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Conference of the Parties to the Convention on Biological Diversity
Seventeenth meeting
Yerevan, 19–30 October 2026
Agenda item 16
Synthetic biology

Synthetic biology

Draft decision submitted by the Chair of Working Group II

The Conference of the Parties,

Recalling Articles 8(j), 11, 12, 16, 18, 19 and 20 of the Convention on Biological Diversity[1] and their possible relevance to the use and application of synthetic biology, as well as to the implementation of the thematic action plan to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology for the implementation of the Convention and the Kunming-Montreal Global Biodiversity Framework,[2]

Recalling also decisions 14/19 of 29 November 2018, 15/31 of 19 December 2022 and 16/21 of 1 November 2024,

Recalling further its decision 15/8 of 19 December 2022,

1. *Notes with appreciation* the outcomes of the meeting of the Ad Hoc Technical Expert Group on Synthetic Biology;[3]

2. *Notes* the current and potential benefits of synthetic biology in relation to the targets of the Framework Kunming-Montreal Global Biodiversity, as set out in annexes II and III to the report of the Ad Hoc Technical Expert Group, respectively, recognizing that the examples therein are illustrative and not a result of an assessment by the Expert Group;

3. *Also notes* the preliminary work on the potential positive and potential negative impacts of the most recent technological developments in synthetic biology;[4]

[4. *Re-emphasizes* that Parties should apply a precautionary approach,[5] and invites Parties to use the best available scientific information for the environmental release of synthetic biology applications[, in accordance with national circumstances and legislation, as appropriate];]

[1] United Nations, *Treaty Series*, vol. 1760, No. 30619.
[2] Decision 15/4, annex.
[3] CBD/SYNBIO/AHTEG/2026/1/3.
[4] See CBD/SYNBIO/AHTEG/2026/1/2, annex II.
[5] As provided in principle 15 of the Rio Declaration on Environment and Development.

5. *Recognizes* the importance of anticipatory approaches, such as horizon scanning and monitoring mechanisms, among others, in supporting the timely identification and assessment of potential positive and potential negative impacts of future developments in synthetic biology;

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Thematic action plan to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology for the implementation of the Convention and the Kunming-Montreal Global Biodiversity Framework

[6. *Adopts* the thematic action plan to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology for the implementation of the Convention and the Framework, as contained in the annex to the present decision, as a voluntary, non-duplicative and complementary tool aimed at supporting Parties in accordance with their national priorities and circumstances;]

7. *Invites* Parties, other Governments, indigenous peoples and local communities, women's and youth organizations and other relevant stakeholders to make use of the thematic action plan to support capacity-building and development, access to and transfer of technology on mutually agreed terms and knowledge-sharing in the context of synthetic biology for the implementation of the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework, in accordance with national priorities and circumstances;

8. *Invites* the Parties to the Cartagena Protocol on Biosafety[6] and the Parties to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization[7] to use the thematic action plan without duplicating, and in a manner that is complementary to and coordinated with, the capacity-building action plan for the Cartagena Protocol[8] and the capacity-building and development action plan for the Nagoya Protocol;[9]

9. *Invites* Parties to consider, as appropriate, the actions contained in the thematic action plan in the development, updating and implementation of national biodiversity strategies and action plans, as well as in relevant sectoral policies, strategies and plans, in accordance with national priorities and circumstances;

10. *Encourages* Parties, other Governments and relevant organizations to facilitate the full and effective participation of indigenous peoples and local communities, women and youth, with their free, prior and informed consent,[10] in the implementation of the thematic action plan, in accordance with national legislation;

11. *Invites* Parties, other Governments, indigenous peoples and local communities, women, youth, academia, research institutions and other relevant organizations to consider, as appropriate, other complementary frameworks and guidelines when planning activities to implement the thematic action plan;[11]

12. *Invites* Parties and regional organizations, as appropriate, to assess capacities and identify needs and priorities in line with the indicative strategic actions set out under output 1.1 of the thematic action plan, in order to support the adaptation and implementation of the thematic action plan, in accordance with national and regional circumstances and priorities;

13. *Invites* Parties to share, as appropriate, their needs and priorities with regard to the implementation of the thematic action plan with the regional and subregional support centres of the

[6] United Nations, *Treaty Series*, vol. 2226, No. 30619.
[7] Ibid., vol. 3008, No. 30619.
[8] Decision CP-10/4, annex.
[9] Decision NP-5/3, annex.
[10] All references to "free, prior and informed consent" refer to the tripartite terminology of "prior and informed consent", "free, prior and informed consent" and "approval and involvement".
[11] Examples of other complementary frameworks and guidelines are provided in section V of the thematic action plan.

Technical and Scientific Cooperation Mechanism,[12] to complement the implementation of the capacity-building action plan for the Cartagena Protocol and the capacity-building and development action plan for the Nagoya Protocol;

14. *Invites* the technical and scientific cooperation support centres to facilitate the implementation of the thematic action plan, as appropriate;

15. *Encourages* developed country Parties, and invites Parties in a position to do so, other Governments and relevant organizations, to make financial, technical and in-kind resources available to support the implementation of the thematic action plan, especially for developing country Parties, in particular the least developed countries and small island developing States, and country Parties with economies in transition, in line with Articles 16, 18 and 20 of the Convention;

16. *Encourages* Parties to submit to the Global Environment Facility and other donors project proposals to support the implementation of the thematic action plan, including on the identification of needs and priorities and the national and regional adaptation of the plan;[13]

17. *Invites* Parties, other Governments, indigenous peoples and local communities, women, youth, academia, research institutions and other stakeholders to share, on a voluntary basis and through the clearing-house mechanisms, information on the implementation of the thematic action plan complementary to that on the implementation of the capacity-building action plan for the Cartagena Protocol and the capacity-building and development action plan for the Nagoya Protocol;

18. *Encourages* Parties, international organizations, indigenous peoples and local communities, women, youth, academia and other relevant stakeholders to facilitate scientific and technical cooperation on synthetic biology, including North-South, South-South and triangular cooperation, to support the implementation of the thematic action plan;

19. *Invites* Parties, other Governments and relevant organizations to submit to the Executive Secretary information on national and regional experiences, best practices and lessons learned with regard to capacity-building and development, access to and transfer of technology on mutually agreed terms and knowledge-sharing in the context of synthetic biology;

20. *Requests* the Executive Secretary, subject to the availability of resources:

(a) To create a compilation of the national and regional experiences, best practices and lessons learned referred to in paragraph 19 above as a resource to support the implementation of the thematic action plan;

(b) To enhance the section on the thematic action plan on the Secretariat website[14] with the information referred to in paragraphs 17, 19 and 20 (a) above, with a view to promoting capacity-building and development, access to and transfer of technology on mutually agreed terms and knowledge-sharing relevant to the implementation of the thematic action plan;

(c) To facilitate capacity-building and development and knowledge-sharing activities, in particular for developing countries, indigenous peoples and local communities, women and youth, in order to facilitate the implementation of the thematic action plan;

(d) To develop a mechanism to monitor the implementation of the thematic action plan, on the basis of the information shared pursuant to paragraph 19 above, for consideration at the eighteenth meeting of the Conference of the Parties;

[12] See decision 16/3, annex I.
[13] See output 1.1 of the thematic action plan.
[14] See www.cbd.int/synbio.

II

Most recent technological developments in synthetic biology

21. *Notes* the outcomes of the work undertaken on synthetic biology pursuant to decisions 14/19, 15/31 and 16/21, and decides to assess the need for the establishment of a new ad hoc technical expert group on synthetic biology after due consideration of the stocktake report referred to in paragraph 26 below;

22. *Invites* Parties, other Governments, indigenous peoples and local communities, women's and youth organizations, academia, research institutions and other relevant organizations to submit information on:

(a) New developments in synthetic biology [15] and its applications[, including, as appropriate, those related to the convergence of artificial intelligence with synthetic biology,] in relation to the objectives of the Convention and the implementation of the Framework;

(b) The potential positive and potential negative impacts of the developments referred to in subparagraph 22 (a) above in relation to the objectives of the Convention and the implementation of the Framework;

(c) Existing methodologies for assessing the potential positive and potential negative impacts of synthetic biology;

23. *Decides* to convene discussions of the Open-ended Online Forum on Synthetic Biology to gather information related to:

(a) New developments in synthetic biology and its applications[, including, as appropriate, those related to the convergence of artificial intelligence with synthetic biology,] in relation to the objectives of the Convention and the implementation of the Kunming-Montreal Global Biodiversity Framework;

(b) The potential positive and potential negative impacts of the developments referred to in subparagraph 23 (a) above in relation to the objectives of the Convention and the implementation of the Framework;

(c) Existing methodologies for assessing the potential positive and potential negative impacts of the most recent technological developments in synthetic biology;

24. *Requests* the Executive Secretary, subject to the availability of resources:

(a) To synthesize the information on synthetic biology and the discussions of the Open-ended Online Forum referred to in paragraphs 22 and 23 above, respectively;

(b) To submit the synthesis of information to the Subsidiary Body on Scientific, Technical and Technological Advice for consideration at a meeting held before the eighteenth meeting of the Conference of the Parties

(c) To support the full and effective participation of indigenous peoples and local communities in the work related to synthetic biology undertaken under the Convention, in accordance with decision X/40 of 29 October 2010;

(d) To support further the participation of women and youth organizations, academia and research institutions in the work related to synthetic biology undertaken under the Convention;

25. *Requests* the Subsidiary Body on Scientific, Technical and Technological Advice to consider at a meeting held before the eighteenth meeting of the Conference of the Parties the

[15] Synthetic biology is operationally defined in decision XIII/17 as a further development and new dimension of modern biotechnology that combines science, technology and engineering to facilitate and accelerate the understanding, design, redesign, manufacture and/or modification of genetic materials, living organisms and biological systems.

synthesis requested under subparagraph 24 (a) above, with a view to submitting a draft decision for consideration by the Conference of the Parties at its eighteenth meeting;

III
Synthesis and review of work relevant to synthetic biology conducted under the Convention and its Protocols

26. *Requests* the Executive Secretary, subject to the availability of resources:

(a) To prepare a draft stocktake report containing a consolidation, synthesis and review of the work and processes related to synthetic biology undertaken under the Convention and its Protocols since 2010, with a view to:

(i) Identifying gaps, overlaps, duplication and complementarities with existing processes under the Convention and its Protocols;

(ii) Mapping the scope and mandate of other relevant international organizations and entities [16] working on synthetic biology in relation to the three objectives of the Convention;

(b) To submit the draft stocktake report for peer review in time for finalization and consideration at the meeting of the Subsidiary Body on Scientific, Technical and Technological Advice preceding the eighteenth meeting of the Conference of Parties;

(c) To submit the stocktake report at the meeting of the Subsidiary Body on Scientific, Technical and Technological Advice preceding the eighteenth meeting of the Conference of Parties;

27. *Requests* the Subsidiary Body on Scientific, Technical and Technological Advice to consider the stocktake report and prepare a draft recommendation on options for future work on synthetic biology under the Convention for consideration at the eighteenth meeting of the Conference of the Parties.

Annex

Thematic action plan to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology for the implementation of the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework

I. Introduction

1. The thematic action plan to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology is designed to meet the needs and priorities of Parties, especially developing country Parties, in particular the least developed countries and small island developing States, and Parties with economies in transition, in order to implement the three objectives of the Convention on Biological Diversity [17] and the Kunming-Montreal Global Biodiversity Framework[18] in the context of synthetic biology.[19]

[16] E.g. the Food and Agriculture Organization of the United Nations, the Organisation for the Prohibition of Chemical Weapons, the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Secretariat of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, the United Nations Conference on Trade and Development, the World Health Organization, the International Gene Synthesis Consortium and the International Union for Conservation of Nature.
[17] United Nations, *Treaty Series*, vol. 1760, No. 30619.
[18] Decision 15/4, annex.
[19] Synthetic biology is operationally defined in decision XIII/17 as a further development and new dimension of modern biotechnology that combines science, technology and engineering to facilitate and accelerate the understanding, design, redesign, manufacture and/or modification of genetic materials, living organisms and biological systems.

2. In accordance with decision 16/21 of 1 November 2024, the thematic action plan has been developed taking the following into account:

(a) The specific needs of Parties and indigenous peoples and local communities,[20] to complement the capacity-building action plan for the Cartagena Protocol on Biosafety;[21,22]

(b) The identification of areas where capacity-building and development, access to and transfer of technology and knowledge-sharing are needed for research and development and for assessments in the field of synthetic biology;

(c) Strategies to facilitate the equitable participation of developing country Parties, indigenous peoples and local communities, women, youth, academia, the business sector and relevant institutions in research and development in the field of synthetic biology;

(d) Strategies to promote the fair and equitable sharing of benefits arising from synthetic biology, in line with Articles 16 and 19 of the Convention and with the Framework;

(e) Mechanisms for technology transfer, knowledge-sharing and international technical and scientific cooperation to foster innovation, in line with Articles 16 and 18 of the Convention and with the Framework.

II. Structure

3. The table below contains the outcome areas and indicative strategic actions of the thematic action plan. The three outcome areas are:

(a) Strengthened capacity for research and development in and the assessment of synthetic biology;

(b) Improved access to and transfer of technology relevant to synthetic biology on mutually agreed terms;

(c) Enhanced knowledge-sharing on synthetic biology, including its development, assessment, governance and regulation.

4. Strategies to facilitate equitable participation in the field of synthetic biology; strategies to promote the fair and equitable sharing of benefits arising from synthetic biology, in line with Articles 16 and 19 of the Convention; and mechanisms for technology transfer, knowledge-sharing and international technical and scientific cooperation to foster innovation, in line with Articles 16 and 18 of the Convention, have been integrated into the three outcome areas.

5. Where relevant, and to avoid duplication, the thematic action plan includes references to the other action plans developed under the Convention and its Protocols, in addition to relevant documents and resources developed by other intergovernmental organizations.

III. Linkage to the Convention on Biological Diversity, the Kunming-Montreal Global Biodiversity Framework and existing plans

6. The thematic action plan is developed to support Parties and other stakeholders in achieving, in the context of synthetic biology, the three objectives of the Convention, namely, the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The plan could therefore help to minimize the potential adverse impacts on biological diversity (Articles 7 (c), 8 (g) and 14 of the Convention), while also facilitating access to and transfer of technology, scientific and technical cooperation and the distribution of benefits arising from biotechnology based upon genetic resources (Articles 16, 18 and 19). The plan can also contribute to the implementation of the goals and targets of the

[20] As identified further to notifications Nos. 2025-065 and 2025-088.
[21] United Nations, *Treaty Series*, vol. 2226, No. 30619.
[22] Decision CP-10/4, annex.

Framework, specifically Targets 2, 4, 6, 7, 8, 9, 10, 11, 13, 16, 17, 19, 20, 21, 22 and 23, where applicable and as a complement to other actions that may contribute to their achievement.

7. In addition, the thematic action plan is complementary to the capacity-building action plan for the Cartagena Protocol and the capacity-building and development action plan for the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization.[23,24] The implementation plan for the Cartagena Protocol can also support and guide Parties in addressing elements related to biosafety.

IV. Use of the thematic action plan

8. The thematic action plan can be used by any actors. The suggested actions are voluntary and will vary according to national circumstances, priorities and needs, as well as the role of the actors involved. Actions should be taken in line with the guiding principles listed in section V below.

9. To ensure effective implementation, a phased approach is recommended, starting with the identification of needs and priorities related to research and development, access to and transfer of technology on mutually agreed terms, regulation, assessment, monitoring and knowledge-sharing in the context of synthetic biology that are relevant to the implementation of the Convention and the Framework. According to national and organizational circumstances, activities can then be prioritized to address the identified needs (see outcome area 1, output 1.1).

10. The implementation of any relevant elements of the thematic action plan should be considered in the light of existing capacity-building and development activities, access to and transfer of technology initiatives and knowledge-sharing endeavours related to biosafety, access and benefit-sharing and the Framework implementation mechanisms, with the goal to avoid duplication.

V. Guiding principles

11. The thematic action plan is aimed at contributing to the achievement of the three objectives of the Convention and the goals and targets of the Framework. Thus, all indicated actions should be taken in the context of the Convention and its Protocols and the Framework.

12. In line with decision 16/21, the general principles and strategies for enhancing capacity-building and development, access to and transfer of technology on mutually agreed terms and knowledge-sharing of the long-term strategic framework for capacity-building and development should apply to the thematic action plan and be taken into consideration when planning activities.[25]

13. When using the thematic action plan, actors should:

(a) Take a precautionary approach, as provided in principle 15 of the Rio Declaration on Environment and Development;

(b) Adopt a science-based and case-by-case approach;

(c) Take a needs-based approach in line with national priorities and circumstances;

(d) Consider the potential positive and potential negative impacts of synthetic biology applications on the three objectives of the Convention and the goals and targets of the Framework;

(e) Consider the potential positive and potential negative impacts in relation to the intended use and the likely potential receiving environment;

(f) Take a multidisciplinary, transdisciplinary or interdisciplinary approach to research and development in and the assessment of synthetic biology;

[23] United Nations, *Treaty Series*, vol. 3008, No. 30619.
[24] Decision NP-5/3, annex.
[25] See decision 15/8, annex I, paras. 8 and 9.

(g) Recognize the diverse values of nature and its benefits, including biodiversity, the environment and ecosystem services;[26]

(h) Recognize and respect diverse knowledge systems and gender-specific elements in accordance with national legislation;

(i) Recognize and respect traditional knowledge, innovations, practices and technologies of indigenous peoples and local communities, in accordance with national priorities and circumstances;

(j) Foster a whole-of-society approach that ensures the full, effective and meaningful participation of all actors, in accordance with national priorities and circumstances;

(k) Ensure the free, prior and informed consent[27] of indigenous peoples and local communities, in accordance with national priorities and circumstances;

(l) Promote the fair and equitable sharing of benefits arising from the utilization of genetic resources;[28]

(m) Support international and regional scientific and technical cooperation to strengthen activities related to research and development in and the assessment of synthetic biology in the context of the Convention and its Protocols and the Framework;

(n) Take a coordinated, non-duplicative and complementary approach with respect to synthetic biology and other related fields.[29]

14. As appropriate, other principles, frameworks and guidelines containing complementary actions can be taken into account when planning activities and considering the use of synthetic biology in the context of the Convention and the Framework.[30]

VI. Means of implementation

15. Making adequate and predictable resources available in a timely manner is crucial for the effective implementation of the three objectives of the Convention and the Framework in the context of synthetic biology. Thus, there is a need to mobilize resources from all sources, including those in accordance with Article 20 of the Convention, and to identify and select the financial resources that will support the thematic action plan. Such resource mobilization should be needs-based and accessible, in line with national circumstances and priorities and aimed at supporting the implementation of the Convention and the Framework. Particular consideration should be given to the least developed countries, small island developing States, and Parties with economies in transition, as well as the most environmentally vulnerable countries, in accordance with paragraph 7 of Article 20 of the Convention.

[26] See *The Methodological Assessment Report on the Diverse Values and Valuation of Nature* of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

[27] "Free, prior and informed consent" refers to the tripartite terminology of "prior and informed consent", "free, prior and informed consent" and "approval and involvement".

[28] In line with Article 2 of the Convention and relevant decisions of the Conference of the Parties.

[29] Including by building on the work conducted under the Protocols to the Convention and the Organisation for Economic Co-operation and Development, as appropriate.

[30] E.g. the implementation plan for the Cartagena Protocol, the Gender Plan of Action (2023–2030), the Akwé: Kon Voluntary Guidelines, the Mo'otz Kuxtal Voluntary Guidelines, the plan of action on customary sustainable use of biological diversity, the knowledge management strategy to support the implementation of the Framework, the United Nations Declaration on the Rights of Indigenous People, the United Nations Educational, Scientific and Cultural Organization recommendation on Open Science, the World Health Organization global guidance framework for the responsible use of life sciences, the Food and Agriculture Organization of the United Nations Science and Innovation Strategy and its corresponding action plan, the International Union for Conservation of Nature policy on synthetic biology in relation to nature conservation (8.086), the Organisation for Economic Co-operation and Development framework for anticipatory governance of emerging technologies and the Organisation for Economic Co-operation and Development agile mechanisms for responsible technology development.

16. The thematic action plan can be used as a reference for guiding the development of programmatic directions for the financial mechanism of the Convention and its Protocols (the Global Environmental Facility and its Global Biodiversity Framework Fund), as well as the Biodiversity Finance Initiative of the United Nations Development Programme, regional initiatives, other funds and donors.

17. National Governments are also invited to incorporate dedicated funding in their national finance plans or other similar planning instruments in the context of national biodiversity strategies and action plans, in accordance with national priorities and capacities (see also output 1.1).

18. The implementation of the thematic action plan should be needs-driven, and financial, technical and institutional support should be provided, in accordance with national priorities, circumstances, needs and legislation, as appropriate.

VII. Role of the Secretariat and of the regional and subregional technical and scientific cooperation support centres

19. While the thematic action plan is directed to national Governments and relevant stakeholders, the Secretariat of the Convention will support Parties in their efforts in implementing the plan, in accordance with Article 24 of the Convention. Its support can include undertaking activities in response to requests from the Conference of the Parties, including gathering, synthesizing and sharing information through the clearing-house mechanisms and facilitating capacity-building activities.

20. The regional and subregional technical and scientific cooperation support centres forming part of the Technical and Scientific Cooperation Mechanism established by decision 15/8 and operationalized in decision 16/3 can support Parties, upon request, with identifying gaps in scientific capacity, supporting technology transfer and innovation, facilitating scientific and technical cooperation and assisting with knowledge-sharing activities when implementing the thematic action plan.

21. To monitor the implementation of the thematic action plan, the Secretariat may request the voluntary submission of information to complement relevant information from other possible sources, including national reports requested under the Convention and its Protocols, as necessary.

VIII. Monitoring and reporting on progress in the implementation of the thematic action plan

22. The monitoring and reporting of progress in the implementation of the thematic action plan will be conducted in conjunction with the monitoring and reporting of progress in the implementation of the long-term strategic framework for capacity-building and development and the Technical and Scientific Cooperation Mechanism.

23. The thematic action plan may be reviewed, as necessary, upon request of the Conference of the Parties in the light of experiences in using the plan and of new developments in the field of synthetic biology.

Outcome areas and indicative strategic actions to support capacity-building and development, access to and transfer of technology and knowledge-sharing in the context of synthetic biology for the implementation of the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework

Outcome area 1: strengthened capacity for research and development in and the assessment of synthetic biology **Objective:** actors have improved capacity and infrastructure for undertaking research and development, assessments, monitoring and regulatory oversight of synthetic biology applications that are relevant to the implementation of the three objectives of the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework, while avoiding duplication with the Cartagena Protocol and the Nagoya Protocol.	
Output	*Indicative strategic actions*
1.1 Identification of needs and priorities	(a) Assess capacities and identify needs related to research and development, access and transfer of technology, regulation, assessment, monitoring and knowledge-sharing in the context of synthetic biology; (b) Prioritize activities for short-, medium- and long-term action on the basis of identified needs and national circumstances; (c) Integrate synthetic biology research and development and assessment needs into various sectoral budget plans, and identify capacity-building and development needs.
1.2 Strengthened physical infrastructure	(a) Establish, strengthen or provide access to technical laboratory infrastructure, while taking biosafety and biosecurity into account;[31] (b) Develop governance mechanisms, technical support and sustainability models to ensure long-term functionality and equitable use of laboratory infrastructure; (c) Develop in silico infrastructure;[32] (d) Establish or strengthen laboratories at the national, subregional or regional level; (e) Promote continued and sustainable financing for the maintenance of infrastructure and the procurement of reagents and materials; (f) Integrate physical and digital biosecurity protocols and cyberbiosecurity protocols into the design, operation and maintenance of laboratory and in silico infrastructure.
1.3 Support for personnel capacity	(a) Institutionalize capacity-building and development processes and ensure continued capacity-building through global, regional and national institutions, including for assessment, monitoring and regulation, avoiding duplication with the Cartagena Protocol and the Nagoya Protocol; (b) Provide scholarships, internships and mentorships at the undergraduate and postgraduate levels for areas related to research and development in and the assessment of synthetic biology, in particular for students and women from developing countries and indigenous peoples and local communities; (c) Support the development or use of existing exchange programmes as mechanisms to build capacity, transfer knowledge and promote sustained communication and collaboration across relevant stakeholders; (d) Develop interdisciplinary training programmes for research and development in and the assessment of synthetic biology, including for assessment and monitoring, in national or regional universities and on e-learning platforms, including specialized courses for regulators and decision makers; (e) Foster the training of members of indigenous peoples and local communities in research and development in and the assessment of synthetic biology in locally relevant languages and in line with their self-determined needs and priorities.
1.4 Development of capacity for local research	(a) Develop national or regional road maps for research and development and responsible innovation in synthetic biology, including through convening national or regional workshops;

[31] Where needed to complement infrastructure supported under the capacity-building action plan for the Cartagena Protocol and the capacity-building and development action plan for the Nagoya Protocol, for Parties to those respective instruments.
[32] For example, computational facilities for data processing, computer-aided design, modelling, bioinformatics and artificial intelligence; software; and servers.

and development	(b) Support standardization and best practices within the field of synthetic biology, as appropriate and in accordance with national circumstances and priorities; (c) Establish regional and international centres of excellence, networks of laboratories or research consortiums, in particular in developing countries, for activities conducted in the field of synthetic biology; (d) Strengthen research on local genetic resources, including through the provision of grants for local research.
1.5 Enhanced assessment capacity	(a) For Parties to the Cartagena Protocol, use associated actions under Goal A.5 of the capacity-building action plan for the Protocol[33] for synthetic biology applications; (b) Strengthen existing national and international procedures, where appropriate, for the environmental impact assessment of synthetic biology applications, in line with Article 14 of the Convention and avoiding the creation of duplicative regulatory processes; (c) Ensure public participation and engagement with a diverse range of experts, including from indigenous peoples and local communities, women, youth, academia and other relevant stakeholders, in the assessment of synthetic biology applications; (d) Fund and strengthen research programmes to improve assessment and monitoring capacity for the potential positive and potential negative impacts of synthetic biology; (e) Strengthen national capacities in anticipatory approaches, assessment and monitoring to identify recent developments in synthetic biology with potential positive and potential negative impacts on the objectives of the Convention; (f) Develop science-based standards to assess and ensure the reliability of biocontainment systems, in accordance with national legislation.
Outcome area 2: improved access to and transfer of technology relevant to synthetic biology on mutually agreed terms **Objective**: access to and the transfer of technology on mutually agreed terms are essential for the attainment of the three objectives of the Convention and the Framework. Thus, the objective of outcome area 2 is to ensure access to synthetic biology technology that is relevant to the conservation and sustainable use of biological diversity and does not result in significant damage to the environment, and to create enabling environments that facilitate the transfer of such technology on mutually agreed terms, in line with Articles 16 and 19 of the Convention	
Output	*Indicative strategic actions*
2.1. Increased access to and transfer of technology on mutually agreed terms	(a) Establish public-private, public-private-academic and academic-private partnerships on technology relevant to research and development in and the assessment of synthetic biology; (b) Develop and maintain an accessible database of tools and methodologies for detection, identification and assessment; (c) Encourage the development and use of open-source tools, low-cost technology platforms and distributed manufacturing models; (d) Invest in and strengthen supply chains, including through cold-chain facilities, national and regional manufacturing and diversified suppliers; (e) Facilitate the import processes for research supplies; (f) Promote and facilitate the sharing of facilities in line with national needs and priorities; (g) Encourage the use of exchange programmes and organize matchmaking events and technology fairs to support the establishment of links among technology providers, regulators, assessors and potential users, including at the regional level; (h) Develop tools and guidance for access to and the transfer of synthetic biology technology on mutually agreed terms that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources, do not result in significant damage to the environment and are adapted to local economic, social and cultural contexts; (i) Encourage voluntary licensing arrangements on mutually agreed terms for indigenous peoples and local communities;

[33] Goal A.5: Parties carry out scientifically sound risk assessments of living modified organisms and manage and control identified risks to prevent adverse effects of living modified organisms on the conservation and sustainable use of biological diversity taking also into account risks to human health (decision CP-10/4, annex).

	(j) Encourage voluntary reduced licensing rates and transfer of technical knowledge for use in local innovation and non-commercial research in developing countries on mutually agreed terms.
2.2. Establishment and/or strengthening of regulatory alignment with existing regulation	(a) Establish, strengthen and/or maintain functional biosafety frameworks, which for Parties to the Cartagena Protocol should be in accordance with Goal A.1 of the capacity-building action plan for the Protocol;[34] (b) Review regulatory frameworks to identify any potential gaps related to synthetic biology and align biosafety systems to address such gaps, as necessary; (c) Establish and/or strengthen national coordination mechanisms for activities related to synthetic biology; (d) Encourage North-South, South-South and triangular cooperation, including through the exchange of scientific knowledge, technical expertise, regulatory experience and best practices related to synthetic biology, while respecting national legislation, national circumstances and the sovereign right of Parties to establish and implement their own regulatory frameworks.
2.3. Strengthened strategies to promote fair and equitable benefit-sharing arising from synthetic biology	(a) For Parties to the Nagoya Protocol, use the capacity-building and development action plan for the Protocol[35] to strengthen access and benefit-sharing systems; (b) Support fair and equitable benefit-sharing, including monetary and non-monetary benefit-sharing, from applications of synthetic biology technology, including to support the participation of developing country Parties in research and development and the assessment of synthetic biology; (c) Encourage equitable and inclusive non-monetary benefit-sharing, in particular for developing countries and indigenous peoples and local communities; (d) Include reciprocity and co-benefit clauses in public-private, public-academic and other partnership or licensing agreements on mutually agreed terms; (e) Develop appropriate tools and mechanisms to promote the fair and equitable sharing of benefits arising from research and development in and the application of synthetic biology technology; (f) Promote measures to respect, preserve and maintain the traditional knowledge, innovations and practices of indigenous peoples and local communities relevant to synthetic biology to ensure that their access and use are obtained only with the free, prior and informed consent[36] of the indigenous peoples and local communities concerned and that benefits arising from their utilization are shared in a fair and equitable manner, in accordance with relevant intellectual property frameworks.
Outcome area 3: enhanced knowledge-sharing on synthetic biology, including its development, assessment, governance and regulation **Objective**: knowledge relevant to synthetic biology research, development, assessment and regulation is shared widely, in line with Article 17 of the Convention, and made available for use by all actors for research and development in and the assessment, governance and regulation of synthetic biology	
Output	*Indicative strategic actions*
3.1. Improved access to scientific knowledge	(a) Promote the publication of open access scientific articles in the field of synthetic biology, while respecting national legislation on the protection of confidential information and sovereignty over genetic resources; (b) Promote the publication of relevant information in public databases, in line with national legislation and the principles of findability, accessibility, interoperability and reusability (FAIR principles) and of collective benefit, authority to control, responsibility and ethics (CARE principles); (c) Encourage capacity-building on data stewardship, data curation and long-term data management, including or improving transparency, metadata standards and the handling of confidential information; (d) Promote the sharing of scientific and technical knowledge related to research and development and assessment of synthetic biology, including through the clearing-house mechanisms of the Convention and its Protocols;

[34] Goal A.1: Parties have in place functional national biosafety frameworks (decision CP-10/4, annex).
[35] Decision NP-5/3, annex.
[36] "Free, prior and informed consent" refers to the tripartite terminology of "prior and informed consent", "free, prior and informed consent" and "approval and involvement".

	(e) Support facilitated access to scientific journals and technical databases for researchers and students from developing countries; (f) Establish synthetic biology information hubs to improve access to relevant information.
3.2. Establishment of knowledge-sharing initiatives and mechanisms	(a) Convene national, regional and international knowledge-sharing events on synthetic biology and related areas, including, as appropriate, regulatory aspects, assessment and oversight, and promote participation in relevant regional and international gatherings, in particular for developing countries; (b) Support the participation of researchers and students in dedicated competitions; (c) Establish knowledge-sharing and cooperation agreements among institutions and promote participation in international or regional research networks; (d) Provide international scholarships and internships for knowledge-sharing initiatives on synthetic biology, in particular for developing countries, women and youth; (e) Facilitate the participation of researchers from developing countries and representatives of indigenous peoples and local communities in international two-way knowledge-sharing events; (f) Encourage, as appropriate, regulatory learning exchanges among countries; (g) Promote knowledge-sharing activities that are inclusive of all relevant rights holders and stakeholders; (h) Promote regional, international, North-South, South-South and triangular cooperation on synthetic biology and ecological research.
3.3. Expanded communication and outreach	(a) Encourage the publication of technical materials and scientific publications in local languages; (b) Support the development of scientific and operational modules in local languages, co-developed with stakeholders; (c) Facilitate public awareness through the use of a variety of media and of local languages; (d) Conduct dialogues and awareness campaigns that are accessible, multilingual and adapted to diverse audiences, including the general public, indigenous peoples and local communities, women and youth; (e) Hold dedicated forums and public consultations with the participation of indigenous peoples and local communities, civil society organizations, women, youth, regulators and the scientific community; (f) Promote the organization of public research discovery days in universities to facilitate the dissemination of knowledge related to synthetic biology and its potential impacts.
3.4. Promotion of inclusive knowledge-sharing	(a) Prioritize intercultural dialogues in knowledge construction through mechanisms that respect and integrate diverse knowledge systems, languages and transmission modes, while ensuring effective participation based on free, prior and informed consent, culturally appropriate engagement and respect for traditional knowledge and gender perspectives; (b) Foster two-way learning between scientific institutions and indigenous peoples and local communities.