

## **Including Food Systems, Biodiversity, Nutrition and Health in the Post-2020 Global Biodiversity Framework: a submission from the Alliance of Bioversity International and the International Center for Tropical Agriculture**

**Purpose:** For consideration as part of the Post-2020 Global Biodiversity Framework process and by the 23<sup>rd</sup> meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-23) of the Convention on Biological Diversity (CBD).

**Proponents:** The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

**Scope:** to strengthen and broaden the scope of existing Aichi Biodiversity Target 7 and include considerations of mainstreaming biodiversity across the full spectrum of food systems including inputs, finance and insurance, production, post-harvest storage, processing, transport, marketing and consumption, to address loss of biodiversity and enhance its contribution to improving food and nutrition security, human and environmental health and resilience of food systems.

**Focus:** sustainable food systems, agroecology, agrobiodiversity, genetic resources and associated traditional knowledge, human diets, nutrition and health.

### **Preamble**

Welcoming the proposal put forward by the Co-Chairs of the Open-ended Working Group (OEWG) on the development of a possible new structure for the post-2020 Global Biodiversity Framework [Non-paper 02 - Zero draft (CBD Secretariat WG2020-01, July 2019)];

Noting the following Decisions adopted by the Conference of the Parties to the Convention on Biological Diversity:

- CBD/COP/DEC/XIII/3 (CBD Secretariat, 2016a) that recognizes the need to mainstream biodiversity into agriculture practices
- CBD/COP/DEC/XIII/6 (CBD Secretariat, 2016b) and CBD/COP/DEC/XIV/4 (CBD Secretariat, 2018) that recognize the links between biodiversity and human health

Recognizing the importance of the above decisions to the implementation of the 2030 Agenda for Sustainable Development and the achievement of the Sustainable Development Goals (in particular SDGs 2, 3, 12, 13 and 15);

Noting Resolution A/RES/73/253 (United National General Assembly, 2019) [Agriculture development, food security and nutrition] adopted by the UN General Assembly on 20 December 2018, that recognizes the need to strengthen the resilience and adaptive capacity of food systems and people's livelihoods in response to climate variability and extremes, to achieve a world without hunger and malnutrition in all its forms by 2030;

We, the Alliance of Bioversity International and CIAT, support the proposal of the Co-Chairs of the OEWG to adapt the five goals of the current Strategic Plan for Biodiversity 2011-2020 and update the current Aichi Biodiversity Targets (ABTs or targets) to reflect the above-mentioned decisions and make them as relevant and SMART as possible, measuring the targets against a range of identified milestones and indicators.

We also support the OEWG's view that the new framework should be more ambitious in scope and extended to cover a period of 30 years, thereby extending the framework to 2050 and adopting a new set of targets to support the achievement of the agreed CBD vision for 2050.

Specifically, we propose **to strengthen and broaden the scope of existing Aichi Biodiversity Target 7 “By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity”**, taking advantage of the lessons learned in implementing CBD/COP/DEC/VII/32 (CBD Secretariat, 2004) and VIII/23 (CBD Secretariat, 2006), which established the *Cross-cutting initiative on biodiversity for food and nutrition*. The new target would embrace a food systems perspective, which puts biodiversity at its core and makes more explicit the links to sustainable production and consumption mentioned in ABT 4 and biodiversity conservation in ABT 13.

Opportunities should also be sought to reinforce the ties between the Aichi Biodiversity Targets 4, and 13 (as well as 3, 6 and 18) and Sustainable Development Goal 2 (SDG 2 *Zero Hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture*). As explained extensively in the rationale below, biodiversity underpins human well-being and contributes directly to support food systems, agricultural productivity, ecosystem functioning, food security and livelihoods among others. In re-wording Target 7, we specifically welcome explicit links and alignment to SDG target 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*, and target 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*. We also welcome links and alignment to SDG 3 (*Good Health and well-being: Ensure healthy lives and promote well-being for all at all ages*), SGD 12 (*Responsible consumption and production: Ensure sustainable consumption and production patterns*), SDG 13 (*Climate Action: Take urgent action to combat climate change and its impacts*) and SDG 15 (*Life on earth: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*).

## **Rationale**

One of the monumental challenges facing humanity is how to secure universal access to sufficient, nutritious, safe, healthy and affordable food produced sustainably in resilient systems and landscapes, ensuring the conservation and use of biodiversity. Existing agriculture and food systems produce large quantities of food, but not enough of the nutrient-rich foods needed for healthier and sustainable diets. Indeed, satisfaction of these nutritional needs is even more poorly distributed among low income groups. Such systems also undermine biodiversity, including agricultural biodiversity, while contributing to the global public health crisis and to widespread environmental degradation and loss of biodiversity.

Today three staple crops (rice, maize and wheat) account for more than 50% of the plant derived calories consumed globally, while the wide range of nutrient-rich varieties, cultivars and breeds of plants and animals and wild species used by humanity throughout history are being forgotten and lost, and traditional knowledge on the use of these species eroded. The recent State of the World's Biodiversity for Food and Agriculture report (SoW-BFA) (FAO, 2019a), the first global assessment of biodiversity for food and agriculture worldwide, and the first ever Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report on Biodiversity and Ecosystem Services (IPBES, 2019) present alarming pictures of unprecedented biodiversity loss caused by current food systems and future scenarios of accelerated rates of loss if we fail to act immediately. The second note of the High Level Panel of Experts (HLPE) on Food Security and

Nutrition on Critical and Emerging Issues for Food Security and Nutrition, also identifies the decline of the diversity of our food production systems as one out of nine major critical emerging issues (HLPE, 2017a).

The SoW-BFA warns that, despite growing evidence of biodiversity's key role in food security and nutrition, the diversity of food production systems worldwide is in decline. Of the thousands of plant and animal species cultivated or raised for food in the past, fewer than 200 currently contribute substantially to global food output and only nine account for 66% of total crop production. In 48 years, from 1961 to 2009, diets worldwide have become increasingly similar, dominated by rice, maize and wheat at the expense of a rich global food biodiversity marginalized by specialized modern agricultural production systems (Khoury et al., 2014).

The second note of the High-Level Panel of Experts on Food Security and Nutrition on Critical and Emerging Issues for Food Security and Nutrition states that:

*“modern agricultural practices are reducing available agrobiodiversity while it is the most needed to address challenges. [...] Thousands of plant species and livestock breeds have been raised throughout human history, for food, feed, fibre, shelter and fuel. Since the 1900s, some 75 percent of plant genetic diversity has been lost as farmers worldwide have discarded their multiple local varieties and landraces for genetically uniform, high-yielding varieties. Today, about 30 crops provide 95 percent of human food energy needs and 75 percent of global food production is based on 12 commercial crops and five animal species. The consequences of the gradual erosion of the rich biodiversity of plant varieties and animal breeds need to be better assessed, in particular for the inhabitants of threatened ecosystems, such as deserts, mountains, forests, coastal belts, wetlands and arid regions. Mapping and assessing agrobiodiversity within and between ecosystems, and better understanding their role for sustainable agricultural production could be a priority area for FSN” (HLPE, 2017a).*

The IPBES assessment reports the extinction of 559 of the 6,190 domesticated breeds of mammals used for food and agriculture (over 9%) while 1,000 more are threatened (IPBES, 2019). Data from the USDA indicated that over 80% of crop varieties utilized in the 19<sup>th</sup> Century had disappeared by 1990 (Fowler, 1994). In Mexico, less than 20% of maize landraces cultivated in the 1930's was still cultivated in the 1990's while in China the number of wheat varieties cultivated dropped from over 10,000 in the 1950's to less than 1,000 in the 1970's. And a study for Latin America indicated that 16 to 22% of wild relatives of peanut, potato and black-eyed bean are threatened with extinction by 2055 (FAO, 1997).

The IPBES report goes on to highlight that the loss of local varieties and breeds of domesticated plants and animals, as well as their wild relatives, poses a serious risk to global food security and undermines the resilience of many food systems to threats such as pests, pathogens and climate variability, including extreme weather events (IPBES, 2019).

While biodiversity rapidly disappears, the number of undernourished people has increased to 821 million (FAO, IFAD, UNICEF, WFP and WHO, 2019), signaling a rise in world hunger and a reversal of trends following a prolonged decline. Child stunting remains unacceptably high with approximately 151 million children affected and 51 million children wasted. At the same time, one in eight adults are obese—over 672 million people worldwide—and three out of four deaths are caused by non-communicable, diet-related diseases (e.g. diabetes, cancer, cardio-vascular diseases), particularly in emerging economies and in low-to-middle income countries (HLPE, 2017b). While about 2 billion people lack the key micronutrients they need for physical and mental development such as iron and vitamin A, a case of concern is the huge increase in the supplement industry selling pills with health claims unsupported by science to otherwise healthy people (Couzin-Franzel, 2015; Guallar *et al.*, 2013), rather than focusing on biodiversity as a sustainable solution.

Underutilized food biodiversity<sup>1</sup> provides valuable macro- and micronutrients, as well as beneficial bioactive non-nutrients that contribute to dietary health, a requisite target for achieving Sustainable Development Goal 2 by 2030. This food biodiversity represents a natural wealth for many countries yet most fail to value and conserve it adequately for this purpose. Even a relatively small terrestrial land area such as the Pacific islands demonstrates the unique wealth of food biodiversity. Many Pacific islands harbor globally significant unique and novel varieties of locally important species (e.g. banana, pandanus, breadfruit, taro, yam), which often have higher nutrient contents than more commonly consumed imported varieties that dominate their markets. Yet, many of these nutrient-rich traditional varieties are disregarded for a variety of socio-economic or political reasons. In the case of some local banana varieties, the pro-vitamin A carotenoid content ranged from as little as 1µg to as much as 8500µg per 100g of edible portion, more than a 1000-fold greater than the common Cavendish variety bananas. This is a nature-based solution that is locally and culturally appropriate for addressing micronutrient deficiency.

Business-as-usual clearly carries too much cost with serious repercussions on human health and nutrition - resulting in additional burdens on health services and care – but also reinforcing negative drivers with impacts on climate change and the environment.

Modern food systems contribute significantly to major environmental issues, including biodiversity loss, 19–29% of global greenhouse gas emissions, contamination and shortages of water, ecosystems pollution, and land degradation. Of the different earth ecosystem components assessed in the sixth Global Environment Outlook (GEO 6) report, biodiversity health is the most affected by environmental degradation with adverse impacts on the resilience of ecosystems, including agricultural systems and food security (UN Environment, 2019). The irreversible loss of biodiversity has been identified as the global environmental problem that has already exceeded safe planetary boundaries (Rockstrom *et al.*, 2009; Steffen *et al.*, 2015).

Such a situation, with its massive contribution to biodiversity loss and poor diets, is no longer tolerable. We need to move urgently beyond standard practices to achieve a global food system transformation (IPES-Food, 2016; Caron *et al.*, 2018). One that is centered on safeguarding, creatively using, and celebrating the rich diversity of food plants and animals that sustain all of us and that puts biodiversity at the heart of food systems so that they are more sustainable, resilient, and equitable and better equipped to provide healthy, culturally appropriate and delicious food to all, thus contributing towards the achievement of relevant SDGs.

The negotiations of the Post-2020 Global Biodiversity Framework offer a unique opportunity for parties and partners to commit and mobilize, provide real political will and leadership and coalesce action around the transformation of agriculture, food systems and diets based on conservation and use of biodiversity. Creative approaches are required to utilize biodiversity for food and agriculture and to diversify food systems, supply chains and public food procurement, including innovative approaches that incentivize demand and desirability for food biodiversity. Only when we are actively using biodiversity for sustainable farming and food systems that deliver diverse, nutritious foods can we hope to effectively safeguard this green gold for future generations and reverse current alarming rates of biodiversity loss.

Recent pilot-scale initiatives such as the GEF-supported Biodiversity for Food and Nutrition (BFN) project<sup>2</sup> have demonstrated the often-superior nutritional value and additional benefits of much of our underutilized food biodiversity by using innovative research partnerships and approaches to increase the knowledge, appreciation, awareness and utilization of this diversity encompassing both cultivated and wild edible species. BFN partners Brazil, Kenya, Sri Lanka and Turkey have prioritized a rich diversity of neglected and underutilized species and varieties for healthier diets and improved

---

<sup>1</sup> Food biodiversity is the diversity of plants, animals and other organisms used for food, both cultivated and from the wild (Bioversity International, 2017)

<sup>2</sup> [www.b4fn.org](http://www.b4fn.org)

nutrition, and used this knowledge to mainstream these species and their diversity into production and consumption systems, including linking biodiversity to school meals and public food procurement, into food-based dietary guidelines, and into markets including sustainable gastronomy and tourism. These innovations and approaches are visionary in meeting the challenges of environmental sustainability, improved diet-related health and nutrition and improved livelihoods in the 2030 sustainable development context, as well as putting the conservation of biodiversity on a much stronger footing. In Brazil and Kenya, for example, the project's mainstreaming efforts resulted in the endorsement of national policy instruments that promote the conservation and sustainable use of food biodiversity (Hunter et al., 2019).

Not only does mainstreaming biodiversity in this way bring health and nutrition benefits, it contributes significantly to reducing the environmental impact of the food system as well as improving its resilience. Much of this food biodiversity is maintained by smallholder farmers, including indigenous peoples and local communities, using agroecological principles and practices, in diversified farming systems and landscapes, with limited external inputs of water and chemicals, and is locally adapted to climate variations. A food system transformed in this way contributes significantly to reducing biodiversity loss, greenhouse gas emissions, contamination and shortages of water, ecosystems pollution, and land degradation. In addition, it provides income generation benefits, especially for the youth, as a result of diversification options; it also contributes to empowerment of vulnerable groups including women and Indigenous people and local communities.

Yet, players in the global food system are slow to respond to needed change. Harmful subsidies and perverse incentives are still employed, and structural barriers to diversification are still present in the system (The Food and Land Use Coalition, 2019). The global food system remains locked into delivering largely cheap, unhealthy food with a huge environmental footprint and escalating public health budgets, at the cost of diversity on farms and in agricultural landscapes (IPES-Food, 2016; TEEB, 2018a). While the recent Food and Land Use Coalition report (2019) shows that producing healthy, sustainable food would cut food prices, as land ecosystem health improves. The IPES Food study (2016) focused its attention on the path dependency and lock-ins of the current food system, dominated primarily by concentrated corporate power and profit motivations above human and natural values. This, as well as the need for transformative change, was also highlighted in the Theory of Change section of the TEEB AgriFood Framework report (2018a).

Achieving the transformative change needed requires certain key actions and pathways, including the diversification of food production and consumption, as proposed by FAO and others (FAO, 2014; FAO, 2018ab; FAO, 2019b; IPES-Food, 2016; Bioversity International, 2017). A **first critical pathway** is to urgently safeguard and conserve the remaining globally important genetic diversity including varieties, landraces and breeds, and wild relatives of crops and livestock *in situ* (in protected areas under sustainable management and use, on farm and through other effective area-based conservation measures (OECMs)) and *ex situ* in order to halt and reverse biodiversity loss - currently a remit of ABT13. The **second pathway**, which simultaneously addresses concerns expressed in ABTs 4, 7 and 13, is to provide support for more comprehensive biodiversity mainstreaming innovations as well as investments in sustainable and diverse production landscapes and practices that value, conserve and creatively and sustainably use genetic resources for food and agriculture. For instance, support for biodiversity-friendly management practices in crop, livestock, forestry and aquaculture production systems that make use of nutrient-rich species and varieties. This involves identifying innovations such as using the power of farm bill subsidies and public food purchasing to drive diversification; the linking of smallholders to school markets to supply local foods derived from native biodiversity for healthier school meals; the education and public awareness of consumers, leveraging peoples' attachment to food cultures, traditions, and the identity of terroir; the incorporation of food biodiversity and traditional knowledge into food-based dietary guidelines and additional market opportunities. The **final pathway** in this transformative change is the promotion of sustainable and healthy diets, empowering consumers to improve the healthiness and biodiversity

of their diets, and thus creating greater demand and desirability for food biodiversity (linking to ABT 4).

It is with this rationale in mind that we propose to substitute the language of the existing Aichi Biodiversity Target 7 with one that secures and promotes more sustainable and nutritious food systems based on biodiversity. The new target would make the links to Aichi Biodiversity Targets 4 and 13 more explicit and would actively promote the sustainable management and use of biodiversity, incorporating measures that conserve biodiversity for food and agriculture to ensure and strengthen the resilience and adaptive capacity of food production and simultaneously contribute to diversified, healthy and culturally-relevant nutrition for today's and future generations, thus contributing to the achievement of the Agenda 2030 for Sustainable Development.

This proposed new target focuses on mainstreaming currently underutilized food biodiversity that holds significant potential for improving diets and nutrition while making food systems resilient and protecting ecosystem services. Doing so will help food systems move beyond producing just more food towards finding solutions that nourish people and protect the planet in ways that can be sustained environmentally, economically and culturally.

### **Proposed new target to strengthen the existing Aichi Target 7 and associated milestones and indicators**

#### ***Proposed revised target***

By 2050 food security and nutrition are ensured to all people in an inclusive manner based on diversified, resilient and sustainable food production systems that apply agroecological principles and practices while conserving and sustainably using biodiversity and ecosystem services

This target can be achieved by doubling the total food production by 2050 in developing countries and emerging economies, and by achieving a stepwise increase in the percentage of food produced meeting the criteria of this target, having 2020 as the baseline - 20% by 2030, 50% by 2040 and 100% by 2050 [linked to SDG 2, 3, 4, 12, 13, 15 and 17 and 2050 Biodiversity Vision]. Possible milestones are elaborated below.

#### ***Proposed revised milestones for 2030 and 2040, linked with SDGs 2, 3, 12, 13 and 15***

1. By 2025 all parties have put in place laws, policies and programs that promote food security and improved nutrition from healthy, diverse and safe diets in an inclusive manner to all, in particular the poor and people in vulnerable situations, so as to address by 2030 the nutritional needs of all and in particular of children, adolescent girls, pregnant and lactating women and older persons

*[linked to SDG 2, targets 1 and 2; SDG 3, targets 1 and 2, and possibly 4; SDG 4, target 2; SDG 12, possibly targets 5 and 6]*

2. By 2025, all parties have put in place laws, policies and programs that incentivizes diversification of food production systems applying agroecological principles and practices and conserving and sustainably using biodiversity and ecosystem services, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

*[linked to SDG 2, 12, 13, 15]*

3. By 2030, at least 20% of total food production come from diversified, resilient and sustainable food production systems, applying agroecological principles and practices and conserving and sustainably using biodiversity and ecosystem services, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

*[linked to SDG 2, target 4; SDG 4, targets 4 and 7; SDG 12, targets 1 and 2, and possibly 3; SDG 13, targets 1 and 2, and possibly 3; SDG 15, targets 1, 4 and 9, and possibly 3]*

4. By 2030, parties have built up nutritional compositional value information of available food biodiversity and have information and capacity built on its propagation/reproduction, cultivation/growth, harvesting, storage, marketing and use.

*[linked to SDG 15, target 9; SDG 17, targets 6, 7, 9 and 18]*

5. By 2030, food procurements mechanisms incorporate increased diversity of nutritious and safe foods from local, sustainable and resilient sources, with increased use of local underutilized food biodiversity, of domesticated and wild species

*[linked to SDG 12, target 7]*

6. By 2040, 50% of total food production should come from diversified, resilient and sustainable food production systems, applying agroecological principles and practices and conserving and sustainably using biodiversity and ecosystem services, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

*[linked to SDG 2, target 4; SDG 4, targets 4 and 7; SDG 12, targets 1 and 2, and possibly 3; SDG 13, targets 1 and 2, and possibly 3; SDG 15, targets 1, 4 and 9, and possibly 3]*

#### **Possible indicators and baseline information**

We acknowledge and support the indicators under current ABT 7 (e.g. Proportion of agricultural land under productive and sustainable agriculture). The proposed ones below would however strengthen the new proposed ABT 7 towards more sustainable food production systems:

- Number of countries implementing the *Voluntary Guidelines on Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition and Voluntary Guidelines on Food Systems and Nutrition (to be endorsed by CFS in 2020)*, as well as other relevant instruments, tools and voluntary guidelines for transforming food systems
- Number of countries that have mainstreamed biodiversity for food and nutrition into relevant national development strategies and plans including National Biodiversity Strategy and Action Plans (NBSAPs), Multi-sectoral Nutrition Plans, National Agricultural Plans, National Climate Change Adaptation Programmes of Action (NAPAs) and National Climate Change Adaptation Plans (NAPs) and other relevant national development strategies and plans
- Number of countries with policies in place which provide subsidies/incentives for the sustainable production of healthy biodiverse foods
- Proportion of countries that have increased production and availability of food biodiversity with sustainable agricultural management practices
- Number of best practices for mobilizing nutritionally-rich biodiversity to improve dietary diversity identified and promoted
- Number of countries that have in place national food-based dietary guidelines which highlight the importance of food biodiversity not only for healthy diets and nutrition outcomes but also the many other multiple benefits including environmental sustainability and social equity
- Number of databases with food composition tables which include reliable nutritional value information on food biodiversity and associated traditional knowledge
- Number of people trained to deploy and benefit from nutritionally-rich biodiversity
- Number of new markets developed for food biodiverse products with high nutritional value
- Economic survey/analysis indicating income levels changing due to sales of nutritionally-rich biodiverse products

- Number of information events conducted that foster greater appreciation of consumers, policy makers and others, of nutritionally-rich biodiversity as a resource for development and wellbeing
- Number of publications highlighting nutritionally-rich biodiversity, recipes and processing methods developed
- Number of people consuming 400 gr of fruits and vegetables per day as per World Health Organization (WHO) recommendations
- Etc.

### **Implementation approaches**

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) together with key partners such as FAO, country governments, civil society and industry, including other CGIAR centres, would be well placed, if invited by the CBD, to lead, coordinate and provide technical support to the implementation, monitoring and reporting of the proposed target.

The Alliance deliver solutions that harness agricultural biodiversity and sustainably transform food systems to improve people's live. It brings in-depth expertise in the generation and dissemination of relevant knowledge, including support of policy dialogue to ensure evidence-based decisions and impact. For example, Bioversity and CIAT are managing partners of the CGIAR Research Program on Agriculture for Nutrition and Health, working on issues of nutrition-sensitive food systems with country partners across Latin America, Asia, and Africa. The Alliance carries out research and communications on how to make food and nutrition policies, programs, and investments more effective to improve diets and nutrition. The Alliance has worked with the UN Rome-based agencies (FAO, World Food Programme, International Fund for Agricultural development, FAO Committee on World Food Security, and United Nations System Standing Committee on Nutrition) to mainstream nutrition-sensitive agriculture into their work, and is joining with the CGIAR Research Program on Climate Change, Agriculture and Food Security, led by CIAT, in its support of its partnership with the Rome-based agencies.

The Alliance could therefore mobilize global, regional and national coalitions for action for effective implementation of the proposed target and could collectively facilitate an integrated approach across agricultural and other sectors and countries, to promote good practices, collect data, continue to develop metrics and indicators and report on progress, as well as promote capacity development, sharing of knowledge and cross-fertilization of ideas. Both the Alliance and FAO recognize the importance of biodiversity mainstreaming for safeguarding diversity and promoting nutrition and have considerable experience and expertise supporting the implementation of the CBD's Programme of Work on Agricultural Biodiversity. Often leading global implementation of multi-country projects, they have worked with countries to mainstream biodiversity in production landscapes (Mijatovic et al. 2018). These activities are closely aligned with recent CBD decisions on health and biodiversity, which highlight mainstreaming biodiversity in the health sector as essential for halting biodiversity loss and promoting human health and well-being.

This implementation partnership would bring together a significant portfolio of biodiversity mainstreaming experiences including research expertise, partnerships and networks, relevant voluntary guidelines and other instruments including mainstreaming guidelines and toolkits. Both organizations have extensive expertise in knowledge management, policy analysis, conservation actions, value chain development and system-wide capacity development that empowers people and strengthens organizations and institutions.

Bioversity International and FAO - as co-lead organizations for the CBD's *Cross Cutting Initiative on biodiversity for food and nutrition* and implementing and executing agencies respectively for the GEF-supported pilot project, *Biodiversity for Food and Nutrition* (BFN) - bring considerable expertise,



partnerships and networks in the field of mainstreaming biodiversity across relevant sectors and food systems for improved diets and nutrition.

Bioversity International and FAO are also key partners of the *Interagency Liaison Group on Biodiversity and Health*, which oversees the growing programme of work on health and biodiversity within both the CBD and WHO, which also includes nutrition and diets. This partnership would also bring considerable capacity to mobilize short and long-term resources for the implementation of the proposed target.

Furthermore, the Agrobiodiversity Index (ABD Index), developed by Bioversity International, could be a useful tool to measure agrobiodiversity and identify concrete actions to achieve diverse and sustainable food systems. The ABD Index can meaningfully contribute measures and indicators to monitor progress on the proposed target. It can measure to what extent and how companies, countries and projects contribute to ensure food biodiversity for healthy diets, use agrobiodiversity for sustainable production, and safeguard diverse genetic resources for current and future options. With informed measurements, governments, investors and companies can compare strategies and select those that will deliver more sustainable, more nutritious food systems, built on agrobiodiversity. The ABD Index can also track how agrobiodiversity contributes to meeting the many interconnected global targets to which countries have committed themselves.

## Specific Resources

Bioversity International, 2017. *Mainstreaming Agrobiodiversity in Sustainable Food Systems: Scientific Foundations for an Agrobiodiversity Index*. Bioversity International, Rome, Italy.

[https://www.bioversityinternational.org/fileadmin/user\\_upload/online\\_library/Mainstreaming\\_Agrobiodiversity/Mainstreaming\\_Agrobiodiversity\\_Sustainable\\_Food\\_Systems\\_WEB.pdf](https://www.bioversityinternational.org/fileadmin/user_upload/online_library/Mainstreaming_Agrobiodiversity/Mainstreaming_Agrobiodiversity_Sustainable_Food_Systems_WEB.pdf)

Caron et al., 2018. Food systems for sustainable development: proposals for a profound four-part transformation. *Agronomy for Sustainable Development* 38: 41. <https://doi.org/10.1007/s13593-018-0519-1>.

CBD Secretariat WG2020-01, July 2019. Non-paper 02 - Zero draft. *Proposal for a possible structure of a post 2020 Global Biodiversity Framework*. Secretariat of the Convention on Biological Diversity. Montreal. <https://www.cbd.int/doc/c/8dae/da44/fe68adcf0dc01ffe4cd3e9b3/non-paper-02-v0-en.pdf>

CBD Secretariat, 2004. *Decision VII/32 on the programme of work of the Convention and the Millennium Development Goals*. Secretariat of the Convention on Biological Diversity, Montreal. <https://www.cbd.int/doc/decisions/cop-07/cop-07-dec-32-en.pdf>

CBD Secretariat, 2006. *Decision VIII/23 on Agricultural Biodiversity*. Secretariat of the Convention on Biological Diversity. Montreal. <https://www.cbd.int/doc/decisions/cop-08/cop-08-dec-23-en.pdf>

CBD Secretariat, 2016a. *Decision XIII/3 on Mainstreaming biodiversity in Agriculture, Forestry, Fisheries and Tourism*. Secretariat of the Convention on Biological Diversity. Montreal. <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-03-en.pdf>

CBD Secretariat, 2016b. *Decision XIII/6 on Biodiversity and Human Health*. Secretariat of the Convention on Biological Diversity. Montreal. <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-06-en.pdf>

CBD Secretariat, 2018. *Decision XIV/4 on Health and Biodiversity*. Secretariat of the Convention on Biological Diversity. Montreal. <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-04-en.pdf>

Couzin-Frankel J., 2015. The supplement sleuth. *Science* 349 (6250: 780-783). DOI: 10.1126/science.349.6250.780. <https://science.sciencemag.org/content/349/6250/780>

FAO, 1997. *The State of the World's Plant Genetic Resources for Food and Agriculture*. Food and Agriculture Organization of the United Nations, Rome.

FAO, 2014. *Building a common vision for sustainable food and agriculture: Principles and approaches*. FAO. Rome. <http://www.fao.org/3/a-i3940e.pdf>

FAO, 2018a. *Transforming Food and Agriculture to Achieve the SDGs: 20 Interconnected Actions to Guide Decision-Makers*. FAO. Rome. <http://www.fao.org/3/I9900EN/i9900en.pdf>

FAO, 2018b. *Biodiversity for Sustainable Agriculture: FAO's work on biodiversity for food and agriculture*. FAO. Rome. <http://www.fao.org/3/ca2227en/CA2227EN.pdf>

FAO, 2019a. *The State of the World's Biodiversity for Food and Agriculture*. J. Bélanger & D. Pilling (eds.). FAO Commission on Genetic Resources for Food and Agriculture Assessments. Rome. 572 pp. <http://www.fao.org/3/CA3129EN/CA3129EN.pdf>

FAO, 2019b. *Scaling Up Agroecology to Achieve the Sustainable Development Goals. Proceedings of the 2nd FAO International Symposium on Agroecology, 3 - 5 April 2018, Rome*. FAO, 2019, 416p. Licence: CC BY-NC-SA 3.0 IGO. <http://www.fao.org/3/ca3666en/ca3666en.pdf>

FAO, IFAD, UNICEF, WFP and WHO, 2019. *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns*. FAO. Rome. <https://www.unicef.org/media/55921/file/SOFI-2019-full-report.pdf>

Fowler, C., 1994. *Unnatural selection: technology, politics and plant evolution*. Gordon and Breach Science Publishers, Yverdon, Switzerland.

Gualler E., Stranges S., Mulrow C., Appel L.J., Miller E.R., 2013. Enough Is Enough: Stop Wasting Money on Vitamin and Mineral Supplements. *Annals of Internal Medicines*. Editorials. 159(12):850-851. DOI: 10.7326/0003-4819-159-12-201312170-00011.

<https://annals.org/aim/fullarticle/1789253/enough-enough-stop-wasting-money-vitamin-mineral-supplements>

HLPE, 2017a. *2nd Note on Critical and Emerging Issues for Food Security and Nutrition*. A note by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome. [http://www.fao.org/fileadmin/user\\_upload/hlpe/hlpe\\_documents/Critical-Emerging-Issues-2016/HLPE\\_Note-to-CFS\\_Critical-and-Emerging-Issues-2nd-Edition\\_27-April-2017.pdf](http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/Critical-Emerging-Issues-2016/HLPE_Note-to-CFS_Critical-and-Emerging-Issues-2nd-Edition_27-April-2017.pdf)

HLPE, 2017b. *Nutrition and food systems*. A report by the High Level Panel of Experts of Food Security and Nutrition of the Committee on World Food Security. Report 12. Rome. <http://www.fao.org/3/a-i7846e.pdf>

Hunter, D., Borelli, T., Beltrame, D.M.O., Oliveira, C.N.S., Coradin, L., Wasike, V.W., Wasilwa, L., Mwai, J., Manjella, A., Samarasinghe, G.W.L., Madhujith, T., Nadeeshani, H.V.H., Tan, A., Tuğrul Ay, S., Güzelsoy N., Lauridsen, N., Gee, E. and Tartanac, F., 2019. The potential of neglected and underutilized species for improving diets and nutrition. Special issue on orphan crops: Contributions to current and future agriculture. *Planta* 250(3): 709–729. <https://doi.org/10.1007/s00425-019-03169-4>

IPES-Food, 2016. *From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems*. IPES-Food - International Panel of Experts on Sustainable Food Systems., Brussels, Belgium. [http://www.ipes-food.org/\\_img/upload/files/UniformityToDiversity\\_FULL.pdf](http://www.ipes-food.org/_img/upload/files/UniformityToDiversity_FULL.pdf)

IPBES, 2019. Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondizio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. <https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>

Khoury CK, Bjorkmanc AD, Dempewolf H, Ramirez-Villegasa J, Guarino L, Jarvis A, Riesebergd LH, Struik PC, 2014. Increasing homogeneity in global food supplies and the implications for food security. *Proc Natl Acad Sci USA* 111(11):4001–4006. <https://doi.org/10.1073/pnas.1313490111>

Mijatovic D., Sakalian M. and Hodgkin T., 2018. *Mainstreaming Biodiversity in Production Landscapes*. United Nations Environment Programme. [https://wedocs.unep.org/bitstream/handle/20.500.11822/26878/biodivers\\_production.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/26878/biodivers_production.pdf?sequence=1&isAllowed=y)

Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley., 2009. Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 14(2): 32. <http://www.ecologyandsociety.org/vol14/iss2/art32/>

Steffen W., Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, Stephen R. Carpenter, Wim de Vries, Cynthia A. de Wit, Carl Folke, Dieter Gerten, Jens Heinke, Georgina M. Mace, Linn M. Persson, Veerabhadran Ramanathan, Belinda Reyers, Sverker Sörlin, 2015. Planetary boundaries: Guiding human development on a changing planet. *Science* 13 Feb 2015: 347 (6223), 1259855. DOI: 10.1126/science.1259855

TEEB (The Economics of Ecosystems and Biodiversity), 2018a. TEEB for Agriculture & Food: Scientific and Economic Foundations Report. Geneva: UN Environment. ISBN: 978-92-807-3702-8.

<http://teebweb.org/agrifood/scientific-and-economic-foundations-report/>

TEEB (The Economics of Ecosystems and Biodiversity), 2018b. Measuring what matters in agriculture and food systems: a synthesis of the results and recommendations of TEEB for Agriculture & Food's Scientific and Economic Foundations Report. Geneva: UN Environment.

[http://teebweb.org/agrifood/wp-content/uploads/2018/Synthesis\\_report\\_highres.pdf](http://teebweb.org/agrifood/wp-content/uploads/2018/Synthesis_report_highres.pdf)

The Food and Land Use Coalition, 2019. *Growing Better: The Critical Transitions to Transform Food and Land Use*. The Global Consultation Report of the Food and Land Use Coalition.

<https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/FOLU-GrowingBetter-GlobalReport.pdf>

UN Environment, 2019. Global Environment Outlook – GEO-6: Healthy Planet, Healthy People. Nairobi. DOI 10.1017/9781108627146.

[https://assets.cambridge.org/97811087/07664/frontmatter/9781108707664\\_frontmatter.pdf](https://assets.cambridge.org/97811087/07664/frontmatter/9781108707664_frontmatter.pdf)

United National General Assembly, 2019. Seventy-third session, Agenda item 26. *Resolution adopted by the General Assembly on 20 December 2018. 73/253. Agriculture development, food security and nutrition.* <https://undocs.org/en/A/RES/73/253>