies:</u></p> <p>“Aichi Biodiversity Target 20 refers to 2020, while the SDG targets (1a, 10b, 17.3) do not specify a date” (CBD/SBSTTA/21/2/Add.1, 2017, p. 3).</p> <p><u>Considerations about how (a modified) Target 20 could better support one or more SDGs:</u></p> <p>SDG target 15.a calls for mobilization and significantly increasing of financial resources from all sources to conserve and sustainably use biodiversity and ecosystems, without giving a timeline, and 15.b does the same for financing sustainable forest management. A new CBD Target on financing would therefore foster the implementation of these SDG targets.</p>

5.20.2.4. *Links to other conventions and further processes*

As Targets of a post-2020 biodiversity framework will probably be linked to SDGs and in many cases development aid projects have biodiversity-relevant components, a funding Target should refer to multiple funding sources, and processes between different funding schemes should refer to each other.

The Global Environment Facility (GEF) is operating the financial mechanism of the CBD based on a Memorandum of Understanding (CBD/COP/3/DEC/III/8, 1996). The GEF is also the financial mechanism of the UNFCCC Paris Agreement on climate change as well as for the UNCCD and it provides funds for developing countries and countries with economies in transition to implement these and other environmental agreements¹²⁴. The GEF has therefore the potential to facilitate cross-issue financing and to make recommendations how resources could be used more efficiently. The Integrated Approach Pilot Programs on e.g. sustainability and resilience for food security in Sub-Saharan Africa or on approaches to take deforestation out of commodity supply chains are interesting case studies in this regard (GEF, 2017). The under Target 17 described new Joint Project Preparation Facility of UNFCCC, CDB and UNCCD could benefit from the reported experience and recommendations.

¹²³ <https://biodiversity.europa.eu/policy/target-1-and-related-aichi-targets>

¹²⁴ <https://www.thegef.org/partners/conventions>

The Green Climate Fund (GCF) is supporting UNFCCC activities and the implementation of the Paris Agreement in developing countries. The CBD has identified potential entry points for future cooperation. Several work areas of the GCF could contribute to the objectives of the biodiversity Conventions e.g. “sustainable land use management to support mitigation and adaptation; sustainable forest management to support mitigation and adaptation including afforestation and reduction of forest degradation; REDD+ implementation; adaptation activities to reduce climate-related vulnerabilities; and related readiness and capacity-building activities” (CBD Secretariat, 2017d).

Other innovative funding approaches that could inspire the CDB process are for example private public partnerships (PPP) such as the World Economic Forum’s New Vision for the Ocean (NVO)¹²⁵. The NVO is a PPP to raise funds from private donors targeting especially “high net worth individuals” to support the implementation of SDG 14 and the Ocean Action Track.

The Crop Trust has developed a long-term approach to secure the funding for their work to maintain gene-banks and the global seed vault (see also Target 13, this report). Governments and other donors pay into the Crop Diversity Endowment Fund of the Crop Trust, which invests the money following clear rules and overseen by a donor’s council. Only the benefits of the Fund are used to finance the Trust’s activities¹²⁶.

5.20.3. Recommended options and further suggestions for Aichi Target 20

5.20.3.1. Suggestion by ibn: replace Aichi Target 20

Recommended option (ibn): Target 20 no longer needed.

Rationale:

Aichi Target 20 was formulated to parallel processes within the CBD which took place in the meantime. Funding has improved compared to former levels. Nevertheless, funding and in many places increased funding will still be needed in the future. However, instead of formulating a specific Target on funding and relating it to ongoing processes like the resource mobilization strategy, this link and the need for financial resources could be expressed in a preamble text for the whole post-2020 biodiversity framework and detailed in the resource mobilization strategy as such. A preamble paragraph on financial resources could also call for more coordination between the Rio Conventions and other cross-issue projects.

¹²⁵ <https://www.weforum.org/projects/a-new-vision-for-the-ocean>

¹²⁶ <https://www.croptrust.org/our-mission/crop-diversity-endowment-fund/>

6. Possible additional topics for the post-2020 framework of the CBD

The CBD post-2020 framework could potentially address topics that are currently not included in the Strategic Plan. Since the time, when the current CBD framework was negotiated, some negative impacts on the conservation and sustainable use of biodiversity have become more obvious. These could, e.g. be dealt with in the post-2020 biodiversity framework. For some of these topics processes within the CBD have already been started but nevertheless an explicit mentioning in modified or newly formulated CBD Targets might be useful. Below, suggestions for some additional topics are listed. This selection was inspired by the discussions during the expert workshop held in April 2018 and by submissions of several stakeholders during the online consultations on the process leading to the post-2020 global biodiversity framework (see chapter 2 of this report and CBD/SBI/2/17, 2018).

6.1. Soil biodiversity

Below-ground biodiversity is a key agent in biogeochemical cycles and indispensable for several soil-related ecosystem functions such as filtering water, maintaining soil fertility, storing carbon and controlling soil-borne plant pathogens. And functional soils are literally fundamental for the existence and interplay of all terrestrial organisms, including humans. But they are also under enormous pressure caused e.g. by climate change, pollution, and human activities such as sealing and intensive agriculture. These and related stressors (such as high inputs of pesticides and nutrients) impair below-ground biodiversity. Currently, the Strategic Plan of the CBD does not address soil biodiversity explicitly – presumably because it is regarded as falling into the scope of the UNCCD. However, the UNCCD does not cover soil biodiversity sufficiently, mainly for two reasons: a) the Convention's clear focus on drylands (see section 4.1.2.4) – biodiversity in other ecosystems or regions not affected by desertification is therefore not really on its agenda; and b) the Convention's anthropocentric perspective: its strategic objectives and expected impacts mostly deal with benefits for humans (e.g. improve living conditions, enhance resilience of vulnerable populations)- the conservation of soil biodiversity for its own sake therefore doesn't seem to be of priority for the UNCCD (see UNCCD, 2017). Soil biodiversity therefore needs to be strongly anchored in the CBD, being the Convention that explicitly acknowledges the intrinsic value of biodiversity and that primarily strives to conserve the diversity of life. If taken up in the post-2020 CBD framework, soil biodiversity would probably be most appropriately addressed in a dedicated new Target (as currently, none of the Aichi Targets has a similar focus).

6.2. Underwater noise

Underwater noise has been detected as a factor to massively disturb marine mammals and a variety of anthropogenic sources of such noise has been identified, including vessels of all kind, military activities, underwater mining, construction of off-shore wind parks, etc. CBD has taken up this issue with respect to the work programme on marine biodiversity but this driver of biodiversity loss is not mentioned in its Strategic Plan 2011-2020.

Target 6 lists many aquatic species groups and life forms, namely 'fish and invertebrate stocks and aquatic plants', but does not speak of aquatic mammals, and the driver addressed by Target 6 is mostly fisheries. The aspect of underwater noise could either be integrated in an extended and modified Target based on Target 6, or under a separate Target. This new Target would then probably fit best under strategic goal B which addresses direct pressures on biodiversity (if the goals are maintained).

6.3. Pollution by plastic waste and micro-plastics

Pollution through plastic waste is a growing threat to biodiversity as the amount of plastic used and dumped keeps growing. Plastic is extremely persistent and therefore, it not only poses a growing but also a long-lasting problem, especially in aquatic systems. Micro-plastics originating from disintegrating plastic waste or from products such as cosmetics (in which micro-plastic particles are used deliberately) cause a growing health problem for humans too, as they are widely distributed in aquatic and terrestrial ecosystems and taken up through the food chain.

Target 8 tackles pollution from all kinds of sources, naming excess nutrients explicitly, so that an extension of Target 8 or a newly formulated Target based on Target 8 would also include pollution through plastics. Nevertheless, if a newly formulated Target on pollution would name more sources (maybe in a rationale or explanatory note rather than in the Target text), pollution through plastic should be explicitly mentioned.

6.4. Marine protected areas beyond national jurisdiction

For the time being, the majority of marine protected areas is situated in coastal areas and within areas of national jurisdiction. Nevertheless, to conserve marine biodiversity it would be essential to also designate protected areas in the open seas in areas beyond national jurisdiction. The CBD started the scientific effort to identify so called Ecologically and Biologically Significant Marine Areas (EBSAs) in many parts of the world and stored this information in a repository accessible for the UN-fora which could designate such protected areas (see also Target 11 in chapter 5). In the current Strategic Plan 'areas of particular importance for biodiversity and ecosystem services' are already mentioned in Target 11, but specific mentioning of EBSAs as starting points for protected areas beyond national jurisdiction could be helpful to foster this important aspect of conservation of marine biodiversity. A new legal regime is currently negotiated under UNCLOS to cover areas beyond national jurisdiction (see Target 11 in chapter 5). Specific language could be introduced in a modified Target based on Target 11, reflecting these negotiations. One of the emerging topics that should be considered in this context is the exploitation of resources from seabeds in areas beyond national jurisdiction, the so called deep sea mining, currently regulated by the International Seabed Authority.

6.5. Consequences of synthetic biology

Among the research areas which made most rapid progress since 2010, when the current Strategic Plan was formulated, is synthetic biology. Meanwhile, this technology allows not only changing genes in existing organisms but also the creation of a new genome to be imported into an empty cell. This method creates new organisms or even species that have not existed before. If released into the environment, such synthetic organisms or species could pose new challenges and questions for the conservation and sustainable use of biodiversity. The CBD is aware of the potential risks and currently discusses if the topic is fully covered by the Cartagena Protocol or not. As (some of) the products of synthetic biology may have the potential to contribute to biodiversity loss, they should arguably be dealt with under the post-2020 CBD framework. On the other hand, synthetic biology also holds a potential for a better implementation of some SDGs, e.g. to contribute to decrease hunger through more effective crop varieties, which, in a consequence, might reduce other pressures on biodiversity, e.g. the conversion of natural habitats into agriculture areas.

6.6. Geo-engineering

Geo-engineering in the sense of large-scale interventions into ecosystems or the atmosphere is mentioned in the outcomes of negotiations under the UNFCCC as an option to mitigate climate change. The CBD noted in 2016 that 'more transdisciplinary research and sharing of knowledge among appropriate institutions is needed in order to better understand the impacts of climate-related geo-engineering on biodiversity and ecosystem functions and services, socio-economic, cultural and ethical issues and regulatory options' (CBD/COP/DEC/XIII/14, 2016). Although these possible impacts obviously are not yet understood (and might not be really predictable anyhow), it is clear that climate-related geo-engineering could be a severe driver of biodiversity loss as it would impact entire ecosystems. This warrants addressing geo-engineering explicitly in the post-2020 CBD framework, possibly under strategic goal B (if the goals are maintained).

6.7. Telecoupling

The IPBES ECA Assessment describes telecoupling as "...socioeconomic and environmental interactions over distances. It involves distant exchanges of information, energy and matter (e.g., people, goods, products, capital) at multiple spatial, temporal and organizational scales" (IPBES/6/INF/4, 2018, p. 1090). An example for the consequences of such "interregional flows" is the impact of the decision of the European Union to increase the use of biofuel that "contributed to global food shortages in 2008 and subsequent civil unrest in other world regions" (IPBES/6/INF/4, 2018, p. 536). The dependency of some regions and countries on resource imports with high impacts on biodiversity and human well-being in other regions of the world should be reflected in the post-2020 CBD framework.

7. Conclusions

7.1. Keep the level of ambition

It can be expected that a stocktaking of how far the Aichi Targets will presumably be reached by 2020 (e.g. through GBO 5 or the IPBES Global Assessment on Biodiversity and Ecosystem Services) will reveal that most Targets are not sufficiently implemented and that for some Targets there is very little progress. Nevertheless, there are strong arguments in favour of maintaining as much as possible of the current Strategic Plan of the CBD for the post-2020 period and to keep the level of ambition. Failures with regard to the implementation of the Strategic Plan are in many cases not rooted in the Plan itself but in strong forces and power relations that exist independently of the CBD. Under the assumption that the 2050 Vision to 'live in harmony with nature' remains valid, most of the 20 Targets also stay valid as they describe necessary steps to get closer to that Vision and their full implementation would help to reach that long-term aim. Strongly reforming the Strategic Plan of the CBD would entail the risk of decreasing the level of ambition substantially for the post-2020 period. Changing the content or the overall structure of the Strategic Plan very significantly, as proposed in several current debates, could heavily delay its implementation by cumbersome modifications of indicator frameworks and the National Biodiversity Strategies and Action Plans (NBSAPs) for national uptake. Thus, there are good reasons to keep the overall structure of the current Plan for the post-2020 CBD framework that should also consist of about 20 Targets.

It needs thorough consideration whether Targets explicitly related to the two Protocols under the CBD (Cartagena Protocol and Nagoya Protocol) should be directly included into the post-2020 CBD framework or dealt with under the Protocols only. The fact that the memberships of the three agreements differ is a strong argument against the inclusion of specific Protocol-related Targets within the general post-2020 CBD framework. In this respect, SBI-2 recommended that the Conference of the Parties serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety at its ninth meeting decides 'to develop a specific follow-up to the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020 that is complementary to the post-2020 global biodiversity framework'. The same SBI-2 meeting could not agree whether to recommend or not that the Conference of the Parties serving as the Meeting of the Parties of the Nagoya Protocol at its third meeting should decide 'to develop a specific plan for the Nagoya Protocol as part of the post-2020 global biodiversity framework'.

7.2. Focus on implementation

Given the above mentioned considerations it seems most crucial to push towards a better implementation of the current and the next strategic framework of the CBD and this effort should have priority over the question whether a Target meets the "SMART" criteria or not ("SMART" standing for "specific, measureable, ambitious, realistic, time-bound"). To facilitate such implementation it could be useful to underpin each Target with milestones defining steps to be reached at certain points in time. This would also counter the impression that the level of ambition is generally and tremendously decreased by 'postponing' the timelines, e.g. by ten years or more. Meeting this communication challenge seems particularly crucial for the scenario in which the post-2020 CBD framework much resembles the current Strategic Plan.

Further discussion would be needed to clarify whether underpinning milestones equal sub-Targets, how specific they should be and whether they can (or should) incorporate additional topics into the

post-2020 framework. If the concept of voluntary contributions is taken up in the new framework, milestones could specify orientation points for such commitments.

To avoid an 'over-loading' of Targets the formulation of 'general guidance' would be useful that could include all issues that are important for the implementation of several Targets, such as intergenerational justice, gender equality, the need to respect the rights of indigenous and other vulnerable communities and the references to obligations from other international agreements. Respective specifications that are found in some of the current Targets might in that case no longer be necessary, which would increase the consistency and simplicity of the framework. The suggested guidance could also explain certain terms used in the Targets, with reference to agreed definitions and approaches. It could further explain the interrelationship between different Targets and how steps to implement one Target would help to implement others. Furthermore, such guidance could highlight the interdependencies between a post-2020 biodiversity framework and other global agreements e.g. relations to the Sustainable Development Goals (SDG) or the Paris Agreement. It could also point out synergies and indicate where joined efforts can help to reach multiple global environmental goals.

7.3. Set strategic timelines

No decision has yet been taken on the time span a post-2020 biodiversity framework should cover and it is not automatically settled that the aiming point will be the year 2030. As said before, time frames of beyond 2020 may automatically be perceived as a lowering of the ambition level which would call for a post-2020 period as short as possible (presumably 10 years). On the other hand, a longer timeframe (e.g. until 2035) would have the advantage to avoid too many re-negotiations of the framework on the path towards the 2050 Vision of the CBD. Furthermore, a 10-year timeframe would imply that the new CBD Targets would 'expire' in the same year as the SDG framework. This would hold the disadvantage that no biodiversity Targets are in place when the Agenda for Sustainable Development needs updating after 2030. If the timeline was set until 2035, underpinning the Targets with specific and time-bound milestones seems indeed very reasonable. If this was decided, it would probably make sense for practical reasons to negotiate only the Targets at CBD COP-15 (in 2020) and to decide at the same time whether they should be supplemented by underpinning milestones or sub-Targets; the latter could then be specified at CBD COP-16 (in 2022).

7.4. Overall conclusion

The Strategic Plan of the CBD and the Aichi-Targets remain relevant, and this framework should be maintained to the highest degree possible beyond 2020. However, as a partial update seems unavoidable, the upcoming re-negotiations should be regarded as an opportunity for improving the framework with regard to its consistency, simplicity and – in particular – its coherency with other multilateral environmental agreements, while keeping the level of ambition. Additional guidance could help to show how the conservation as well as just and sustainable use of biodiversity can contribute to overcome other related social and environmental challenges. Specific and time-bound milestones or sub-Targets could help fostering the urgently required implementation of the framework and could address relevant actors more specifically. These modifications could be important contributions to paving the way towards 'living in harmony with nature'.






7.5. Overview over developed recommendations







Table 7.1 provides an overview over how the Targets might be modified and proposals for Target texts. For many Targets the authors of the study as well as the participants of the national expert workshop proposed to keep but modify the Target. For the Targets 2, 3, 9, 12, 13,14 and 18, they proposed to keep the Target as it stands or nearly as it stands (but additional sub-Targets and milestones are also proposed for these Targets, see chapter 5). The participants of the international workshop discussed the post-2020 CBD framework and many of the Aichi Targets at a more general level, providing different views on how to restructure the framework and which elements of the Targets are of specific importance to reach CBD's vision. Target 16 was not subject of this study.

Table 7.1 Overview over recommendations developed during the course of this study and in consultation with national and international biodiversity experts. Abbreviations: **ibn**: Recommendations drafted by the **authors** of the study, also presented at the expert workshops; **NWS**: Recommendations derived from the discussions at the **national expert workshop** in April 2018; **IWS**: Recommendations derived from the discussions at the international expert workshop in September 2018. Target 16-20 were not discussed during the workshops.

Aichi Target	Recommendation	Text proposal
	ibn: Keep but modify Target (accentuate crisis and actions)	<i>By 2030, at the latest, all people are aware of the irreversibility and gravity of biodiversity loss values of biodiversity, and the steps they can take actions to conserve and sustainably use biodiversity it sustainably.</i>
	NWS: Option 1 - Keep Target as it stands Option 2 - Keep but modify Target	Option A <i>By 2030, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it fairly and sustainably.</i> Option B <i>By 2030, at the latest, people are aware of the values of biodiversity and of the irreversibility of biodiversity loss and the threat it poses to humanity and the steps they can take to conserve and use it fairly and sustainably.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 1. Intense discussion on the different categories of Targets and on the desired overall architecture of the framework.
	ibn: Keep Target as it stands - with modified timeline	<i>By 2030, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.</i>
	NWS: Keep Target nearly as it stands	<i>By 2030, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 2. Intense discussion on the different categories of Targets and on the desired overall architecture of the framework.
	ibn: Keep Target nearly as it stands - with modified timeline	<i>By 2030, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.</i>
	NWS: Option 1 - Keep Target as it stands Option 2 - Keep Target nearly as it stands	Option A <i>By 2030, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed transformed into order to minimize or avoid negative impacts, and positive incentives, and new positive incentives for the conservation and sustainable use of biodiversity are developed and applied [, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions].</i> Option B <i>By 2030, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied [, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions].</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 3. Intense discussion on the different categories of Targets and on the desired overall architecture of the framework.
	ibn: Keep but modify Target (accentuate role of consumers)	<i>By 2030, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits. By 2030, all consumers are aware of sustainable production standards and consider ecological sustainability when they make individual choices about products and services.</i>
	NWS: Keep but modify Target	<i>By 2030, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological the limits compatible with halting the loss of biodiversity.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 4. Intense discussion on the different categories of Targets and on the desired overall architecture of the framework.

	ibn: Keep but modify Target (add the aspect of non-natural habitats)	<i>By 2030, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought as well as their degradation and fragmentation, are brought close to zero, and degradation and fragmentation is significantly reduced. Where this is not achieved, these rates are at least reduced by 75 per cent. By 2030, the loss of biodiversity in non-natural habitats (such as urban or agricultural areas and managed forests) is halted.</i>
	NWS: Keep but modify Target	<i>By 2030, the rate of loss, degradation and fragmentation of all natural and semi-natural habitats, including forests, is halted at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 5 and of semi-natural habitats (see suggestion by ibn). Cautionary note against unrealistic ambitions (halting the loss seems unrealistic, halving the loss already ambitious). Loss of soils should be mentioned explicitly.
	ibn: Keep but modify Target (accentuate freshwater biodiversity)	<i>By 2025, all fishery subsidies harmful to biodiversity have been eliminated and all fish and invertebrate stocks and aquatic plants in marine and freshwater ecosystems are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.</i>
	NWS: Keep but modify Target	<i>By 2025, all fishery subsidies harmful to biodiversity have been eliminated and all fish and invertebrate stocks and aquatic plants in marine and freshwater ecosystems are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is halted-avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 6. Need for defined standards and reference limits highlighted. Discussion on additional aspects of high significance (e.g. IUU fishery, no-take zones, by-catch, deep sea fishing, ...). Severe gaps in knowledge and data highlighted, e.g. with regard to many fish-stocks.
	ibn: Keep but modify Target (accentuate "area" as a key factor)	<i>By 2030, all areas under agriculture, aquaculture and forestry are managed sustainably, ensuring to halt the loss conservation of biodiversity in such areas and allowing recovery of natural biodiversity. By 2030, the rate at which areas are newly claimed for agriculture, aquaculture and forestry is drastically reduced (ensuring also progress toward Target 5).</i>
	NWS: Keep but modify Target	Option A <i>By 2030 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring to halt the loss conservation of biodiversity in such areas and encouraging recovery of biodiversity.</i> Option B <i>By 2030 landscapes and seascapes dominated by areas under agriculture, aquaculture and forestry are managed to ensure sustainably, sustainable functioning of a healthy ecosystem and to halt the loss of biodiversity in such areas and encouraging recovery of natural conservation of biodiversity.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 7 but only brief discussion due to time constraints. Socio-economic dimension highlighted. Need for consistent terminology and for definitions of terms identified.
	ibn: Keep but modify Target (accentuate different kinds of pollution)	<i>By 2030, air pollution by (name substances or sources particularly relevant for biodiversity), including from excess nutrients, has been halted brought to levels that are not detrimental to ecosystem function and biodiversity. By 2030, soil pollution by (name substances or sources particularly relevant for biodiversity), including from excess nutrients, has been halted brought to levels that are not detrimental to ecosystem function and biodiversity. By 2030, water pollution by (name substances or sources particularly relevant for biodiversity), including from excess nutrients, has been halted brought to levels that are not detrimental to ecosystem function and biodiversity.</i>
	NWS: Target 8 was not discussed in detail in a break-out group at the workshop but general in plenary	Participants suggested that the Target needs concrete milestones as well as supporting guidance documents to ease the implementation. Participants proposed that the Target should include further causes for pollution/sources of substances, however it was not clarified whether this aspect should be incorporated in the Target text or addressed in a milestone.
	IWS: Keep Target as it stands - with modified timeline	<i>By 2030, pollution [of air, water and soil], including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.</i>
	ibn: Keep Target as it stands - with modified timeline	<i>By 2030, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.</i>

	NWS: Keep Target as it stands	See above.
	IWS: No particular wording was suggested	Target was not discussed due to time constraints.
	ibn: Keep but modify Target (specify pressures and vulnerable ecosystems)	<i>By 2025, the multiple anthropogenic pressures, including climate change, ocean acidification, unsustainable fisheries and unsustainable tourism, on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification, are minimized, so as to maintain their integrity and functioning.</i> <i>By 2030, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change, including marine ecosystems, mountain ecosystems and ecosystems under permafrost, are minimized, so as to maintain their integrity and functioning.</i>
	NWS: Keep, but modify Target	<i>By 2030, the multiple anthropogenic pressures especially human-induced greenhouse gas emissions on biodiversity and ecosystem services (inter alia coral reefs) which are increasingly impacted by climate change through droughts, fires and ocean acidification, are strongly decreased (meeting the 1.5 degrees target) so as to on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.</i>
	IWS: Keep but modify Target (specify vulnerable ecosystems)	Support for the second part of the ibn-suggestion: <i>By 2030, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change, including marine ecosystems, mountain ecosystems and ecosystems under permafrost, are minimized, so as to maintain their integrity and functioning.</i>
	ibn: Keep but modify Target (accentuate EBSAs in the open seas)	<i>By 2030, at least 22 17 per cent of terrestrial and inland water, at least 15 10 per cent of coastal and at least 15 per cent of marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected system of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.</i>
	NWS: Keep but modify Target	<i>By 2030, at least 30 [27] per cent of terrestrial and inland water, at least 30 [20] per cent of coastal and at least 30 [20] per cent of marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected system of protected areas and other effective area-based conservation measures, especially community based conservation areas, and integrated into the wider landscapes and seascapes.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of the issues addressed in Aichi Target 11. Focus needs to shift towards neglected Target elements, the achievements in terms of % still a success. Intense discussion that highlighted several aspects, e.g. the importance of connectivity, the concept of Key Biodiversity Areas, finance and knowledge needs, importance of community based (bottom-up) approaches.
	ibn: Keep Target as it stands - with modified timeline	<i>By 2025, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.</i>
	NWS: Keep Target as it stands - with modified timeline	<i>By 2030, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.</i>
	IWS: No particular wording was suggested	No suggestions on the Target text. Affirmation of the importance of Aichi Target 12 as capturing 'the goal of the whole Strategic Plan' – Target may deserve a more prominent position in the framework. Discussion highlighted several additional aspects, e.g. not extinction (= end point) but the decline of species needs to be prevented, finance and knowledge needs, importance of national or sub-national action plans.
	ibn: Keep Target as it stands - with modified timeline	<i>By 2025, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.</i>
	NWS: No particular wording was suggested	Only brief discussion due to time constraints.
	IWS: Keep Target as it stands - with modified timeline	<i>By 2030, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.</i>
	ibn: Keep Target nearly as it stands - with modified timeline	<i>By 2030, all ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are fully restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.</i>

	NWS: Keep but modify Target	By 2030 , ecosystems that provide essential services, including services related to water, including a just access to water and other natural ecosystem services that contribute and contribute to health, livelihoods and well-being, and Disaster Risk Reduction , are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the (poor and) vulnerable.
	IWS: Keep Target as it stands - with modified timeline	By 2030 , ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
	ibn: Keep but modify Target (clarify terms, separating Target elements)	By 2030 , ecosystem resilience against multiple anthropogenic pressures, including climate change, and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 20 per cent of degraded ecosystems, and the contribution of biodiversity to carbon stocks has been enhanced, through conservation , thereby contributing to climate change mitigation and adaptation and to combating desertification.
	NWS: Keep but modify Target (include 350 mha goal of the New York Declaration on Forests)	By 2030 , ecosystem resilience and the contribution of biodiversity to carbon stocks and (carbon sinks) [include ecological and social safeguards] has been enhanced, through conservation and restoration, including restoration and rehabilitation as defined in IPBES Assessment on Land Degradation and Restoration , including restoration of at least 15 per cent of at least 350 mha of degraded ecosystems [see New York Declaration on Forests] , thereby contributing to climate change mitigation and adaptation and to combating land degradation and desertification.
	IWS: Keep but modify Target	Participants of the international expert workshop supported rather the option suggested by ibn (see above) than the one suggested by the national experts, which was seen as too technical and hard to communicate.
	Target 16 was not subject of the analysis	-
	ibn: Option A) Target no longer needed ibn: Option B) Keep but modify Target	Option B By 2015 e Each Party continues and does not decrease its efforts to develop and implement has developed, adopted as a policy instruments such as, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plans in close coordination with the implementation processes of the other Rio Conventions, the Sendai Framework for Disaster Risk Reduction and the SDGs.
	ibn: Keep Target as it stands - with modified timeline	By 2025, at the latest , the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
	ibn: Keep but modify Target	By 2030 , knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, taken up and thoroughly considered in political decision making.
	ibn: Target no longer needed	-

8. Abbreviations

ABNJ – Areas Beyond National Jurisdiction

AZE – Alliance for Zero Extinction

BBNJ – Biodiversity beyond national jurisdiction (in UNCLOS context)

BfN – German Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN)

BMU/BMUB – Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) Germany, formerly Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)

CBD – Convention on Biological Diversity

BIP – Biodiversity Indicators Partnership

CEPA – Communication, Education and Public Awareness initiatives by the CBD

CGRFA – FAO's Commission on Genetic Resources for Food and Agriculture

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

CMS – Convention on the Conservation of Migratory Species of Wild Animals

COP – Conference of the Parties

EBSAs – Ecologically and Biologically Significant Areas

ECA – Europe and Central Asia (in IPBES context)

ECOSOC – United Nations Economic and Social Council

ESD – Education for Sustainable Development (in UNESCO context)

FAO – Food and Agriculture Organization of the United Nations

FSC – Forest Stewardship Council

G7 – Group of Seven (G7) is a group of advanced economies consisting of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States

GAP – Global Action Programme on Education for Sustainable Development of UNESCO

GBO – Global Biodiversity Outlook

GCF – Green Climate Fund

GBIF – Global Biodiversity Information Facility

GEF – Global Environment Facility

GEOBON – Biodiversity Observation Network

GTI – Global Taxonomy Initiative

IAS – Invasive Alien Species

IIFB – International Indigenous Forum on Biodiversity

IIFBES – International Indigenous Forum on Biodiversity and Ecosystem Services

ILK – Indigenous and Local Knowledge

INDC – Intended Nationally Determined Contributions

IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IPCC – Intergovernmental Panel on Climate Change

IPPC – International Plant Protection Convention

ISEAL – International Social and Environmental Accreditation and Labelling Alliance

IUCN – International Union for Conservation of Nature

ITPGRFA – International Treaty on Plant Genetic Resources for Food and Agriculture

IUU-fishing – illegal, unreported and unregulated fishing

JLG – Joint Liaison Group of the Rio Conventions

KBA – Key Biodiversity Area Partnership

LDN – Land Degradation Neutrality (in UNCCD context)

MEA – Multilateral Environmental Agreement

MPA – Marine Protected Area

NAP – National Adaptation Plan (in UNFCCC context)

NBSAP – National Biodiversity Strategy and Action Plan

NCA – Natural Capital Accounting

NDC – Nationally Determined Contributions (in UNFCCC/Paris Agreement context)

NGO – Non-governmental Organisations

NVO – World Economic Forum’s New Vision for the Ocean

NYDF – New York Declaration on Forests

MEB – Multiple Evidence Base

MSC – Marine Stewardship Council (MSC) and the

OECD – The Organisation for Economic Co-operation and Development

OIE – World Organisation for Animal Health

PES – Payments for Ecosystem Services

REDD+ – Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (in CBD und UNFCCC context)

PPP – Public-Private Partnership

SBI – Subsidiary Body on Implementation (of the CBD)

SBSTTA – Subsidiary Body on Scientific, Technical and Technological Advice to the CBD

SCP – Sustainable Consumption and Production

SDGs – Sustainable Development Goals of the UN 2030 Agenda for Sustainable Development

SEEA – UN Statistical Commission of the System for Environmental and Economic Accounts

SMART – SMART criteria standing for specific, measurable, ambitious, realistic, time-bound

SPM – Summary for Policymakers (in IPBES context)

TEEB – The Economics of Ecosystems and Biodiversity

TSU – Technical Support Unit for IPBES

UNCTAD – UN Conference on Trade and Development

UNCCD – United Nations Convention to Combat Desertification

UNCLOS – United Nations Convention on the Law of the Sea

UNDP – United Nations Development Program

UNEA – UN Environment Assembly

UNEP – United Nations Environment Programme

UNEP 10YFP – UNEP’s 10 Year Framework Programme for 2012-2021 on sustainable consumption and production

UNEP-WCMC – World Conservation Monitoring Centre of UNEP

UNESCO – United Nations Educational, Scientific and Cultural Organization

UNFCCC – United Nations Framework Convention on Climate Change

UNFF – United Nations Forum on Forests

UNGA – United Nations General Assembly

UNEP GPA – Global Programme of Action for the Protection of the Marine Environment from Land-based Activities

UNISDR – United Nations Office for Disaster Risk Reduction

WAVES – Wealth Accounting and the Valuation of Ecosystem Services of the World Bank

WCDRR – United Nations World Conferences on Disaster Risk Reduction - / Sendai Framework

WCPA – World Commission on Protected Areas

WGRI – Ad Hoc Open-ended Working Group on the Review of Implementation of the CBD

WHO – World Health Organisation

WTO – World Trade Organisation

9. Cited references

- Aarssen, L. W. (1997). "High productivity in grassland ecosystems: effected by species diversity or productive species?". *Oikos* **80**(1): 183-184.
- Barrett, S. (2016). "Coordination vs. voluntarism and enforcement in sustaining international environmental cooperation". *Proceedings of the National Academy of Sciences of the United States of America* **113**(51): 14515-14522.
- Birdlife International (2017). "Preparations of the Post-2020 Strategic Plan". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/BirdLife.pdf>.
- BMUB (2014). "Fifth National Report. Convention on Biological Diversity. Germany". Retrieved from: <https://www.cbd.int/doc/world/de/de-nr-05-en.pdf>.
- BMUB (2015). "Naturschutz-Offensive 2020. Für biologische Vielfalt!". Retrieved from: http://www.bmu.de/fileadmin/Daten_BMU/Pool/Broschueren/naturschutz-offensive_2020_broschuere_bf.pdf.
- BMUB (2017a). "Biologische Vielfalt in Deutschland: Fortschritte sichern - Herausforderungen annehmen! Rechenschaftsbericht 2017 der Bundesregierung zur Umsetzung der Nationalen Strategie zur biologischen Vielfalt". Retrieved from: http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Naturschutz/nationale_strategie_rechenschaftsbericht_2017_bf.pdf.
- BMUB (2017b). "Stickstoffeintrag in die Biosphäre. Erster Stickstoff-Bericht der Bundesregierung". Retrieved from: http://www.bmu.de/fileadmin/Daten_BMU/Pool/Broschueren/stickstoffbericht_2017_bf.pdf.
- Brown Weiss, E. (2014). "Voluntary Commitments as Emerging Instruments in International Environmental Law". *Environmental Policy and Law* **44**(1-2): 83-95.
- Bubb, P. (2017). "Suggestions for the Strategic Plan for Biodiversity 2021-2030". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/Bubb.pdf>.
- Butchart, S. H. M., M. Di Marco and J. E. M. Watson (2016). "Formulating Smart Commitments on Biodiversity: Lessons from the Aichi Targets". *Conservation Letters* **9**(6): 457-468.
- CAT (2018). "Climate Action Tracker - Emissions Gaps - 15th November 2017". Retrieved from: <http://climateactiontracker.org/global/173/CAT-Emissions-Gaps.html>.
- CBD (1992). "The Convention on Biological Diversity". Retrieved from: <https://www.cbd.int/doc/legal/cbd-en.pdf>.
- CBD and Ramsar Convention (2011). "5th Joint Work Plan (JWP) 2011 - 2020". Retrieved from: https://www.ramsar.org/sites/default/files/documents/pdf/moc/CBD-Ramsar5thJWP_2011-2020.pdf.
- CBD CHM (2018). "User Manual. CBD Clearing-House Mechanism (CHM) -Online reporting tool for the sixth national report". Retrieved from: <https://www.cbd.int/chm/doc/chm-latest-guide-online-reporting-en.pdf>.
- CBD Secretariat (2014). "Global Biodiversity Outlook 4". Retrieved from: <https://www.cbd.int/gbo4/>.
- CBD Secretariat (2016). "Biodiversity and climate change. Making use of the findings of the IPCC's Fifth Assessment Report". Retrieved from: <https://www.cbd.int/climate/doc/biodiversity-ar5-brochure-en.pdf>.

CBD Secretariat (2017a). "The Lima Declaration on Biodiversity and Climate Change: Contributions from Science to Policy for Sustainable Development". Secretariat of the Convention on Biological Diversity. Retrieved from: <https://www.cbd.int/doc/publications/cbd-ts-89-en.pdf>.

CBD Secretariat (2017b). "Notification 2017-052: Preparations of the Post-2020 Strategic Plan". Retrieved from: <https://www.cbd.int/doc/notifications/2017/ntf-2017-052-post2020-en.pdf>.

CBD Secretariat (2017c). "Notification 2017-124: Peer review - Proposals for a comprehensive and participatory process for the preparation of the post-2020 biodiversity framework ". Retrieved from: <https://www.cbd.int/doc/notifications/2017/ntf-2017-124-post2020-en.pdf>.

CBD Secretariat (2017d). "Notification: Opportunities under the Green Climate Fund". Retrieved from: <https://www.cbd.int/doc/notifications/2017/ntf-2017-077-cc-en.pdf>.

CBD Secretariat (2018). "Draft Guidelines for Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction". Retrieved from: <https://www.cbd.int/sbstta/sbstta-22-sbi-2/EbA-Eco-DRR-Guidelines-en.pdf>.

CBD Secretariat, FAO, The World Bank, UNEP and UNDP (2016). "Biodiversity and the 2030 Agenda for Sustainable Development". Retrieved from: <https://www.cbd.int/development/doc/biodiversity-2030-agenda-technical-note-en.pdf>.

CBD/COP/3/DEC/III/8 (1996). "Memorandum of understanding between the Conference of the Parties to the Convention on Biological Diversity and the Council of the Global Environment Facility". Retrieved from: <https://www.cbd.int/decision/cop/default.shtml?id=7104>.

CBD/COP/10/9 (2010). "Revised and Updated Strategic Plan: Technical Rationale and Suggested Milestones and Indicators". Retrieved from: <https://www.cbd.int/doc/meetings/cop/cop-10/official/cop-10-09-en.pdf>.

CBD/COP/10/INF/12/Rev.1 (2011). "Strategic Plan For Biodiversity 2011-2020: Further Information Related to the Technical Rationale for the Aichi Biodiversity Targets, Including Potential Indicators and Milestones". Retrieved from: <https://www.cbd.int/doc/meetings/cop/cop-10/information/cop-10-inf-12-rev1-en.pdf>.

CBD/COP/12/INF/29 (2014). "Promoting synergies in addressing biodiversity and climate change adaptation issues: Linking National Adaptation Plans and National Biodiversity Strategies and Action Plans". Retrieved from: <http://www.cbd.int/doc/meetings/cop/cop-12/information/cop-12-inf-29-en.pdf>.

CBD/COP/14/9 (2018). "Long-term strategic directions to the 2050 Vision for Biodiversity, approaches to living in harmony with nature and preparation for the post-2020 global biodiversity framework". Retrieved from: <https://www.cbd.int/doc/c/0b54/1750/607267ea9109b52b750314a0/cop-14-09-en.pdf>.

CBD/COP/DEC/VI/26 (2002). "Strategic Plan for the Convention on Biological Diversity". Retrieved from: <https://www.cbd.int/decision/cop/default.shtml?id=7200>.

CBD/COP/DEC/VII/5 (2004). "Marine and coastal biological diversity". Retrieved from: <https://www.cbd.int/doc/decisions/cop-07/cop-07-dec-05-en.pdf>.

CBD/COP/DEC/X/2 (2010). "The strategic plan for biodiversity 2011-2020 and the Aichi biodiversity targets.". Retrieved from: <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf>.

CBD/COP/DEC/X/35 (2010). "Biodiversity of dry and sub-humid lands". Retrieved from: <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-35-en.pdf>.

CBD/COP/DEC/XI/4 (2012). "Review of implementation of the strategy for resource mobilization, including the establishment of targets". Retrieved from: <https://www.cbd.int/doc/decisions/cop-11/cop-11-dec-04-en.pdf>.

CBD/COP/DEC/XII/3 (2014). "Resource mobilization". Retrieved from: <https://www.cbd.int/doc/decisions/cop-12/cop-12-dec-03-en.pdf>.

CBD/COP/DEC/XIII/1 (2016). "Progress in the implementation of the Convention and the Strategic Plan for Biodiversity 2011-2020 and towards the achievement of the Aichi Biodiversity Targets". Retrieved from: <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-01-en.pdf>.

CBD/COP/DEC/XIII/6 (2016). "Biodiversity and Human Health". Retrieved from: <https://www.cbd.int/doc/c/1889/6715/24ba5f3b1e6a397598bee964/cop-13-dec-06-en.pdf>.

CBD/COP/DEC/XIII/14 (2016). "Climate-related geoengineering". Retrieved from: <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-14-en.pdf>.

CBD/COP/DEC/XIII/28 (2016). "Indicators for the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets". Retrieved from: <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-28-en.pdf>.

CBD/SBI/2/17 (2018). "Proposals for a comprehensive and participatory process for the preparation of the post-2020 global biodiversity framework". Retrieved from: <https://www.cbd.int/doc/c/cde0/fa18/7681b85be1ed441f18ae0c97/sbi-02-17-en.pdf>.

CBD/SBI/2/INF/26 (2018). "Exploring elements for a transformative biodiversity agenda post-2020". Retrieved from: <https://www.cbd.int/doc/c/7ed7/6372/e4163975c34d3730b58bf211/sbi-02-inf-26-en.pdf>.

CBD/SBI/REC/2/19 (2018). "Recommendation adopted by the Subsidiary Body on Implementation 2/19: Proposals for a comprehensive and participatory process for the preparation of the post-2020 global biodiversity framework". Retrieved from: <https://www.cbd.int/doc/recommendations/sbi-02/sbi-02-rec-19-en.pdf>.

CBD/SBSTTA/20/INF/27 (2016). "Expert Meeting on Improving Progress Reporting and Working Towards Implementation of Aichi Biodiversity Target 6". Retrieved from: <https://www.cbd.int/doc/meetings/sbstta/sbstta-20/information/sbstta-20-inf-27-en.pdf>.

CBD/SBSTTA/20/INF/34 (2016). "National Indicators and Approaches to Monitor Progress towards the Aichi Biodiversity Targets". Retrieved from: <https://www.cbd.int/doc/meetings/sbstta/sbstta-20/information/sbstta-20-inf-34-en.pdf>.

CBD/SBSTTA/21/2/Add.1 (2017). "Biodiversity and the 2030 Agenda for Sustainable Development". Retrieved from: <https://www.cbd.int/doc/meetings/sbstta/sbstta-21/official/sbstta-21-02-add1-en.pdf>.

CBD/SBSTTA/21/4 (2017). "Biodiversity and Human Health". Retrieved from: <https://www.cbd.int/doc/c/72d6/b5bb/9244e977048688ec45735d2c/sbstta-21-04-en.pdf>.

CBD/SBSTTA/22/5 (2017). "Updated scientific assessment of progress towards selected Aichi Biodiversity Targets and options to accelerate progress". Retrieved from: <https://www.cbd.int/doc/c/c75f/06b1/6fc465496044698feacc47ba/sbstta-22-05-en.pdf>.

CBD/SBSTTA/22/8 (2018). "Biodiversity and climate change: ecosystem-based approaches to climate change adaptation and disaster risk reduction". Retrieved from: <https://www.cbd.int/doc/c/9f64/178b/0f6394c5bf422cb156972f95/sbstta-22-08-en.pdf>.

CBD/SBSTTA/22/INF/31 (2018). "Effective use of knowledge in developing the post-2020 global biodiversity framework". Retrieved from:
<https://www.cbd.int/doc/c/a243/1d4d/667748f0fd8a2a7ff805267e/sbstta-22-inf-31-en.pdf>.

CBD/SBSTTA/22/INF/35 (2018). "Literature-based assessment and lessons-learned analysis of progress towards the Aichi Biodiversity Targets - input to SBSTTA 22/COP 14". Retrieved from:
<https://www.cbd.int/doc/c/bf53/55a1/41afdeacdf7bba10267f20b/sbstta-22-inf-35-en.pdf>.

CBD/SBSTTA/22/INF/36 (2018). "Safeguarding space for nature and securing our future: Developing a post-2020 strategy". Retrieved from:
<https://www.cbd.int/doc/c/b0ad/2d72/c89c5d360d03e57c246e6977/sbstta-22-inf-36-en.pdf>.

CBD/SBSTTA/REC/XXI/1 (2017). "Scenarios for the 2050 Vision for Biodiversity". Retrieved from:
<https://www.cbd.int/doc/recommendations/sbstta-21/sbstta-21-rec-01-en.pdf>.

CGRFA/FAO (2007). "Global Plan of Action for Animal Genetic Resources and the Interlaken Declaration". Retrieved from: <http://www.fao.org/3/a-a1404e.pdf>.

Chan, K. M. A., P. Balvanera, K. Benessaiah, M. Chapman, S. Diaz, E. Gomez-Baggethun, R. Gould, N. Hannahs, K. Jax, S. Klain, G. W. Luck, B. Martin-Lopez, B. Muraca, B. Norton, K. Ott, U. Pascual, T. Satterfield, M. Tadaki, J. Taggart and N. Turner (2016). "Why protect nature? Rethinking values and the environment". *Proceedings of the National Academy of Sciences of the United States of America* **113**(6): 1462-1465.

Christian, C., D. Ainley, M. Bailey, P. Dayton, J. Hocevar, M. LeVine, J. Nikoloyuk, C. Nouvian, E. Velarde, R. Werner and J. Jacquet (2013). "A review of formal objections to Marine Stewardship Council fisheries certifications". *Biological Conservation* **161**: 10-17.

CITES (2015). "Trade in stony corals. Resolution Conf. 11.10 (Rev. CoP15)". Retrieved from:
<https://www.cites.org/eng/res/11/11-10R15.php>.

CITES (2016). "CITES Strategic Vision: 2008-2020. Conf. 16.3 (Rev. CoP17)". Retrieved from:
https://www.cites.org/sites/default/files/document/E-Res-16-03-R17_0.pdf.

CITES (2017). "Revision and replacement of the CITES Strategic Vision: 2008-2020". Retrieved from:
<https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-10.pdf>.

CITES (2018). "Notification to the Parties concerning: Cooperation with other biodiversity-related Conventions". Retrieved from: <https://cites.org/sites/default/files/notif/E-Notif-2018-063.pdf>.

Climate Focus (2016). "Progress on the New York Declaration on Forests - Achieving Collective Forest Goals. Executive Summary - Updates on Goals 1 - 10". Retrieved from:
<https://climatefocus.com/sites/default/files/2016-Updates-on-Goals-1-10-Report.pdf>.

CMS (2014). "Strategic Plan for Migratory Species the period 2015-2023. UNEP/CMS/Resolution 11.2". Retrieved from:
https://www.cms.int/sites/default/files/document/Res_11_02_Strategic_Plan_for_MS_2015_2023_E_0.pdf.

Conservation International (2017). "Conservation International Submission Prepared in Response to CBD Notification 2017-052 on Preparations of the Post-2020 Strategic Plan". Retrieved from:
<https://www.cbd.int/doc/strategic-plan/Post2020/CI.pdf>.

Correia, R. A., P. Jepson, A. C. M. Malhado and R. J. Ladle (2017). "Internet scientific name frequency as an indicator of cultural salience of biodiversity". *Ecological Indicators* **78**: 549-555.

- Costello, M. J., M. Coll, R. Danovaro, P. Halpin, H. Ojaveer and P. Miloslavich (2010). "A Census of Marine Biodiversity Knowledge, Resources, and Future Challenges". Plos One **5**(8).
- Derraik, J. G. B. (2002). "The pollution of the marine environment by plastic debris: a review". Marine Pollution Bulletin **44**(9): 842-852.
- Doran, G. T. (1981). "There's a S.M.A.R.T. way to write management's goals and objectives". Management Review **70**(11): 35-36.
- Dowie, M. (2009). "Conservation Refugees: the Hundred-Year Conflict Between Global Conservation and Native Peoples". Cambridge, USA, MIT Press.
- ECOSOC (2017a). "Progress report on the 10-year framework of programmes on sustainable consumption and production patterns (E/2017/63)". Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=E/2017/63.
- ECOSOC (2017b). "Resolution 2017/4: United Nations strategic plan for forests 2017-2030 and quadrennial programme of work of the United Nations Forum on Forests for the period 2017-2020". Retrieved from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N17/184/62/PDF/N1718462.pdf?OpenElement>.
- EEA (1997). "Life Cycle Assessment (LCA) - A guide to approaches, experiences and information sources.". Retrieved from: <https://www.eea.europa.eu/publications/GH-07-97-595-EN-C/Issue-report-No-6.pdf>.
- EU and its Member States (2017). "Submission by the European Union and its Members States to CBD Notification 2017-052 on the preparatory process for the follow-up to the Strategic Plan for Biodiversity ". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/EU.pdf>.
- European Commission (2011). "COM (2011) 244 final. Our life insurance, our natural capital: an EU biodiversity strategy to 2020". Retrieved from: http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7%5B1%5D.pdf.
- FAO (1995). "Code of Conduct for Responsible Fisheries (CCRF)". Retrieved from: <http://www.fao.org/docrep/005/v9878e/v9878e00.htm>.
- FAO (2014a). "Building a common vision for sustainable food and agriculture. Principle and approaches". Retrieved from: <http://www.fao.org/3/a-i3940e.pdf>.
- FAO (2014b). "FAO's tools and guidance to assist implementation of the Convention on Biological Diversity and the Strategic Plan for Biodiversity 2011-2020". Retrieved from: <http://www.fao.org/3/a-i4811e.pdf>.
- FAO (2015a). "The Second Report on the state of the world's animal genetic resources for food and agriculture in brief". Retrieved from: <http://www.fao.org/3/a-i5077e.pdf>.
- FAO (2015b). "Voluntary Guidelines to Support the Integration of Genetic Diversity into National Climate Change Adaptation Planning". Retrieved from: <http://www.fao.org/3/a-i4940e.pdf>.
- FAO (2016). "The State of World Fisheries and Aquaculture 2016 (SOFIA). Contributing to food security and nutrition for all.". Retrieved from: <http://www.fao.org/documents/card/en/c/2c8bcf47-2214-4aeb-95b0-62ddef8a982a>.
- FAO (2017a). "Food and agriculture. Driving action across the 2030 Agenda for Sustainable Development". Retrieved from: <http://www.fao.org/3/a-i7454e.pdf>.

FAO (2017b). "Sixteenth Regular Session of the Commission on Genetic Resources for Food and Agriculture". Retrieved from: <http://www.fao.org/3/a-ms565e.pdf>.

FAO (2018). "Sustainable Agriculture for Biodiversity - Biodiversity for Sustainable Agriculture. Sustainable agriculture for biodiversity". Retrieved from: <http://www.fao.org/3/a-i6602e.pdf>.

FAO and WHO (2014). "The International Code of Conduct on Pesticide Management". Retrieved from: <http://www.fao.org/3/a-i3604e.pdf>.

Forest Peoples Programme (2017). "Submission in relation to the notification inviting views regarding the preparations of the Post-2020 Strategic Plan". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/FPP.pdf>.

G 7 Italy (2017). "Communiqué - G7 Bologna Environment Ministers' Meeting - Bologna, Italy, 11-12 June 2017". Retrieved from: <http://www.g7italy.it/sites/default/files/documents/Communiqu%C3%A9%20G7%20Environment%20-%20Bologna.pdf>.

GEF (2017). "Tackling the drivers of global environmental degradation through the Integrated Approach Pilot Programs". Retrieved from: https://www.thegef.org/sites/default/files/publications/IAP_Report_2017-2_v3.pdf.

Hill, R., G. A. Dyer, L. M. Lozada-Ellison, A. Gimona, J. Martin-Ortega, J. Munoz-Rojas and I. J. Gordon (2015). "A social-ecological systems analysis of impediments to delivery of the Aichi 2020 Targets and potentially more effective pathways to the conservation of biodiversity". *Global Environmental Change* **34**: 22-34.

Howard, C. (2016). "World's largest marine reserve created off Antarctica". Retrieved from: <https://news.nationalgeographic.com/2016/10/ross-sea-marine-protected-area-antarctica/>.

IDLO (2012). "Compendium of Innovative Legal Best Practices: Version 1.0. Legal Preparedness for Achieving the Aichi Biodiversity Targets". Retrieved from: <http://www.cisd.org/aichilex/files/compendium/Compendium.pdf>.

IPBES (2016). "The assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production". Retrieved from: https://www.ipbes.net/system/tdf/downloads/pdf/individual_chapters_pollination_20170305.pdf?file=1&type=node&id=15248.

IPBES/2/17 (2013). "Report of the second session of the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services". Retrieved from: https://www.ipbes.net/system/tdf/downloads/IPBES_2_17_en_0.pdf?file=1&type=node&id=14621.

IPBES/4/INF/14 (2016). "Information on work related to policy support tools and methodologies (deliverable 4 (c))". Retrieved from: https://www.ipbes.net/system/tdf/downloads/pdf/IPBES_4_INF_14.pdf?file=1&type=node&id=13415.

IPBES/6/15 (2018). "Report of the Plenary of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on the work of its sixth session". Retrieved from: https://www.ipbes.net/system/tdf/ipbes-6-15-report_advance.pdf?file=1&type=node&id=22981.

IPBES/6/15/Add.4 (2018). "Summary for policymakers of the regional assessment report on biodiversity and ecosystem services for Europe and Central Asia of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services". Retrieved from: https://www.ipbes.net/sites/default/files/downloads/ipbes-6-15-add.4-advance_ea.pdf.

IPBES/6/15/Add.5 (2018). "Summary for policymakers of the thematic assessment of land degradation and restoration of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services". Retrieved from: https://www.ipbes.net/sites/default/files/downloads/ipbes-6-15-add-5_spm_ldr_advance.pdf.

IPBES/6/INF/4 (2018). "Chapters of the regional and subregional assessment of biodiversity and ecosystem services for the Americas". Retrieved from: **only for IPBES-6 delegates / confidential document**.

IPBES/6/INF/6 (2018). "Chapters of the regional and subregional assessment of biodiversity and ecosystem services for Europe and Central Asia". Retrieved from: **only for IPBES-6 delegates / confidential document**.

IPBES/6/INF/9 (2018). "Information on the scoping for the methodological assessment regarding the diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem services (deliverable 3 (d))". Retrieved from: https://www.ipbes.net/system/tdf/ipbes-6-inf-9_en.pdf?file=1&type=node&id=16522.

ISEAL (2014). "Setting Social and Environmental Standards. ISEAL Code of Good Practice". Retrieved from: <https://www.isealliance.org/credible-sustainability-standards/iseal-codes-good-practice>.

IUCN (2014a). "Our Commitment to action for the Promise of Sydney". Retrieved from: https://testportals.iucn.org/wpc/about/promise_of_sydney_commitments.

IUCN (2014b). "Priorities emerging from the IUCN World Parks Congress 2014". Retrieved from: [https://www.worldparkscongress.org/wpc/sites/wpc/files/documents/pages/Priorities emerging from the IUCN World Parks Congress 2014.pdf](https://www.worldparkscongress.org/wpc/sites/wpc/files/documents/pages/Priorities%20emerging%20from%20the%20IUCN%20World%20Parks%20Congress%202014.pdf).

IUCN (2016a). "A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0 ". IUCN. Retrieved from: <https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf>.

IUCN (2016b). "Resolution WCC 2016 Res 036: Supporting privately protected areas". Retrieved from: <http://privateconservation.net/ppa-resolution-2016.html>.

IUCN (2017a). "Bonn Challenge Barometer of Progress: Spotlight Report 2017". Retrieved from: <https://portals.iucn.org/library/sites/library/files/documents/2017-060.pdf>.

IUCN (2017b). "Inputs for preparations of the post-2020 strategic plan". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/IUCN.pdf>.

IUCN and WCPA (2016). "IUCN Green List of Protected and Conserved Areas: Standard, Version 1.0. The global standard for protected areas in the 21st century". IUCN. Retrieved from: https://www.iucn.org/sites/dev/files/content/documents/iucn_glpca_standard_version_1.0_september_2016_030217_0.pdf.

Kanie, N. (2007). "Governance with Multilateral Environmental Agreements: A Healthy or Ill-Equipped Fragmentation?". Global Environmental Governance: Perspectives on the current debate. L. Swart and E. Perry. New York, USA, Centre for UN Reform Education: 67-86.

Khan, M. R. (2015). "Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change". Laws 4(3): 638-653.

Komives, K. and A. Jackson (2014). "Introduction to Voluntary Sustainability Standard Systems". Voluntary Standard Systems. A Contribution to Sustainable Development. C. Schmitz-Hoffmann, M. Schmidt, B. Hansmann and D. Palekhov, Springer: 3-19.

Laurans, Y., F. Kinniburgh and A. Rankovic (2018). "2018-2020: An Outburst for Biodiversity?". Retrieved from: <https://www.iddri.org/en/publications-and-events/blog-post/2018-2020-outburst-biodiversity>.

Liu, J., W. Yang and S. Li (2016). "Framing ecosystem services in the telecoupled Anthropocene". *Frontiers in Ecology and the Environment* **14**(1): 27-36.

MA (2005). "Millennium Ecosystem Assessment - Ecosystems and human well-being". Retrieved from: <http://millenniumassessment.org/en/index.html>.

Maes, J., A. Teller, M. Erhard, B. Grizzetti, J. I. Barredo, M. L. Paracchini, S. Condé, F. Somma, A. Orgiazzi, A. Jones, A. Zulian, S. Vallecillo, J. E. Petersen, D. Marquardt, V. Kovacevic, D. Abdul Malak, A. I. Marin, B. Czúcz, A. Mauri, P. Löffler, A. Bastrup-Birk, K. Biala, T. Christiansen and B. Werner (2018). "Mapping and Assessment of Ecosystems and their Services: An analytical framework for ecosystem condition". Retrieved from: http://catalogue.biodiversity.europa.eu/uploads/document/file/1673/5th_MAES_report.pdf.

Marques, A., H. M. Pereira, C. Krug, P. W. Leadley, P. Visconti, S. R. Januchowski-Hartley, R. M. Krug, R. Alkemade, C. Bellard, W. W. L. Cheung, V. Christensen, H. D. Cooper, T. Hirsch, R. Hoft, J. van Kolck, T. Newbold, K. Noonan-Mooney, E. C. Regan, C. Rondinini, U. R. Sumaila, L. S. L. Teh and M. Walpole (2014). "A framework to identify enabling and urgent actions for the 2020 Aichi Targets". *Basic and Applied Ecology* **15**(8): 633-638.

Martin-Lopez, B., E. Gomez-Baggethun, M. Garcia-Llorente and C. Montes (2014). "Trade-offs across value-domains in ecosystem services assessment". *Ecological Indicators* **37**: 220-228.

McDonough, W. and M. Braungart (2002). "Cradle to Cradle: Remaking the way we make things", North Point Press.

Miles, L., K. Trumper, M. Osti, R. Munroe and C. Santamaria (2013). "REDD+ and the 2020 Aichi Biodiversity Targets. Promoting synergies in international forest conservation efforts". Retrieved from: http://www.unredd.net/index.php?option=com_docman&task=doc_download&gid=11226&Itemid=53.

Minelli, S., A. Erlewein and V. Castillo (2017). "Land Degradation Neutrality and the UNCCD: From Political Vision to Measurable Targets". *International Yearbook of Soil Law and Policy 2016*. H. Ginzky, I. L. Heuser, T. Qin, O. C. Ruppel and P. Wegerdt, Springer: 85-104.

MSC (2017). "The MSC at 20. Wild. Certified. Sustainable. Annual Report 2016-17". Retrieved from: <https://www.msc.org/docs/default-source/default-document-library/about-the-msc/msc-annual-report-2016-17-english.pdf>.

Nauber, J. and A. Paulsch, Eds. (2015). "International workshop on diverse knowledge systems in IPBES". BfN-Skripten 415. Bonn, Bundesamt für Naturschutz - BfN.

OECD (2003). "Environmentally Harmful Subsidies: Policy Issues and Challenges". Retrieved from: <https://www.cbd.int/financial/fiscalenviron/g-subsidyharmful-oecd.pdf>.

OECD (2009). "Declaration on green growth". Retrieved from: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=C/MIN\(2009\)5/ADD1/FINAL](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=C/MIN(2009)5/ADD1/FINAL).

Pauw, W. P., R. Klein, J. T., K. Mbeva, A. Dzebo, D. Cassanmagnago and A. Rudloff (2018). "Beyond headline mitigation numbers: we need more transparent and comparable NDCs to achieve the Paris Agreement on climate change". *Climate Change* **147**(1-2): 23-29.

- Pe'er, G., L. Dicks, P. Visconti, R. Arlettaz, A. Báldi, T. Benton, S. Collins, M. Dieterich, R. Gregory and F. Hartig (2014). "EU agricultural reform fails on biodiversity". *Science* **344**(6188): 1090-1092.
- Perrings, C., S. Naeem, F. S. Ahrestani, D. E. Bunker, P. Burkill, G. Canziani, T. Elmqvist, J. A. Fuhrman, F. M. Jaksic, Z. Kawabata, A. Kinzig, G. M. Mace, H. Mooney, A. H. Prieur-Richard, J. Tschirhart and W. Weisser (2011). "Ecosystem services, targets, and indicators for the conservation and sustainable use of biodiversity". *Frontiers in Ecology and the Environment* **9**(9): 512-520.
- Pieters, J. (2003). "When removing subsidies benefits the environment: developing a checklist based on the conditionality of subsidies". *Environmentally Harmful Subsidies: Policy Issues and Challenges*. OECD. Paris, France, Organisation for Economic Co-Operation and Development: 143-188.
- Pro Natura (2017). "Process and timetable for the follow-up to the Strategic Plan for Biodiversity 2011-2020". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/ProNatura.pdf>.
- Raab, K. and E. Marquard (2018). "Towards a new CBD Strategy 2021-2030. Final Report on a 'Horizon Scanning' exercise.". Retrieved from: http://www.biodiv.de/fileadmin/user_upload/PDF/Projekte-aktuell/WWF_CBD_post_2020_HorizonScanning_Report.pdf.
- Ramsar Convention (2015). "The 4th Strategic Plan 2016 – 2024". Retrieved from: https://www.ramsar.org/sites/default/files/documents/library/4th_strategic_plan_2016_2024_e.pdf.
- Rochette, J., K. Gjerde, E. Druel, J. A. Ardron, A. Craw, P. Halpin, L. Pendleton, K. Teleki and J. Cleary (2014). "Delivering the Aichi target 11: challenges and opportunities for marine areas beyond national jurisdiction". *Aquatic Conservation-Marine and Freshwater Ecosystems* **24**: 31-43.
- Roe, D. (2010). "Whither biodiversity in development? The integration of biodiversity in international and national poverty reduction policy". *Biodiversity* **11**(1&2): 13-18.
- Schultz, M., T. D. Tyrell and T. Ebenhard (2016). "The 2030 Agenda and Ecosystems - A discussion paper on the links between the Aichi Biodiversity Targets and the Sustainable Development Goals". Retrieved from: http://swed.bio/wp-content/uploads/2016/11/The-2030-Agenda-and-Ecosystems_spread.pdf.
- SeaBOS (2017). "The Seafood Business for Ocean Stewardship (SeaBOS) - Our pledge for ocean stewardship – our plea to governments". Retrieved from: http://keystonedialogues.earth/wp-content/uploads/2017/07/Statement_2_10signatures.pdf.
- STDF (2013). "International Trade and Invasive Alien Species". Retrieved from: <http://oie.int/doc/ged/D13294.PDF>.
- Sukhdev, P., H. Wittmer and D. Miller (2014). "The Economics of Ecosystems and Biodiversity (TEEB): Challenges and Responses". *Nature in the Balance: The Economics of Biodiversity*. D. Helm and C. Hepburn. Oxford, UK, Oxford University Press: 135–150.
- Sustainable Ocean Initiative (2014). "Action plan for the Sustainable Ocean Initiative (2015-2020). Prepared by the Sustainable Ocean Initiative Global Partnership Meeting, 3-4 October, 2014, Seoul, Republic of Korea". Retrieved from: <https://www.cbd.int/doc/meetings/mar/soiom-2014-02/official/soiom-2014-02-actionplan-en.pdf>.
- SwedBio (2016). "Indigenous and local knowledge in IPBES & traditional knowledge in the CBD". Retrieved from: <http://swed.bio/news/indigenous-and-local-knowledge-in-ipbes-traditional-knowledge-in-the-cbd>

Talberth, J. and E. Gray (2012). "Global Costs of Achieving the Aichi Biodiversity Targets. A Scoping Assessment of Anticipated Costs of Achieving Targets 5, 8, and 14". Retrieved from: <https://sustainable-economy.org/wp-content/uploads/Aichi-58-and-14-Final-Report.pdf>.

TEEB (2008). "An Interim Report. European Communities". Retrieved from: <http://www.teebweb.org/publication/the-economics-of-ecosystems-and-biodiversity-an-interim-report/>.

TEEB (2010). "The Economics of Ecosystems and Biodiversity. Mainstreaming the economics of nature: A synthesis of the approach, conclusions and recommendations of TEEB". H. W. Authors: Pavan Sukhdev, Christoph Schröter-Schlaack, Carsten Nesshöver, Joshua Bishop, Patrick ten Brink, Haripriya Gundimeda, Pushpam Kumar and Ben Simmons. Retrieved from: <http://www.teebweb.org/publication/mainstreaming-the-economics-of-nature-a-synthesis-of-the-approach-conclusions-and-recommendations-of-teeb/>.

Tengö, M., E. S. Brondizio, T. Elmqvist, P. Malmer and M. Spierenburg (2014). "Connecting Diverse Knowledge Systems for Enhanced Ecosystem Governance: The Multiple Evidence Base Approach". *AMBIO* **43**(5): 579-591.

The Crop Trust (2016). "Annual Report 2015 Summary". Retrieved from: <https://www.croptrust.org/2015/>.

Tittensor, D. P., M. Walpole, S. L. L. Hill, D. G. Boyce, G. L. Britten, N. D. Burgess, S. H. M. Butchart, P. W. Leadley, E. C. Regan, R. Alkemade, R. Baumung, C. Bellard, L. Bouwman, N. J. Bowles-Newark, A. M. Chenery, W. W. L. Cheung, V. Christensen, H. D. Cooper, A. R. Crowther, M. J. R. Dixon, A. Galli, V. Gaveau, R. D. Gregory, N. L. Gutierrez, T. L. Hirsch, R. Hoft, S. R. Januchowski-Hartley, M. Karmann, C. B. Krug, F. J. Leverington, J. Loh, R. K. Lojenga, K. Malsch, A. Marques, D. H. W. Morgan, P. J. Mumby, T. Newbold, K. Noonan-Mooney, S. N. Pagad, B. C. Parks, H. M. Pereira, T. Robertson, C. Rondinini, L. Santini, J. P. W. Scharlemann, S. Schindler, U. R. Sumaila, L. S. L. Teh, J. van Kolck, P. Visconti and Y. M. Ye (2014). "A mid-term analysis of progress toward international biodiversity targets". *Science* **346**(6206): 241-244.

UK NEA (2011). "The UK National Ecosystem Assessment: Synthesis of the Key Findings". Retrieved from: uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx.

UN-NYDF (2014). "New York Declaration on Forests ". *FORESTS - Action Statements and Action Plans - UN Climate Summit 2014*. New York: 3-7.

UN (2017). "The Sustainable Development Goals Report". Retrieved from: <https://unstats.un.org/sdgs/files/report/2017/TheSustainableDevelopmentGoalsReport2017.pdf>.

UN DESA (2017). "In-depth analysis of Ocean Conference Voluntary Commitments to support and monitor their implementation. SDG 14 – Life below water. Advanced copy". Retrieved from: https://sustainabledevelopment.un.org/content/documents/17193OCVC_in_depth_analysis.pdf.

UNCCD (2007). "The 10-year strategic plan and framework to enhance the implementation of the Convention (Decision 3/COP.8)". Retrieved from: <https://www.unccd.int/sites/default/files/inline-files/Decision%20COP8%20adoption%20of%20The%20Strategy.pdf>.

UNCCD (2016). "Land in Balance. The scientific conceptual framework for Land Degradation Neutrality. Science-Policy Brief". Retrieved from: https://www.unccd.int/sites/default/files/documents/18102016_Spi_pb_multipage_ENG_1.pdf.

UNCCD (2017). "The future strategic framework of the Convention". Retrieved from: https://www.unccd.int/sites/default/files/relevant-links/2017-11/ICCD_COP%2813%29_L.18-1716078E.pdf.

UNCTAD (2016). "UNCTAD-FAO Joint Statement: Regulating fisheries subsidies must be an integral part of the implementation of the 2030 Sustainable Development Agenda". Retrieved from: <http://www.fao.org/3/a-bl898e.pdf>.

UNDP (2016). "Climate Credit Mechanisms - Clean Development Mechanism". Retrieved from: <http://www.undp.org/content/dam/sdfinance/doc/Climate%20Credit%20Mechanisms%20%20UNDP.pdf>.

UNEA (2017). "Ministerial declaration of the United Nations Environment Assembly at its third session "Towards a pollution free planet"". Retrieved from: <https://www.informea.org/en/decision/ministerial-declaration-united-nations-environment-assembly-its-third-session>.

UNEP-WCMC (2015). "Mapping Multilateral Environmental Agreements to the Aichi Biodiversity Targets". Retrieved from: <https://wedocs.unep.org/bitstream/handle/20.500.11822/11205/mapping-meas-aichi.pdf?sequence=1&isAllowed=y>.

UNEP-WCMC (2017). "Post-2020 Global Biodiversity Framework". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/WCMC.pdf>.

UNEP (1995). "Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities". Retrieved from: http://www.cep.unep.org/pubs/meetingreports/LBS%20ISTAC%20III/english/whole_gpa.pdf.

UNEP (2018). "The State of Plastics. World Environment Day Outlook 2018". Retrieved from: https://wedocs.unep.org/bitstream/handle/20.500.11822/25513/state_plastics_WED.pdf?sequence=1&isAllowed=y.

UNEP and International Trade Center (2017). "Guidelines for Providing Product Sustainability Information Global guidance on making effective environmental, social and economic claims, to empower and enable consumer choice". Retrieved from: <http://www.oneplanetnetwork.org/resource/guidelines-providing-product-sustainability-information>.

UNESCO (2017). "Education for Sustainable Development Goals - Learning Objectives". Retrieved from: <http://unesdoc.unesco.org/images/0024/002474/247444e.pdf>.

UNFCCC (1992). "United Nations Framework Convention on Climate Change". Retrieved from: http://unfccc.int/files/essential_background/convention/background/application/pdf/convention_text_with_annexes_english_for_posting.pdf.

UNFCCC (1998). "Kyoto Protocol to the United Nations Framework Convention on Climate Change". Retrieved from: <https://unfccc.int/resource/docs/convkp/kpeng.pdf>.

UNFCCC (2015). "Paris Agreement". Retrieved from: https://www.ipbes.net/system/tdf/downloads/pdf/IPBES_4_INF_14.pdf?file=1&type=node&id=13415&force=.

UNFCCC/CP/2011/9/Add.1 (2012). "Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011. Addendum. Part Two: Action

taken by the Conference of the Parties at its seventeenth session". Retrieved from: <https://unfccc.int/sites/default/files/resource/docs/2011/cop17/eng/09a01.pdf>.

UNGA (1994). "Elaboration of an international convention to combat desertification in countries experiencing serious drought and/or desertification, particularly in Africa (A/AC.241/27)". Retrieved from: https://www.unccd.int/sites/default/files/relevant-links/2017-01/English_0.pdf.

UNGA (2015). "Resolution 70/1: Transforming our world: the 2030 Agenda for Sustainable Development". Retrieved from: http://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf.

UNGA (2017a). "Report of the Preparatory Committee established by General Assembly resolution 69/292: Development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction". Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=A/AC.287/2017/PC.4/2.

UNGA (2017b). "Resolution 71/285: United Nations strategic plan for forests 2017-2030". Retrieved from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N17/115/46/PDF/N1711546.pdf?OpenElement>.

UNGA (2017c). "Resolution 71/312. Our ocean, our future: call for action". Retrieved from: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/71/312&Lang=E.

UNGA (2017d). "Resolution 71/313: Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development". Retrieved from: <https://undocs.org/A/RES/71/313>.

UNISDR (2005). "Hyogo Framework for Action 2005-2015". Retrieved from: <https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>.

UNISDR (2015). "Sendai Framework for Disaster Risk Reduction 2015 - 2030. Third World Conference on Disaster Risk Reduction". Retrieved from: https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf.

van Asselt, H. and K. Kulovesi (2017). "Seizing the opportunity: tackling fossil fuel subsidies under the UNFCCC". *International Environmental Agreements-Politics Law and Economics* **17**(3): 357-370.

van Oorschot, M., C. Wentink, M. Kok, P. Van Beukering, O. Kuik, M. van Drunen, J. van den Berg, V. Ingram, L. Judge, E. Arets and F. Veneklaas (2016). "Integrating values of ecosystem goods and services into Dutch supply chains: Potential private and public benefits of voluntary markets standards for sustainable production". Retrieved from: www.pbl.nl/en.

Vardon, M., S. King, D. Juhn, S. Bass, P. Burnett, C. M. Rodriguez and S. Johansson (2017). "The Aichi Targets and Biodiversity Conservation – The Role of Natural Capital Accounting". *Forum on Natural Capital Accounting for Better Policy Decisions: Taking Stock and Moving Forward*. M. Vardon, S. Bass, S. Ahlroth and A. Ruijs. Washington D.C., World Bank WAVES: 205-215.

Vidal, J. (2016). "Oil drilling underway beneath Ecuador's Yasuní national park". Retrieved from: <https://www.theguardian.com/environment/2016/oct/26/oil-drilling-underway-beneath-ecuadors-yasuni-national-park>.

WHO and CBD (2015). "Connecting Global Priorities: Biodiversity and Human Health. A State of Knowledge Review". Retrieved from: <https://www.cbd.int/health/SOK-biodiversity-en.pdf>.

Widerberg, O. and P. Pattberg (2015). "International Cooperative Initiatives in Global Climate Governance: Raising the Ambition Level or Delegitimizing the UNFCCC?". Global Policy **6**(1): 45-56.

Wilkinson, C., B. Salvat, C. M. Eakin, A. Brathwaite, R. Francini-Filho, N. Webster, B. Padovani Ferreira and P. Harris (2016). "Tropical and Sub-Tropical Coral Reefs. World Ocean Assessment, Chapter 43". United Nations. Division for Ocean Affairs and the Law of The Sea. Retrieved from: http://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_43.pdf.

World Bank Group (2017). "WAVES Annual Report". Retrieved from: <https://www.wavespartnership.org/sites/waves/files/kc/WAVES-Annual-Report-2017-05.pdf>.

World Summit on Sustainable Development (2002). "Plan of Implementation of the World Summit on Sustainable Development". Retrieved from: http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf.

WTO (2017). "Fisheries subsidies. Ministerial Decision of 13 december 2017". Retrieved from: <https://docs.wto.org/.../SS/directdoc.aspx?filename=q:/WT/MIN17/64.pdf>.

WWF. (2012). "What is our planet up against?". Retrieved July 14, 2012, from http://wwf.panda.org/about_our_earth/global_priority_drivers/.

WWF (2017). "CBD Strategic Plan 2020-30 - WWF views on process". Retrieved from: <https://www.cbd.int/doc/strategic-plan/Post2020/WWF.pdf>.

Young, O. R. (2011). "Effectiveness of international environmental regimes: Existing knowledge, cutting-edge themes, and research strategies". Proceedings of the National Academy of Sciences of the United States of America **108**(50): 19853-19860.