



## Biodiversity in Projects in the Areas of Agriculture, Food Security, and Rural Development – Guidance for Project Planners



These guidelines are meant to provide ideas on how measures aimed at the conservation and sustainable use of biodiversity and ecosystem services can be incorporated when designing food security, agriculture and rural development projects.

### Biological diversity and agriculture

Biological diversity, or biodiversity for short, is synonymous with the diversity of life on Earth and encompasses genetic diversity as well as the diversity of species and ecosystems. Due to the manifold interrelations between organisms and with the climate and soil, biodiversity contributes significantly to the stability and adaptability of ecosystems. The contributions that ecosystems make to human well-being, namely the goods and services that provide direct or indirect economic, material, health or psychological benefits to people, are called ecosystem services (TEEB DE 2012). Agroecosystems<sup>1</sup> also provide important ecosystem services. In addition to its primary role of providing food and resources, environmentally friendly agriculture can and should also consider the important services of the respective ecosystems.

#### Did you know that ...

... 75% of the world's staple foods are at least partially reliant on pollination?

... the importance of pollinators in safeguarding livelihoods is increasing because there has been a 300% growth in the level of global fruit production dependent on pollinators over the past 50 years?

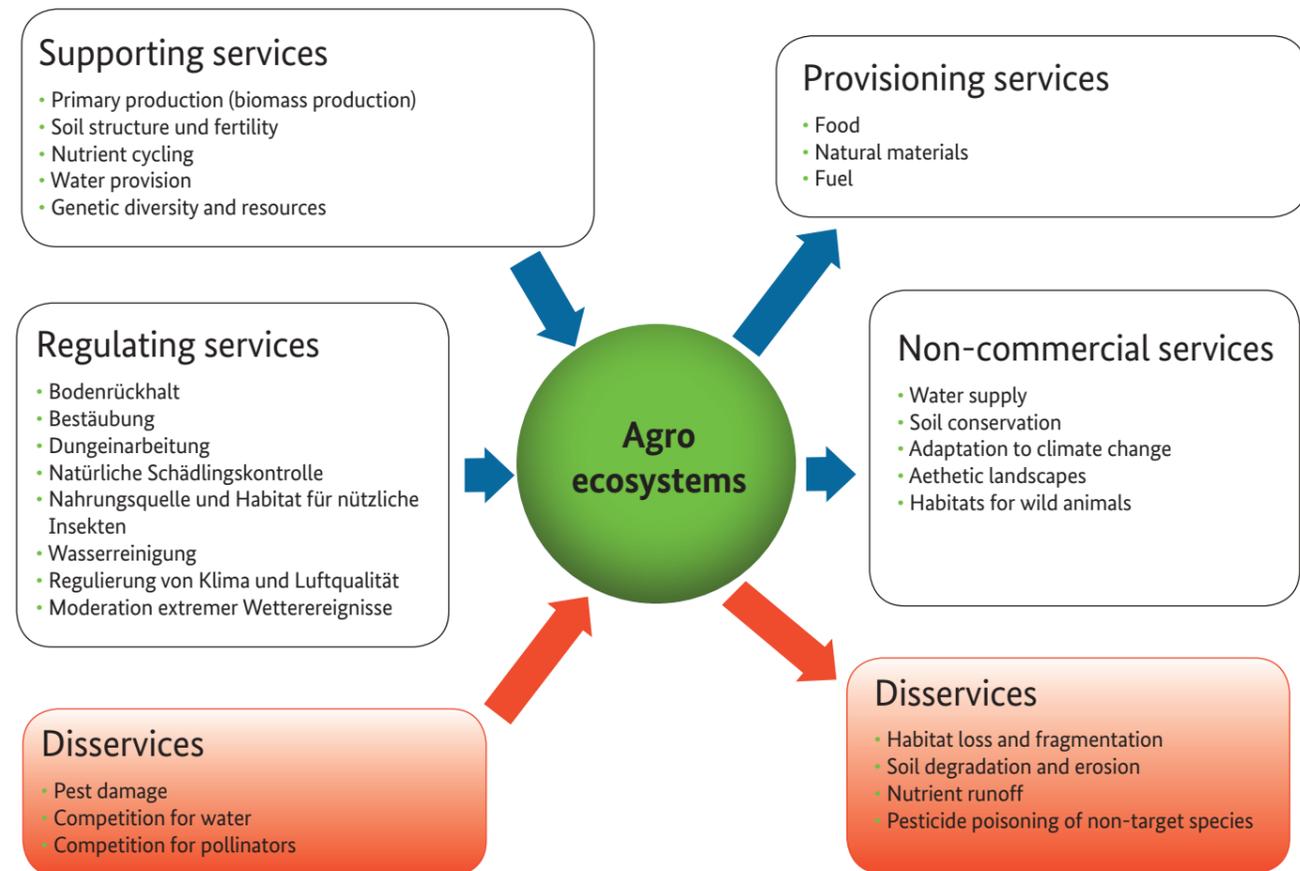
... 40% of invertebrate pollinators – particularly bees and butterflies – are at risk of extinction?

Source: IPBES 2016

<sup>1</sup> A dynamic combination of crops, pastures, livestock, other flora and fauna, atmosphere, soil and water. Agro-ecosystems are part of broader landscapes. They include the wild plants and animals that live there, uncultivated land, drainage systems and rural communities (FAO 2005).



Important services provided by sustainably managed agricultural ecosystems include safeguarding the availability of water, carbon sequestration and the conservation of agrobiodiversity and cultural services. Agroecosystems are themselves dependent on ecosystem services like pollination, natural pest management, soil flora and fauna that preserve soil structure and fertility, nutrient cycling and hydrological services (see figure).



Ecosystem services and disservices for, and caused by, agriculture (Source: adapted from Zhang W. et.al. 2007)

\* For resource-friendly production methods, e.g. organic farming, integrated pest management, zero-tillage (GMO free), conservation agriculture

The need for agriculture and a corresponding alteration of ecosystems is not questioned by ecologists. However, the negative impacts on biological diversity, the degradation of soil, and the pollution of water reserves caused by incorrect production practices cannot be justified by the necessity to produce food and reduce poverty. The Global Biodiversity Outlook published in 2014 states that 70% of the projected terrestrial biodiversity loss can be attributed to agriculture. There is therefore a large potential for German development cooperation to improve environmental practices in the agricultural sector, for which it has a binding obligation within the context of environmental, climate and social impact assessments.

The value of less tangible ecosystem services like pollination, preservation of soil fertility, pest management or long-term preservation of water accessibility is frequently not recognised. The diverse services that nature provides for global agricultural production and the costs associated with the degradation of ecosystem services are hence still insufficiently considered within policy, planning and economic decision-making processes. They are therefore used without any further thought, and/or are not protected. Also, the contributions by wild plant and animal species, alternative income from ecotourism, and food security are often not adequately recognised.

The relevance of ecosystem services illustrate that multiple conflicting goals arise if management decisions are made in agricultural landscapes with a one-sided view to benefiting provisioning services (MA 2005). As a result, there are frequently trade-offs between the production of agricultural goods like food, fibre and biofuels, and regulating ecosystem services like water purification, soil conservation or carbon sequestration.

### Biodiversity for achieving the Sustainable Development Goals

The conservation of biodiversity and its ecosystem services in rural areas is not only critical for achieving international environmental targets, for instance the implementation of the Rio Conventions on Biodiversity, Climate Change and Desertification. It is also crucial for sustainable food production and rural development. Achieving the Sustainable Development Goals (SDGs) requires sustainable agriculture that limits the degradation of nature in rural areas and takes greater consideration of biodiversity. Specifically, this applies to:

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

SDG 12: Ensure sustainable consumption and production patterns.

SDG 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.**

Biodiversity conservation can only be achieved if relevant interest groups, particularly the local population and primary drivers of loss (e.g. industry, energy, agriculture, fisheries and consumers), actively participate in planning and decision-making processes and make a contribution through more sustainable patterns of production and consumption. For this reason, the Strategic Plan (2011-2020) of the Convention on Biological Diversity (CBD) focuses on greater mainstreaming of biodiversity issues into the spheres of policy, society and economics.



## Approaches to incorporating biodiversity conservation measures

A diverse range of approaches exists for paying greater attention to biodiversity issues in agricultural projects. These can include informational, market-based, planning and regulatory instruments. Aside from environmental, climate and social impact assessments, other processes in this context include the World Bank Safeguards and the International Performance Standards on Environmental and Social Sustainability, which provide precise guidance on avoiding and minimising the negative impacts of activities on biodiversity, for example through set asides, minimisation of habitat fragmentation through the use of green corridors, or damage thresholds for the use of pesticides and integrated crop protection.

The following overview introduces starting points for projects on food security, promotion of agriculture, and rural development to employ measures related to biodiversity. It is based on the biodiversity goals (Aichi Targets) in the CBD Strategic Plan 2011-2020:

### 1 Raising awareness about the value of biological diversity and its conservation and sustainable use

- Policy advice on promoting sustainable agriculture
- Information and training for producers
- Awareness-raising among consumers and others along value chains
- Establish and/or strengthen relevant institutions or civil society organisations

### 2 Consider diversity of values from biodiversity and incorporate these into planning

- Analysis and assessment of ecosystem services
- Incorporate biodiversity conservation goals into the review and implementation of national agricultural, rural development and food security policies (e.g. agricultural and land reform programmes, national and regional plans, agricultural research, food security strategies, agricultural trade, lending institutions, or strategic environmental assessments of national policies and programmes)

### 3 Eliminate harmful incentives and establish positive incentives for conserving biodiversity

- Policy impact assessment
- Eliminate harmful subsidies
- Consider biodiversity in support guidelines
- Payment for the conservation of ecosystem services

### 4 Sustainable production and consumption within ecological limits

- Production in accordance with environmental standards, certification
- Environmental sustainability as a condition, e.g. when awarding loans or subsidies
- Training and awareness-raising related to (agro) biodiversity among producers and users
- Cooperation with the private sector and promotion of green business models
- Corporate ecosystem services review, trade in biodiversity products and sustainable collection from the wild

### 5 Reduce habitat loss and fragmentation of ecosystems

- Establish protected areas on common land, participatory forest management, beekeeping, etc.
- Reduce the expansion of agricultural areas and fragmentation of natural habitats

### 7 Sustainable management of areas under agriculture

- Promote sustainable production while considering techniques for conserving biodiversity, expand the necessary capacities and participation by stakeholders in planning and implementation processes
- Improve unsustainable land use practices (e.g. monocultures), expand certification systems and approaches to integrated and organic crop protection and good agricultural practices, promote deforestation-free supply chains

### 8 Reduce pollution

- Reduce use of pesticides, e.g. by using the most environmentally friendly means of crop protection, pest management using correct or organic processes
- Reduce fertiliser application to a level that does no harm to ecosystems or biodiversity, e.g. information management and monitoring of data related to biodiversity

### 9 Stop the spread of invasive species

- e.g. through phytosanitary measures
- through biological control measures according to CBD guidelines

### 11 Support area-based conservation of ecosystems, species and genetic diversity

- Incorporate nature conservation measures into land use planning and regional development, establish green corridors, biosphere reserves



### 13 Maintain genetic diversity in agriculture

- Promote agro-biodiversity within the context of agricultural production systems, for example through diversification (e.g. mixed cultivation or agroforestry systems) and conservation of traditional varieties and breeds of domestic animals (in-situ conservation, e.g. by promoting traditional animal/plant breeding, and/or ex-situ conservation in international/national gene banks or community seedbanks), particularly for climate change adaptation

### 14 Conserve and restore ecosystem services

- Rehabilitate and restore degraded ecosystems (e.g. through forest landscape restoration, ecosystem-based climate adaptation measures) with consideration for the impacts of changes in ecosystem services on indigenous peoples and local communities, women, and other vulnerable segments of the population
- Measures to conserve soil and water, promote and conserve soil fertility

### 15 Maintain the resilience of ecosystems

- e.g. through mixed cultivation and genetic diversity

### 16 Access to genetic resources

- Support for the implementation of the Nagoya Protocol and coherence with other relevant instruments, particularly the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA)

### 18 Integrate traditional knowledge and conventional use of biological resources

- Promote biodiversity conservation in rural areas and thereby maintain the associated traditional knowledge of local and indigenous communities, for example in the context of agricultural research

### 19 Improve, share and apply knowledge and technologies relating to biodiversity

- Integrate biodiversity and ecological aspects in agricultural research

### 20 Mobilize financial resources from all sources

- Increase budget allocation for measures that contribute to the conservation and sustainable use of biodiversity.

#### Summary:

Consideration of biodiversity contributes to safeguarding livelihoods over the long term. Biodiversity conservation is not an add-on for development cooperation projects, but rather a condition that must be considered during the planning of the project. Various types of leverage must be used in this regard – a mix of measures across different levels of activity, focused on different groups of people. Synergies must be identified and harnessed. From the highest levels of policy-making to the operational level, there needs to be clarity about the necessity of integrating biodiversity into the agricultural sector. Different production systems and landscapes call for different biodiversity measures. Biodiversity must be considered with regard to knowledge management in the agricultural sector, conceptualisation and planning, and capacity development in the project.

## Additional information

The sector project on implementing the Convention on Biodiversity offers members of review missions support in mainstreaming biodiversity into agricultural, rural development and food security projects. In addition, an annotated bibliography is available, which contains documents from German development cooperation and international organisations at the interface between agriculture and biodiversity, as well as examples of biodiversity indicators from agriculture projects.

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## Literature

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