Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

National Biodiversity Strategy 2030 (NBS 2030)

Biologische Vielfalt
Die Nationale Strategie

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Contents

List of abbreviations

ABS	access and benefit-sharing
AI	artificial intelligence
ASCOBANS (CMS)	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas
BfN	Federal Agency for Nature Conservation
Birds Directive	Directive 2009/147/EC
BLANO	Federal/State Working Group for the North and Baltic Seas
BMEL	Federal Ministry of Food and Agriculture
BMK	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, Austria
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (2018-2021)
BMUV	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
BMVg	Federal Ministry of Defence
BMWK	Federal Ministry for Economic Affairs and Climate Action
BMWSB	Federal Ministry for Housing, Urban Development and Building
BMZ	Federal Ministry for Economic Cooperation and Development
BNB	Federal Government's Assessment System for Sustainable Building
CAFI	Central African Forest Initiative
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CDR	carbon dioxide removal
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals – Bonn Convention
CO_2	carbon dioxide
COP	Conference of the Parties
CPB	Cartagena Protocol on Biosafety
CRCF	EU Carbon Removals Certification Framework
CSS	EU Chemicals Strategy for Sustainability
DAS	German Strategy for Adaptation to Climate Change
DNS	German Sustainable Development Strategy
DSI	digital sequence information
EEMonReport	Report on monitoring for a nature-friendly energy transition
EEZ	exclusive economic zone
EFSA	The European Food Safety Authority
ENACT	Enhancing Nature-based Solutions for an Accelerated Climate Transformation

ESD	education for sustainable development
EUDR	EU Deforestation Regulation – Regulation (EU) 2023/1115
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility
FCPF	Forest Carbon Partnership Facility
FDP	Free Democratic Party
FörTax	Project for the promotion of taxonomic knowledge as a basis for nature conservation
FWS	German Survey on Volunteering
GAK	Joint Task for the Improvement of Agricultural Structures and Coastal Protection
GBF	Kunming-Montreal Global Biodiversity Framework
GDP	gross domestic product
GDR	German Democratic Republic
GEF	Global Environment Facility
GHG	greenhouse gases
GM	genetically modified
GMO	genetically modified organisms
Habitats Directive	Council Directive 92/43/EEC
HAC	High Ambition Coalition for Nature and People
HELCOM	Helsinki Commission – Baltic Marine Environment Protection Commission
HNV farmland	high nature value farmland
IACS	Integrated Administration and Control System
IAS	invasive alien species
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ISFL	BioCarbon Fund Initiative for Sustainable Forest Landscapes
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LULUCF	land use, land-use change and forestry
MoC	Memorandum of Cooperation
MonViA	National Monitoring of Biodiversity in Agricultural Landscapes
MSFD	Marine Strategy Framework Directive – Directive 2008/56/EC
MSY approach	maximum sustainable yield approach
Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity
Nature Restoration Regulation	Regulation (EU) 2024/1991
NBS	National Biodiversity Strategy

NbS	Nature-based Solutions
NBSAPs	national biodiversity strategies and action plans
NDC	nationally determined contribution
NFDI4BioDiversity	National Research Data Infrastructure for Biodiversity
NGT	new genomic techniques
NMS	National Marine Strategy
NWI	National Welfare Index
OHHLEP	One Health High-Level Expert Panel
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PROGREEN	Global Partnership for Sustainable and Resilient Landscapes
Ramsar Convention	Convention on Wetlands of International Importance especially as Waterfowl Habitat
SCBD	Secretariat of the Convention on Biological Diversity
SDGs	Sustainable Development Goals
SPD	Social Democratic Party of Germany
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WBGU	German Advisory Council on Global Change
WFD	Water Framework Directive – Directive 2000/60/EC
WHO	World Health Organization
ZPA	zero pollution ambition

A. Introduction

Biodiversity – the disappearing web of life

Biodiversity, or biological diversity, is defined in section 7 (1) (1) of the Federal Nature Conservation Act (*Bundesnaturschutzgesetz*) as the diversity of plant and animal species, including diversity within species and diversity of ecological communities and biotopes. The Convention on Biological Diversity (CBD) also refers not only to diversity within species and between species but also to the diversity of ecosystems.

These components are closely interconnected and affect one another. Biodiversity is an essential condition for the stability and capacity for development – the resilience – of any ecosystem or community of species. Only with a diversity of species adapted to a given location, a wide range of genes within species and ecosystems can nature adapt to changing living conditions. Particularly in the context of continuing climate change, it is important to maintain and restore this adaptability.

Animals, plants, fungi and microorganisms have important functions in any ecosystem.[1, 2] The extinction of a species is irreversible and generates incalculable risks. Species extinction can cause long-term disruption to their ecosystems: given the complex web of interrelationships, the loss of one species can affect others and consequently jeopardise the ecosystem's overall composition and functions.

Human activity has increasingly affected biodiversity over thousands of years, but the adverse consequences have been ever more visible for some decades. The variety of flora and fauna (mammals, birds, insects, fish, amphibians, plants) and of habitats has been declining in recent years. This is especially true of large parts of the agricultural landscape – though to varying degrees depending on the region. This is in stark contrast to the fact that, historically, farming gave rise to species-rich cultivated landscapes and the agri-ecosystems of open countryside, for example, which would not have developed without anthropogenic influence. Worldwide, the current rate of species loss is at least ten times and up to a hundred times higher than the average for the last ten million years. The cause is that, in many regions, nature has been exploited beyond its capacity for many years. The result is that six of the nine planetary boundaries have already been breached,[3] which weakens the resilience of species and habitats (IPBES 2019). In its Global Assessment Report on Biodiversity and Ecosystem Services of May 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) warns that up to a million more species are threatened with extinction in the coming decades.[4] Already, forests around the world have been reduced to just 68% of their pre-industrial

[1] See the Red Lists at https://www.rote-liste-zentrum.de/en/index.html
[2] Ludwig & Schnittler 1996; Binot et al. 1998; Haupt et al. 2009; Ludwig & Matzke-Hajek 2011; Binot-Hafke et al. 2011; Becker et al. 2013; Gruttke et al. 2016; Matzke-Hajek et al. 2016; Metzing et al. 2018; Ries et al. 2021
[3] Richardson et al. 2023
[4] The full text of the report is available at https://www.ipbes.net/global-assessment

area.[5] Some 75% of the terrestrial environment and 66% of the oceans have been changed by human influence. Over 85% of wetlands have been lost over the last 300 years.[6] The condition of the remaining natural and near-natural habitats has also deteriorated.[7]

In spite of considerable efforts and important successes in the protection of particular species and habitats in recent years, biodiversity is coming under more and more pressure, in Germany as elsewhere, and the status of many species and habitats is deteriorating.

- 29% of the approximately 36,000 assessed species and subspecies in Germany are categorised as threatened with extinction to some extent or already extinct in Germany. Around 32% of plants, 23% of fungi and lichens, 37% of vertebrates and 32% of invertebrates are categorised as threatened with extinction to some extent or already extinct in Germany.[8, 9]
- Many farmland species are experiencing a substantial decline in numbers. Among bird species characteristic of open landscapes, for example, 70% are considered vulnerable, with a further 13% classed as near threatened.
- The 2017 study by the Entomological Society Krefeld presented evidence that the total biomass of flying insects had declined by around three quarters since 1989,[10] a finding which has been confirmed by additional studies in other fields and in other EU member states.[11] Various studies, including Van Klink et al. (2024),[12] have also demonstrated that the decline affects not only rare species but common ones too.
- Among butterflies, beetles, dragonflies and damselflies, one in four to one in three species in Germany are threatened with extinction to some extent or extinct. All in all, almost 34% of the nearly 14,000 insect species assessed for the Red Lists are threatened with extinction to some extent or extinct. Between 1980 and 2011, wild bee numbers fell by about 42%.
- Many habitats are in a similar state. Almost 70% (in terms of their number) of the Habitats Directive habitat types occurring in Germany are in a poor or bad condition, especially areas of grassland used for agriculture but also inland waters and peatlands.[13, 14]

[5] IPBES 2019
[6] Ibid.
[7] Felipe-Lucia et al. 2020; Schils et al. 2022; Wirth et al. 2024
[8] See the Red Lists at https://www.rote-liste-zentrum.de/en/index.html
[9] Haupt et al. 2009; Ludwig & Matzke-Hajek 2011; Binot-Hafke et al. 2011; Becker et al. 2013; Gruttke et al. 2016; Matzke-Hajek et al. 2016; Metzing et al. 2018 ; Meinig et al. 2020, Ries et al. 2021; Rote-Liste-Gremium Amphibien und Reptilien 2020; Freyhof et al. 2023; Haferkorn et al. 2024; Poniatowski et al. 2024; Thiel et al. 2023
[10] Hallmann et al. 2017; Jarvis et al. 2018
[11] Hochkirch et al. 2023; Staab et al. 2023; Nicholson et al. 2023; van Klink et al. 2020
[12] Van Klink et al. 2024
[13] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety & Federal Agency for Nature Conservation 2020; Wirth et al. 2024
[14] Report on the state of the natural world in Germany, available (in German) at https://www.bfn.de/publikationen/broschuere/lage-der-natur-deutschland

- The 2017 Red List of Threatened Habitat Types in Germany demonstrates that almost two in three of the biotope types occurring in Germany are still under threat, albeit to varying degrees.[15]

On the positive side, we have been taking steps to protect nature and the environment for decades. Alongside the protection strategies already in place at the time, establishing the European Natura 2000 protected areas network under the Birds and the Habitats Directives, along with its species conservation requirements, some 30 years ago was a milestone for nature conservation in Europe. It has made it possible, for example, to designate 15.5% of all land areas as Natura 2000 sites, providing relatively effective protection and serving as a refuge for many endangered species. It is thanks to such measures that the verdict on the state of our natural environment is not worse still. They show that nature conservation does work and that intact ecosystems make life better, on a lasting basis, for local people. However, it is also becoming clear that more action is urgently needed if the existing targets for nature and biodiversity conservation are to be achieved. The strategy to guide such action at the national level is the NBS 2030. At the European level, targets for protecting and restoring nature by 2030 have been in place since 2020 as part of the EU Biodiversity Strategy for 2030,[16] a key initiative under the European Green Deal. In addition, the EU adopted its Nature Restoration Regulation in 2024. Those measures likewise need to be put into practice.

[15] Richardson et al. 2017

[16] The full text of the strategy is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX%3A52020DC0380

The biodiversity crisis – a crisis for us humans too

Biodiversity is the result of processes spanning millions of years and is the most distinctive feature of planet Earth in the cosmos. It is not just an inestimable asset in itself; it is an essential condition of human existence. It provides us with food, water, oxygen and more. We take it for granted that we can make use, on a daily basis, of goods and services which result from an intact and diverse natural world – from what we might call our green infrastructure. Around 75% of the plant species used for food around the world rely on animals for pollination. Without clean air, filtered water and healthy soils, we cannot survive; without building materials and other natural resources, we cannot do business; without recreation in natural environments and without medicines derived from nature, health and wellbeing is inconceivable.[17]

An intact natural world in all its diversity also serves as a model for technological developments and provides nature-based climate action by absorbing and storing carbon in forests, peatlands, soils, seas, etc. It can protect us from natural phenomena such as floods and landslides, and offers the assurance that it will respond to disruptions and degradations with resilience and highly developed potential for self-healing.

Biodiversity loss means the irretrievable loss of those natural services for us humans. Replacing it, for example by technological means, is in many cases simply not possible, and where it is, it would entail considerable costs. As biodiversity loss progresses, we leave ourselves exposed to the threat of intolerable environmental, economic and social consequences. Given its intrinsic value, maintaining, restoring, valuing and sustainably managing nature and its diversity, uniqueness and beauty is therefore not only an end in itself but life insurance for ourselves and a duty we owe to future generations.

Ongoing biodiversity loss is one of the three existential environmental challenges – alongside unchecked climate change and rising levels of pollution – and a key threat to our natural foundations of life and the provision of healthy food and renewable raw materials to the global population. Closely interconnected, the three challenges exacerbate one another and must also be tackled together.

Responsibility for the dramatic loss of biodiversity around the world lies with us humans. Experts see the causes primarily in five direct drivers of change, which reinforce one another – in Germany as elsewhere (IPBES 2019). These involve changes in land and sea use, such as urbanization; direct exploitation of organisms; climate change; pollution; invasive alien species and particularly intensive farming, forestry and fisheries practices. Those five direct drivers are underpinned by additional, indirect drivers, including worldwide production and consumption patterns, demographic development and governance.

[17] IPBES 2019, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (Austria) 2016 – see report (in German) at https://www.bmk.gv.at/themen/klima_umwelt/naturschutz/biol_vielfalt/bestaeuberbericht.html

Nature in crisis – previous efforts are not enough

With a view to holding back global biodiversity decline, the international community adopted the Convention on Biological Diversity back in 1992. Conserving biodiversity by protecting terrestrial ecosystems is also one of the 17 global Sustainable Development Goals (SDGs) in the 2030 Agenda for Sustainable Development established by the UN, which is translated into national policy in the form of the German Sustainable Development Strategy. At the European level, targets for protecting and restoring nature by 2030 have been in place since 2020 as part of the EU Biodiversity Strategy for 2030,[18] a key initiative under the European Green Deal.

Despite the ambitious targets set in recent decades, the global biodiversity trend remains on a downward trajectory. None of the 20 global Aichi Biodiversity Targets, established for 2020 under the CBD, have been fully achieved.[19] An interim report[20] compiled in 2020 on the biodiversity-related SDGs – SDG 6 (clean water and sanitation), SDG 14 (life below water) and SDG 15 (life on land) – found that those goals were missed.[21] The reasons for this are not only shortfalls in the implementation of global agreements by means of effective instruments and adequate measures but also various new stress factors, such as intensification of land use, climate change and invasive species. In addition, global crises and their social ramifications increasingly function as obstacles to the implementation of existing nature conservation measures. All too often, and despite the crucial contributions they would make to crisis preparedness, such measures are neglected in the face of short-term crisis-management objectives. The result of all this is that, despite promising developments in important areas, the overall target trajectory has been missed. To summarise, we see on the one hand that the instruments and measures we have to protect biodiversity are effective in principle; we are capable of actively and successfully tackling biodiversity loss and indeed have already done so. On the other hand, we need to implement the necessary measures more consistently and purposefully than we have to date, address new risk factors and pursue fresh approaches, such as restoring degraded ecosystems and deploying Nature-based Solutions.

In Germany, the National Strategy on Biological Diversity that is in place (the NBS 2007) was designed to play a pivotal role in those efforts. It is the German government's central nature conservation strategy and an essential instrument for implementing international agreements on biodiversity conservation in Germany. Since 2007, the NBS has set out federal targets for the preservation, improvement and sustainable use of biodiversity. The NBS 2007 was accompanied by a wide-ranging nature conservation initiative, which served as a programme of action to help implement the NBS. It was supplemented by the Strategy on Agrobiodiversity formulated by the Federal Ministry of Food and

[18] The full text of the strategy is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX%3A52020DC0380
[19] SCBD 2020 – see report at https://www.cbd.int/gbo5
[20] Global Policy Forum 2020 – see report (in German) at https://www.2030agenda.de/sites/default/files/2030/zwischenbilanz/Agenda_2030_Zwischenbilanz_online-2.pdf
[21] Martens et al. 2020

Agriculture, which was replaced in 2024 with the National Strategy on Genetic Resources for Food, Agriculture, Forestry and Fisheries.

Many of the targets in the NBS 2007, like those of the CBD, were set with a 2020 target year and expired in 2020. The last Progress Report, submitted in 2021,[22] and the 2023 Indicator Report,[23] both produced by the German government, show that the NBS 2007 was effective in many different ways. It kick-started numerous activities and has advanced nature conservation in Germany in a positive direction over the last few decades. For example, the total size of nature conservation areas and national parks increased between 2000 and 2020 from 3.2% to 4.6% of Germany's land area. Organic farming fosters biodiversity in the areas where it is practised, albeit with sometimes lower yields per hectare and therefore requiring more land for the same yields. Its share of agricultural land has risen continuously, reaching 11.2% in 2023. There has also been an increase in the proportion of forest left to develop naturally, from 1.9% in 2013 to 3.1% in 2020, although the 5% target set in 2007 has not yet been reached. However, other unmanaged forest areas without a permanent protected status under the law can also contribute to the maintenance of forest biodiversity. According to the findings of the 2022 National Forest Inventory, 6% of forest area in Germany, including inaccessible areas, is unmanaged. All in all, there are indications particularly in forests that a shift towards more natural forest management is causing a gradual increase in the prevalence of enriching structures, like old and deadwood and habitat-typical species.

There are also a number of success stories to report. Alongside the return or re-expanded range of large mammals like the wild cat, grey seal, wolf and beaver, the populations of certain bird species, such as the black stork, white-tailed eagle and little owl, have recovered markedly thanks to special recovery programmes. Among plants, the populations of selected species which depend on less intensive land-use practices, such as certain orchids or the cornflower, are slowly regaining their numbers.[24]

Nevertheless, an examination of the indicators used to measure the attainment of targets from the 2007 strategy shows that the majority of the NBS targets had not been achieved to an adequate level by 2020. Despite numerous countermeasures, biodiversity loss in Germany has not yet been stopped.

[22] Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2021 – see progress report (in German) at https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Naturschutz/rechenschaftsbericht_2021_bf.pdf

[23] Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection 2023 – see report at https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Naturschutz/nbs_indikatorenbericht_2023_en_bf.pdf

[24] Federal Agency for Nature Conservation 2015 – see report (in German) at https://www.bfn.de/sites/default/files/2021-04/Artenschutzreport_Download.pdf)

The National Biodiversity Strategy 2030 – launching into effective action

The adoption of the Kunming-Montreal Global Biodiversity Framework (GBF)[25] at the fifteenth Meeting of the Conference of the Parties to the CBD (COP 15), held in December 2022 after several pandemic-induced postponements, created new global goals and targets for the protection, restoration and sustainable use of biodiversity.[26] For the first time, it proved possible to agree not only on ambitious goals and targets but also on mechanisms for their effective implementation, for monitoring and for appropriate financing. All 196 Parties to the CBD, Germany among them, are now called upon to implement the decisions taken and adapt their national biodiversity strategies and action plans (NBSAPs).

In updating the NBS to produce its National Biodiversity Strategy 2030, the German government's intention is to fulfil its responsibility for biodiversity in Germany and around the world and make an ambitious contribution to implementing the GBF and the EU Biodiversity Strategy for 2030. The governing parties declared in their 2021 Coalition Agreement that they would update the NBS with action plans, specific targets and measures, enshrine it in binding provisions and strengthen the associated scientific monitoring.[27]

The new National Biodiversity Strategy 2030 (NBS 2030) will address all the topics crucial to biodiversity conservation, with targets and specific measures for meeting them. The action plans of the National Biodiversity Strategy 2030 contain measures that fall within the province of the Federal Government and can therefore be implemented at the federal level. The action plans do not pre-empt public budgets or social security systems. The measures are subject to a competence reservation and a funding proviso with respect to the federal budget, being viable only if responsibility to fund them lies with the Federal Government and they are receive reciprocal finance from within the relevant ministerial budget or policy area. In the implementation of the NBS 2030, the obligations of the Federal Republic of Germany under international law, the defence duties of the Bundeswehr, the military interests of foreign armed forces and the interests of the Federal Police will be fully ensured. The strategy will be implemented in consultation with the public authorities using and/or managing the property involved.

However, targets alone will not bring about action as the unchecked progress of climate change and continuing biodiversity loss clearly show. It is important to undertake and implement the right measures. The NBS 2030 is therefore to be adopted in conjunction with a first action plan. The action plan will contain specific measures for the 2025-2027 period and lays down what the German government will do between now and 2030 to achieve its targets for the conservation, restoration and

[25] https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf
[26] CBD 2022 – see https://www.cbd.int/gbf
[27] See the Coalition Agreement (in German) at https://www.bundesregierung.de/breg-de/service/gesetzesvorhaben/koalitionsvertrag-2021-1990800

sustainable use of biodiversity. A subsequent second action plan will cover the period up to 2030, building on the implementation achieved and including further measures in pursuit of the targets.

The NBS 2030 is intended to guarantee improved implementation. The implementation of the NBS 2030 will comprise annual progress reports on the measures, overall assessments compiled in 2027 and 2030, and updates to the measures via the second action plan (see chapter E).

The NBS 2030 development process

Successful implementation of the strategy will require not only support at the political level but also the acceptance and support of society as a whole. It was therefore particularly important to the German government to give all stakeholders, right down to individual members of the public, the opportunity to get involved in the strategy with their expertise, opinions and their own ideas while it was still at the development stage. All sectors must play their part in the success of the NBS 2030, with none bearing a disproportionate burden.

The dialogue and communication process that has flanked the implementation of the strategy since 2007 and accompanied the development process for the NBS 2030 involves all the relevant stakeholders and takes a whole-of-society approach. For the strategy to be implemented successfully, special responsibility lies not only at the federal level but also with the federal states and municipalities (see chapter E). Input from nature conservation and users' organisations, business associations, scientists and researchers, and many other elements of civil society, from religious communities to educational institutions, right down to individual members of the public, was indispensable to the development process. The further development of the NBS 2030 was accompanied by a wide-ranging participatory process. That process began as soon as the NBS 2007 expired. Various event formats were used to engage stakeholder groups, such as nature conservation associations, municipalities, federal states, young people and the academic community, and to collect their ideas and suggestions.

The proposed targets and measures of the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection were presented to the public and opened for public consultation from 15 June to 9 July 2023. Associations, businesses, academics and the interested public were invited to discuss the targets, indicators and measures in the context of an online dialogue on the NBS 2030 and put forward their own ideas and proposals.[28] The outcome of that dialogue process saw more than 900 comments inserted directly into the text and more than 80 position statements submitted. Alongside the online dialogue, meetings were held with stakeholder groups to discuss the Federal Environment Ministry's proposal. On the basis of the outcomes from the public consultation phase, the Federal Environment Ministry reworked its proposal for the NBS 2030 and drafted both the overall strategy and the first action plan. After that, the other federal ministries were officially consulted. The draft was published on the Federal Environment Ministry's website. The federal states and associations again had the opportunity to submit opinions. The final draft of the NBS

[28] See dialogue (in German) at https://dialog.bmuv.de/bmu/de/process/58604

2030, agreed among the ministries, was presented to the Federal Cabinet for a decision on 18 December 2024.

B. Structure of the NBS 2030

Internal design/composition of the NBS 2030

The National Biodiversity Strategy 2030 includes an introduction to the current state of biodiversity in Germany (chapter A) and a vision setting out how species diversity and landscape quality will have significantly improved and attained a good status in all habitats in Germany by 2050 (chapter C). Implementing the NBS 2030 in full is intended to help realise that vision. That is because the NBS 2030 brings all the topics that are key to biodiversity conservation under one roof and addresses the known causes of persistent biodiversity loss.

The NBS 2030 comprises 21 key action areas for the conservation, restoration and sustainable use of biodiversity in Germany and around the world. A total of 64 specified targets establish clear objectives to be attained by 2030. In some cases, targets have also been set for 2050 (see chapter D). To make them easier to monitor, specific indicators have been attached to each target (see Annex H), making it possible to constantly measure and verify progress towards them.

The NBS 2030 also contains an overview of Germany's contributions to the implementation of European and international agreements in the form of a target-by-target inventory (see Annex 0).

The NBS 2030 is to be accompanied by two consecutive action plans with concrete measures attached to the different targets and thus to the different action areas of the strategy. The first action plan contains measures for 2024 to 2027. An assessment of the progress achieved by 2027 will inform the 2030 targets for the second action plan and will be used to adjust measures where necessary and possible. The consecutive action plans will strengthen the implementation of the NBS 2030 (see chapter E). An assessment conducted in 2030 will serve to evaluate how well the targets of the NBS 2030 have been achieved overall and consequently give an insight into the progress made towards realising the vision for 2050.

The implementation of the NBS 2030 will moreover be accompanied by an enhanced dialogue and communication process (see chapter F).

Links to other strategies and processes

Thanks to the breadth of subject matter in the NBS 2030, it is connected to many existing strategies and processes of relevance to biodiversity conservation. The Federal Biological Diversity Programme, which was set up with the express purpose of supporting the implementation of the NBS 2030, has been joined by various new support programmes and measures. For example, a number of key measures from the Federal Action Plan on Nature-based Solutions for Climate and Biodiversity have been incorporated into the measures of the first action plan as they contribute significantly to the pursuit of the NBS 2030 targets.

The following is a non-exhaustive list of connected and cross-referenced strategies and processes.

National

- Federal Action Plan on Nature-based Solutions for Climate and Biodiversity (*Aktionsprogramm Natürlicher Klimaschutz*)
- German Sustainable Development Strategy (*Deutsche Nachhaltigkeitsstrategie*)
- 2024 German Strategy for Adaptation to Climate Change (*Deutsche Anpassungsstrategie*)
- National Water Strategy (*Nationale Wasserstrategie*)
- National Peatland Protection Strategy (*Nationale Moorschutzstrategie*)
- Federal Government's Food and Nutrition Strategy (*Ernährungsstrategie der Bundesregierung*)
- National Bioeconomy Strategy (*Nationale Bioökonomiestrategie*)
- National Circular Economy Strategy (*Nationale Kreislaufwirtschaftsstrategie*)
- Strategy for modelling consideration of biodiversity concerns on all federal properties (*Strategie zur vorbildlichen Berücksichtigung von Biodiversitätsbelangen*)
- Recommendations of the Commission on the Future of Agriculture (*Zukunftskommission Landwirtschaft*)
- Forest Strategy 2050 (*Waldstrategie 2050*)
- National Strategy for Food Waste Reduction (*Nationale Strategie zur Reduzierung der Lebensmittelverschwendung*) (Federal Ministry of Food and Agriculture)
- National Strategy on Genetic Resources for Food, Agriculture, Forestry and Fisheries (*Nationale Strategie zu genetischen Ressourcen*), Federal Ministry of Food and Agriculture
- 2030 Organic Strategy – National Strategy for 30% Organic Production in the Farming and Food Sector by 2030 (*Bio-Strategie 2030*)
- Action Programme for Insect Protection (*Aktionsprogramm Insektenschutz*)
- National Species Recovery Programme (*Nationales Artenhilfsprogramm*)
- Federal Biological Diversity Programme (*Bundesprogramm Biologische Vielfalt*)
- Germany's Blue Belt (*Bundesprogramm Blaues Band Deutschland*)
- Federal Defragmentation Programme (*Bundesprogramm Wiedervernetzung*)
- White Paper on Urban Greenery (*Weißbuch Stadtgrün*)
- Protein Crop Strategy (*Eiweißpflanzenstrategie*)
- Arable Farming Strategy 2035 (*Ackerbaustrategie 2035*)

European Union

- EU Biodiversity Strategy for 2030
- EU Nature Restoration Regulation
- EU Common Agricultural Policy (CAP)
- Marine Strategy Framework Directive (MSFD)
- EU Soil Strategy for 2030

International

- Kunming-Montreal Global Biodiversity Framework (GBF)
- UN Decade on Ecosystem Restoration (2021-2030)
- Sustainable Development Goals (SDGs), particularly SDG 14 and SDG 15
- United Nations Framework Convention on Climate Change (UNFCCC), including the Paris Agreement
- Strategy of the International Climate Initiative up to 2030
- United Nations Convention to Combat Desertification (UNCCD)
- Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- UNESCO World Heritage Convention
- Convention on Wetlands (Ramsar Convention)
- UN Ocean Decade (2021-2030)
- UNCLOS Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement)
- Global Framework on Chemicals (GFC)
- OECD Guidelines for Multinational Enterprises on Responsible Business Conduct

There are many more connections with other strategies and processes. To highlight and explain some of those links, supplementary cross-reference or excursus boxes have been included in the target section below.

C. 2050 Vision: The journey towards a good status for Germany's habitats

The CBD's transformative 2050 Vision and the international context

The vision of the GBF under the Convention on Biological Diversity (CBD) is "a world of living in harmony with nature where 'by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people'" (section F, p. 8, of the GBF).

With its "theory of change", the GBF, or Kunming-Montreal Global Biodiversity Framework, adopted in December 2022 emphasises that only a radical rethink in all spheres of life and business can counteract biodiversity loss and its effects on humankind.

This is supported by IPBES, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, which calls for "fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values", to reverse negative trends in biodiversity.[29] Numerous publications and policy strategies, such as the report by the German Advisory Council on Global Change,[30] the United Nations 2030 Agenda for Sustainable Development,[31] the Special Report by the Intergovernmental Panel on Climate Change (IPCC)[32] and the EU Biodiversity Strategy for 2030, highlight the need for transformative change to respect planetary boundaries and preserve biodiversity as part of the foundations on which we all depend for life, calling for a more resource-efficient approach in the consumption of land, energy and materials. The Food and Agriculture Organization of the UN (FAO), in its Strategy on Mainstreaming Biodiversity across Agriculture Sectors, emphasises the importance of agriculture and food systems that integrate biodiversity to foster more sustainable production practices and enhance resilience in the face of environmental changes.[33] The FAO calls for a systematic approach to embed biodiversity across all areas of land use, food production and food processing as a crucial contribution to ensuring global food security and preserving environmental resources.

[29] IPBES 2019 – see report at https://www.ipbes.net/global-assessment
[30] German Advisory Council on Global Change 2011 – see report at https://www.wbgu.de/en/publications/publication/welt-im-wandel-gesellschaftsvertrag-fuer-eine-grosse-transformation
[31] UN 2015 – see resolution at https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf
[32] IPCC 2019 – see report at https://www.ipcc.ch/site/assets/uploads/2019/11/SRCCL-Full-Report-Compiled-191128.pdf
[33] https://www.fao.org/biodiversity/our-work/en

2050 Vision under the NBS 2030

The German government's National Biodiversity Strategy 2030 is intended to play an active role in steering Germany along a path of sustainable development and achieving the vision of the GBF. A rich diversity of animal and plant species and habitats contributes to a functioning ecological balance and is one of the fundamental necessities of human life, as we depend on the ecosystem services that nature provides. The overarching objective of this strategy is therefore to bring the status of biodiversity to a good level across the major landscape and habitat types in Germany: in agricultural landscapes, in forests, in settlements, in inland waters, in floodplains and peatlands, in the Alps, on the coast and in the sea.

That is the basis of the NBS 2030 vision for 2050:

"By 2050, we will be living in harmony with nature, valuing, conserving, restoring and sustainably using biodiversity both for its own sake and as a basis for the wellbeing of all people, as an investment in the future and as a duty to future generations."

To achieve that vision, the plan is to pay particular attention to the direct and indirect drivers (IPBES 2019) which are responsible for causing biodiversity loss and to halt biodiversity loss by 2030. This will require not only effective measures in the various policy areas but also cross-sectoral solutions and concerted action by all the relevant ministries in a whole-of-government approach. That approach is to be consistently followed and reinforced in the NBS 2030.

A whole-of-society approach is likewise important, with the relevant stakeholders throughout society assuming responsibility for and contributing to the conservation and sustainable use of biodiversity. This is clearly highlighted in the GBF (section C), as its "success requires political will and recognition at the highest level of government and relies on action and cooperation by all levels of government and by all actors of society". Communication and dialogue with important stakeholder groups will play a major role in that endeavour.

The aim is to take nature conservation into consideration responsibly in all spheres of society. That means integrating the manifold contributions that ecosystems make to economic and social wellbeing more strongly into economic activity and boosting nature-friendly consumption. It is important wherever possible and useful to pursue benefit-maximising strategies and thereby generate synergies and alliances between policy areas, particularly when dealing with climate change and land use but also in matters of economic and social policy. This simultaneously helps integrate biodiversity targets into the various sectors responsible for biodiversity conservation.

This is proving especially successful in the pursuit of nature-based climate action as advocated in the context of the NBS 2030 and the Federal Action Plan on Nature-based Solutions for Climate and Biodiversity. In a joint report, the IPCC and IPBES underscored the point that unchecked climate change and the persistent decline in biodiversity are inextricably interconnected. In Germany as elsewhere, the effects of both those crises can already be felt in many places. It follows that biodiversity conservation and the challenges of climate change need to be considered in combination and addressed both with joint and particularly Nature-based Solutions and with measures which do not counteract one another.

International cooperation is also crucial to maintaining biodiversity as part of the foundations of human life and instigating a process of socio-environmental transformation. After all, biological diversity and the causes of biodiversity loss can, in many cases, only be understood and managed in the international context. It is consequently vital to share knowledge and experience at the international level and to strengthen international cooperation.

Launching into action with the NBS 2030

The NBS 2030 and its two action plans lay down important cornerstones for the transformative change required to achieve the long-term goals and the GBF vision by 2050.

The measures formulated in the NBS 2030 action plans are designed to address the drivers of biodiversity loss across all policy areas. The strategy promotes interministerial and cross-sectoral cooperation and places the required transformation at the heart of society as a shared mission.

Through its whole-of-society approach, the NBS 2030 will further expand communication and dialogue to motivate and support different stakeholders (see chapter F). At the same time, the NBS 2030 aims to further raise public awareness of the significance of biodiversity and foster people's willingness to gear their day-to-day activities more strongly towards its conservation and sustainable use. To that end, target-group-specific information and communication work will be expanded as part of the NBS 2030.

Alongside the individual targets and measures, the NBS 2030 needs to focus more strongly on implementation. The review elements will be pivotal here (see chapter E), as will the allocation of responsibilities in the action plans. In future, an NBS office will systematically monitor, press for and supervise the strategy's implementation.

D. Targets under the strategy for 2030

I. General biodiversity targets for Germany

Action area 1: Protection of species

Given the complex relationships and interdependencies between animals, plants, habitats and landscapes, it is also important to protect and conserve individual species and groups of species to safeguard the functions of ecosystems. The national Red Lists of animals, plants and fungi provide information on the endangerment of native species and consequently also provide insights into the status of habitats and ecosystems. A look at those lists gives cause for concern: many of Germany's native species are categorised as threatened to some extent or already extinct. Insect decline has received a great deal of media attention in recent years, but many other species groups or individual species have also been seeing a decline in numbers. A large proportion of the populations of wild and domesticated species occurring in Germany have fallen sharply in numbers and in intraspecific diversity in the last 150 years.

The national targets and measures to protect species will in future also serve as instruments for implementing the Kunming-Montreal Global Biodiversity Framework. One of the associated targets spotlights the importance of preserving the intraspecific diversity of wild and domesticated species. With a view to effectively counteracting the decline of species and their populations, targets have been formulated within this action area which are designed to contribute to the effective conservation of species and their intraspecific diversity.

Target 1.1: Reversing the trend in species diversity and intraspecific diversity

By 2030, the decline in the present diversity of wild species naturally occurring in Germany and in their intraspecific diversity will have been significantly reduced.

By 2030, the preservation of broad intraspecific diversity among crops and native livestock breeds will be assured.

By 2050, the population status of wild species naturally occurring in Germany will have significantly improved, the risk of regional extinction will have been minimised and their intraspecific diversity will have been preserved. To enhance the effectiveness of species conservation, the German government will push for additional legally binding standardisation for the protection of species.

The target explained:

What is behind this target is the vision that Germany will have a wealth of typical and naturally occurring species in combinations characteristic of its various habitats. The populations of those species will be self-sustaining or growing, they will be living in habitats that have long-term protection, are not isolated and are of sufficient size for the needs of the species and the habitats themselves, and

humans will be able to make use of and experience them. Intraspecific or genetic diversity will be manifested in the adequacy of the number and status of populations of each species, including livestock breeds and varieties (see, for example, the Red List of native livestock breeds in Germany).[34]

Alongside and supplementary to in-situ conservation, ex-situ conservation will play an increasingly important role in the preservation of species diversity and particularly intraspecific diversity.

Methodological standards in species conservation will make it possible to apply the provisions of conservation legislation consistently and transparently, which will facilitate the more targeted and effective implementation of protective measures. At the same time, standards will foster planning certainty and ensure that procedures take less time.

Excursus/cross-reference:

National Species Recovery Programme

The National Species Recovery Programme comprises Federal Government species recovery programmes for marine and terrestrial species. The Federal Agency for Nature Conservation runs these programmes to secure long-term conservation, in particular for species and habitats that are affected by the expansion of renewable energy, and undertakes the measures required to implement them. Species action plans are drawn up as a specialist basis for these activities. The goal of the National Species Recovery Programme is to ensure that the conservation status of local and supraregional populations improves rather than deteriorating. Considerable federal funds are available for that purpose. Additional funds are generated for species recovery programmes by means of compensation payments from the operators of wind turbines and power lines.

Red List of native livestock breeds in Germany

In accordance with the national Animal Breeding Act (*Tierzuchtgesetz*) of 2019, the Federal Office for Agriculture and Food determines the endangerment status of native livestock breeds on the basis of scientific methods in collaboration with the Scientific Advisory Board on Animal Genetic Resources. This categorisation process is conducted every two years and is based on population monitoring data gathered annually by the Federal Office for Agriculture and Food. It publishes the resultant categorisations in its biennial brochure on native livestock breeds in Germany and the Red List of threatened livestock breeds. That list also serves as a reference for federal and state support measures under funding area 4 of the Joint Task for the Improvement of Agricultural Structure and Coastal Protection, which is earmarked for the breeding and keeping of threatened native livestock breeds. According to the latest categorisations (October 2024), 59 of the 83 native breeds of horses, donkeys, cattle, pigs, sheep and goats (71%) are classed as threatened.

[34] https://www.genres.de/en/sector-specific-portals/livestock/red-list-of-livestock-breeds

Target 1.2: Reversing trends of decline in insects and their species diversity

By 2030, the number of insect species for which the Red List short-term population trend is deteriorating will have at least remained stable, and the decline in insect biomass will have been stopped.

The target explained:

At a current 33,000 or so known species in Germany, insects account for a large proportion of biodiversity. Protecting insect species and communities of species also protects ecological functions and ecosystem services in many terrestrial and freshwater habitats. Simultaneously, it can be expected to improve the condition of other animal and plant groups which depend on insects, such as birds that feed on them, or wild plants and crops that they pollinate. Multi-species insect communities can also contain many beneficial insects and play an important role in pollination and nature-based or biological pest control, particularly in the context of integrated pest management and organic farming.

Excursus/cross-reference:

Action Programme for Insect Protection

In adopting its Action Programme for Insect Protection in September 2019, the German government established the largest package of measures yet for the conservation of insects and their species diversity. The aim of the programme is to turn the tide on falling insect numbers and the decline in species diversity. Implementation of the many different measures of the action programme, spread across nine action areas, is either far advanced or already complete. One particular milestone has been the adoption of the insect protection package in 2021 – the legislative side of the action programme – consisting of the Insect Protection Act (*Insektenschutzgesetz*) and an Ordinance amending the Use of Plant Protection Ordinance (*Pflanzenschutz-Anwendungsverordnung*).

Red Lists of threatened animals, plants and fungi in Germany

Published by the Federal Agency for Nature Conservation, the Red Lists of threatened animals, plants and fungi in Germany have been drawn up using standardised methodology since 2006. The Red Lists function as scientific evaluations to provide information on the endangerment status of species. This involves conducting a threat analysis for each native species, including consideration of population status and population trends. The applicable Red List category is then determined on the basis of four classes of criteria. Some 14,000 taxa of insect occurring in Germany have been assessed to date.

Two types of population trend are included in the threat analysis, assessing the development of population numbers in two timeframes: a long-term trend spanning 50 to 150 years and a short-term trend spanning 10 to 25 years. The short-term trend reflects current fluctuations more accurately. It is that short-term trend to which the above-mentioned target for reversal by 2030 specifically refers.

Target 1.3: Dealing with alien species

By 2030, effective management will have substantially reduced the introduction, establishment and spread of alien species in Germany. It will also meaningfully combat the potential of some alien species to become invasive. Strategies and action plans for minimising conflict and fostering public acceptance will be in place for dealing with naturally immigrating or returning species.

The target explained:

Alien species may have the potential to damage the naturally occurring species and habitats and so become invasive. Such damage usually occurs only after some time has passed. For reasons of prevention, therefore, the first priority is to avoid the introduction and establishment of alien species on principle. Particularly the presence of alien species which may be or are known to be invasive must be recognised as early or as proactively as possible, with appropriate emergency measures taken to address it. The damage caused by such invasive alien species (IAS) must be dealt with by means of specific management measures. That includes – where possible – safeguarding ecosystem functions and restoring ecosystems that have already been damaged. In settlements, under certain circumstances, alien tree species can play an important role in a changing urban climate.

Climate change can also make it necessary to introduce and permit trees of native species but alien provenance on a targeted basis, as a means of climate adaptation and stabilising forests, as long as any threat to ecosystems, biotopes or species can be ruled out.

Action area 2: Protected areas, connectivity and wilderness

As instruments of nature conservation, protected areas make an indispensable contribution to the conservation of species and habitats, both within and across national borders. In an otherwise highly fragmented and intensively used landscape, they represent a valuable sanctuary for biological diversity. Nature conservation areas, national parks, national natural monuments, biosphere reserves, landscape protection areas, nature parks, Natura 2000 sites and other categories of protected areas address different nature conservation objectives. One of these objectives may be sufficiently large wilderness areas which, when largely unfragmented and free of use, ensure that natural processes can take place undisturbed by human influence on a long-term basis.

In addition to designating protected areas and safeguarding wilderness, ensuring those areas are interconnected is of key importance to biodiversity conservation. Joining them into networks facilitates exchange among species and strengthens the resilience of habitats, not least in the face of changing (climate) conditions. Impetus therefore needs to be channelled into continuing the development of protected areas, establishing a functional biotope network, and developing and safeguarding more wilderness in Germany. Cooperation is to be sought or expanded with the owners and managers of land – through landscape management associations, for example – to ensure that restrictions on use are appropriately balanced and necessary permanent measures are securely underpinned for the long term.

Target 2.1: Continuing the development of protected areas in Germany

By 2030, the protected areas in Germany will be effectively managed and Germany will work in line with the EU Biodiversity Strategy for 2030 and the Global Biodiversity Framework (GBF) to reach 30% protected areas (on land and at sea) and to protect them effectively. The aim is for one third of those areas to be under strict protection.

The target explained:

In Germany, large terrestrial and marine areas already have protected status. They make important contributions to biodiversity conservation in particular but also to the resilience of ecosystems in terms of nature-based climate action and climate adaptation. Those contributions need to be safeguarded and reinforced in the future; at the same time, the interests of land users and others also need to be taken into account. That is why particular emphasis is placed on continuing to develop the quality of existing protected areas. Effective management of these areas ensures that protected habitats, biodiversity-friendly structures and their important role in nature-based climate action are secured, strengthened and, where necessary, restored. Areas under strict protection include not only zones for the undisturbed development of nature, like national parks and zero-use forest reserves, but also biodiversity-rich areas with ecosystems that depend on particular land uses, such as limestone oligotrophic grasslands, which need active management to achieve their conservation goals.

Target 2.2: Conserving and improving Natura 2000 habitats and species

By 2030, the conservation trends and conservation status of all habitats and species listed in the Habitats Directive or the Birds Directive will no longer be deteriorating. At least 30% of the species and habitats which did not have a favourable status in the 2019 Habitats Directive and Birds Directive reports will have a favourable status or show an improving trend.

The target explained:

Fewer than one in three of the habitat types listed in the Habitats Directive are at the favourable conservation status called for by the EU; two in three have an unfavourable conservation status. Among species, one in four have a favourable conservation status, while almost two in three have an unfavourable conservation status. This target contributes to the fulfilment of the objectives and requirements of the EU nature conservation directives, which involve maintaining or restoring a favourable conservation status for habitats and species and avoiding deterioration of those habitats and species.

This target is an element of the EU Biodiversity Strategy for 2030 and is therefore already addressed by national contributions to improve conservation status.

Target 2.3: Continuing the development of a functional biotope network

By 2030, the most important cross-regional habitat corridors or arteries of the biotope network will have been established and secured so that a functioning cross-regional biotope network is assured on at least 15% of Germany's land area.

The target explained:

The cross-regional biotope network involves all terrestrial ecosystems, including settlements. Connecting up valuable habitats and protected areas at both the interregional and local levels is a key prerequisite for biodiversity conservation. The goal is to create a cross-regional network of valuable habitats, in accordance with section 21 of the Federal Nature Conservation Act, which preserves genetic diversity and facilitates species migration – also under the effects of climate change – thereby contributing to a pan-European nature conservation network as envisaged by the European Defragmentation Map.[35] Special importance is attached to high-priority defragmentation zones, international linkage points in the biotope network, important connective structures in highly fragmented habitats and corridors interrupting the longitudinal spread of settlements (green belts). Section 21 (4) of the Federal Nature Conservation Act stipulates that the required core areas, ecological corridors and connective elements need to be given legal protection – in the form of designation as protected elements of nature and the landscape under section 20 (2), planning decisions, long-term contractual agreements or other suitable measures – in order to secure the

[35] See https://bison-transport.eu/

biotope network for the long term. Spatial planning at the federal state and regional levels and transport infrastructure planning are particularly important for legally securing the biotope network. This can be achieved through the conservation and optimisation of narrow corridors in the network of habitats, for example, or the creation of defragmentation zones.

Target 2.4: Developing and safeguarding more wilderness in Germany

By 2030, on at least 2% of Germany's territory, nature will be flourishing in large wilderness areas which, in combination with smaller areas, will help ensure that areas where natural processes prevail make up the lion's share of areas under strict protection as specified in the EU Biodiversity Strategy for 2030.

The target explained:

Currently, around 0.6% of land in Germany is secured as large wilderness areas, mainly on coasts, in floodplains, forests, peatlands or mountains, on former military training facilities or in post-mining landscapes. Some 3.1% of Germany's forests have been permanently set aside for natural forest development (see target 7.4 on natural forest development). Areas where nature can develop according to its own rules on a permanent basis are vital for biodiversity conservation. They can moreover yield insights into what strategies result in stable ecosystems in the face of climate change and how the function of forests, floodplains or peatlands as carbon sinks can be sustainably and naturally enhanced.

Wilderness areas as defined by the NBS are sufficiently large, (predominantly) non-fragmented, areas free of intrusive or extractive human activity. They serve to permanently provide for the ecological function of natural processes without human interference.[36] They comply with the quality criteria for large-scale wilderness areas.[37] In densely populated Germany, however, the potential for large-scale wilderness or wilderness development areas of more then 1,000 hectares is limited.[38] Smaller areas of wilderness will therefore also play an important role in achieving this target and in the formation of an overarching biotope network as, for instance, stepping stones, connective elements or biological hot spots.

[36] See section 1 of the Funding Guidelines for the Development of Wilderness in Germany (*Richtlinie zur Förderung der Wildnisentwicklung in Deutschland*) of 24 June 2019

[37] Available (in German) at https://www.bfn.de/sites/default/files/2021-09/BMU_BfN_Kriterien_Wildnisgebiete_Bund_Laender_20180503_barrierefrei%20%281%29.pdf

[38] Rosenthal, Mengel, Reif, Opitz, Schoof & Reppin, *Umsetzung des 2 % - Ziels für Wildnisgebiete aus der Nationalen Biodiversitätsstrategie. Abschlussbericht des gleichnamigen F+E-Vorhabens (FKZ 3512 85 0300 unter Integration von Zusatzauswertungen, FKZ 3515 85 0900)*. BfN-Skripten 422, 2015

Action area 3: Restoration of ecosystems

Droughts, forest fires, floods, wind and water erosion, soil compaction and pollinator decline: these are all signs that, in many places, overuse and climate change have already damaged ecosystems so badly that their functions are at risk of being lost. One key to successfully turning the tide when working to combat biodiversity loss and simultaneously foster sustainable development and food security is the nature restoration of ecosystems. Targeted nature restoration measures can revive disrupted ecosystems like rivers, forests and peatlands and reestablish functions such as carbon storage, water filtration and soil fertility. Following centuries of intensive use and destruction of nature, an era of nature restoration has already been launched.

At the global level, for instance, the UN General Assembly has declared the years 2021 to 2030 the UN Decade on Ecosystem Restoration. At the EU level, the Nature Restoration Regulation has been adopted – a key instrument for fulfilling the international commitments we have entered into. The primary objective of that regulation is to decide on and start implementing nature restoration measures covering at least 20% of the EU's land areas and at least 20% of its sea areas by 2030. In concrete terms, this means establishing specific measures for key areas such as rivers, floodplains, peatlands, forests, species and habitats.

Excursus/cross-reference:

UN Decade on Ecosystem Restoration (2021-2030) – Germany's activities

In Germany, the UN Decade on Ecosystem Restoration (2021-2030) is being implemented under the aegis of the Federal Environment Ministry and the Federal Agency for Nature Conservation and coordinated by the office for the UN Decade. Germany's activities are geared towards fostering public discourse on the importance of intact ecosystems, sparking dialogue among those actively involved in the relevant sectors, research, politics and society, and encouraging new restoration projects.

A competition has been created to recognise current representative projects designed to restore, preserve or care for ecosystems. The office for the UN Decade organises free events at regular intervals for direct dialogue between specialists and the interested public.

A scientific advisory board composed of specialists from various fields expands the available interdisciplinary expertise on ecosystem restoration and provides advice on the design of measures to implement the UN Decade in Germany. Since 2022, a national platform for the implementation of the UN Decade on Ecosystem Restoration (2021-2030) in Germany has been online at www.undekade-restoration.de, supplying information on activities and opportunities to participate.

Target 3.1: Restoring ecosystems

By 2030, in accordance with the EU Nature Restoration Regulation, effective restoration measures are to be established on at least 20% of EU land areas and at least 20% of EU sea areas within the

scope of that regulation. Germany will contribute to the achievement of those targets on an appropriate scale and also align that contribution with the goals and targets of the Global Biodiversity Framework (GBF), which envisages restoration measures covering at least 30% of all degraded ecosystems by 2030. By 2050, restoration measures will cover all ecosystems in need of restoration.

The target explained:

Ecosystems are the foundations of all life on Earth. They produce oxygen, filter water, store carbon, provide protection from drought and severe weather events, and supply food and incomes. Only intact ecosystems and the services they perform can maintain the foundations of human life. Consequently, ecosystems that are at great additional risk due to climate change and biodiversity loss need to be protected or – where the damage is at an advanced stage – restored. Restoring ecosystems does not rule out continuing to use them. On the contrary, it is meant to help bolster ecosystems' capacity to perform their services on a long-term and sustainable basis, which include climate change mitigation, food security, human recreation and many other functions. In settlement areas intended for building, the soil is to be restored in such a way that there are no health hazards.

It was that conviction and that need which led to the creation of the UN Decade on Ecosystem Restoration (2021-2030), which draws together the demands of biodiversity conservation, climate action and soil conservation and serves achievement of the SDGs. After centuries of destruction to the natural world and the environment on a massive scale, there now follows a decade of restoration. The Kunming-Montreal Global Biodiversity Framework adopted under the CBD also addresses the necessity of restoration, stipulating in target 2 that "by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration".

The EU Biodiversity Strategy for 2030 therefore sets ambitious targets for 2030 to develop and restore healthy and resilient ecosystems. The restoration of Germany's land and sea areas is to prioritise degraded ecosystems first and foremost, ensuring the restoration of more than 30% of degraded areas altogether. The EU Nature Restoration Regulation is one of the key instruments for fulfilling the international commitments we have entered into.

Action area 4: Soil

Soil is a vibrant, indispensable but delicate habitat for organisms. A mere fraction of the species living in soils are known to science. Particularly in the temperate latitudes, the variety and also the biomass of soil organisms considerably outstrip those of life above ground. A teaspoon of soil contains a million bacteria, a hundred and twenty thousand fungi and twenty-five thousand algae – all microscopically small. These tiny lifeforms perform important functions in cycles of matter. A healthy soil filters drinking water, ensures water retention, cools the vicinity, provides nutrients, stores carbon, breaks down organic matter – and pollutants – and serves as a substrate for vegetation. The services of the soil and its organisms are existential to agriculture and forestry. In urban areas in particular, healthy soils in combination with plants ensure a well-balanced urban climate. However, soil sealing, traffic, industrial processes, overuse – in the form of intensive farming, for example – and raw materials extraction are increasingly causing deteriorations in the physical and chemical quality of soils. To better protect soils and their biodiversity, it is essential to assess and improve the condition of soil ecosystems, pursue an active unsealing policy and raise awareness in society regarding the importance of soils.

Excursus/cross-reference:

EU Soil Strategy for 2030

With the EU Soil Strategy for 2030, which it presented in November 2021, the European Commission is pursuing the vision of having all EU soil ecosystems in healthy condition (meaning in good chemical, biological and physical condition and able to provide many ecosystem services and soil functions as continuously as possible) and thus more resilient by 2050. Healthy soils are an essential prerequisite of achieving climate neutrality, developing a clean and circular economy, and halting desertification and land degradation. They are also important to reversing biodiversity loss, supplying healthy foods and protecting human health. The EU Soil Strategy for 2030 establishes a framework and concrete measures for the conservation, restoration and sustainable use of soils. It is an essential component of the EU Biodiversity Strategy for 2030 and will contribute to the goals of the European Green Deal.

In July 2023, the European Commission presented the legislative proposal envisaged in the strategy, in the form of its Proposal for a Directive on Soil Monitoring and Resilience. The European Parliament and the environment ministers of the member states have since stated their positions regarding the proposal, and autumn 2024 saw the start of trilogue negotiations which may result in the first ever directive on soil monitoring and resilience at the European level. It would then need to be transposed into national law by each member state.

Target 4.1: Maintaining healthy soils

By 2030, the good biological condition of soils will have been comprehensively defined, with differentiations according to form of use, and will serve as a target and benchmark for forward-looking land use.

By 2050, all soil ecosystems will be in good biological condition.

The target explained:

Healthy soils are characterised by good biological, chemical and physical properties, which interact and combine in intricate ways. The chemical and physical properties are generally well defined, while biological properties are not. The three together form an important basis of life on land and consequently for all ecosystems and humans. Intensive land use and sealed soils lead to considerable degradations in soil biodiversity. Sustainable soil management, land recycling to reduce land take, unsealing, processing contaminated sites, and building up a root-penetrable layer restores natural soil functions, fosters biodiversity (soil flora, soil fauna, soil fungi), and preserves and creates habitats for animals and plants which live above ground. The definition should be differentiated according to form of use, in order not to cause unnecessary difficulties for, for example, land recycling.

Target 4.2: Reducing the expansion of settlement and transport area

By 2030, the daily increase in land used for settlements and transport infrastructure ("land take") will be reduced to less than 30 hectares per day.

By 2050, the aim is to achieve circular land-use management (net zero land take).

The target explained:

Land is a finite resource. Competing uses include agriculture and forestry, settlement and transport, raw materials extraction and energy generation. Using land for settlements and transport infrastructure causes a particular degree of shrinkage, fragmentation, islandisation and destruction to the natural habitats of animals and plants. Moreover, such areas tend to generate additional environmental degradation in the form of pollutant substances, noise and light pollution, and the loss of climate-friendly carbon sinks. Land take often involves some sealing of soils. Sealed soils and other significant degradations markedly reduce soil biodiversity, which can then only be redeveloped over very long periods. Land take is therefore to be further minimised in future; the goal is circular land-use management. In its National Sustainable Development Strategy, the German government sets the goal of limiting land use for settlements and transport infrastructure from the 2024 figure of around 52 hectares per day to an average of less than 30 hectares per day by 2030. This path is aimed at achieving net-zero land take by 2050 in line with circular land-use management.

Circular land-use management is a system comprising planning, use, discontinuation, lying fallow and revival by means of long-term land use or interim land use for limited periods. In this way, the principle of circularity, known from other sectors such as waste or water management, is also applied to land.

Action area 5: Public awareness, involvement and participation

Biodiversity conservation and sustainable use of the natural world are a task for society as a whole which can only be successful if it is rooted in broad-based support from politics and civil society. Public acceptance, however, requires fundamental awareness of the importance of nature and biodiversity. Improving nature awareness[39] in society in such a way as to reach all sections of the population requires good communication of scientific content and intensive and participatory information and education campaigns. In that context, issues of fairness in connection with education, inclusion and gender are also key. Additionally, it is important to continue to encourage volunteer work for biodiversity and nature conservation.

Target 5.1: Raising awareness of biodiversity through education and communication

By 2030, a high degree of public awareness regarding biodiversity will have been achieved among at least 50% of the population. Up-to-date educational and communication work tailored to target audiences on the importance of biodiversity will be reinforced in all spheres of society.

The target explained:

Public awareness of biodiversity will rise substantially by 2030 and will manifest itself particularly in increased motivation and in day-to-day behaviours relating to the conservation and sustainable use of biodiversity. Generalised messaging addressed to the public as a whole, as frequently practised to date, will be supplemented by more tailored educational and communication work which takes account of evidence-based, psychological and social factors influencing behaviours relevant to biodiversity. The whole spectrum of relevant target audiences, such as sociodemographic subsets (age, education, income, etc.) and lifestyle groups or sociocultural milieus, and interaction with relevant key stakeholders in transport, energy generation, industry, crafts and trades, farming, sports, municipalities, etc., will be taken into consideration. Not only general and academic educational institutions like nurseries, schools and universities are crucial to that work; so are providers of vocational basic and further training or retraining, the use of new communication formats such as virtual reality and social media, and extracurricular or informal educational settings like protected areas, urban greenery, forests, botanical gardens and well-run zoos.

Excursus/cross-reference:

Education for sustainable development

Education for sustainable development enables people to think and act in a future-oriented manner. Development is sustainable when people worldwide, presently and in the future, can live in dignity and unfold their needs and talents while considering planetary boundaries. Such a societal

[39] https://www.bfn.de/en/nature-awareness

transformation requires strong institutions, participatory decision-making and conflict resolution, knowledge, technologies, and new behavioural patterns. ESD is an essential driver for the 17 Sustainable Development Goals of the Agenda 2030, especially Goal 4 "Quality Education". The aim is an equitable development that allows for a life in peace and permanently viable ecosystems.

This strategy picks up the approaches of ESDBNE and aims to raise awareness among people of all social strata and age groups for the protection and sustainable use of biological diversity in all areas of life through education.

Target 5.2: Ensuring participation, social justice and social diversity in nature conservation and encouraging volunteering for biodiversity conservation

By 2030, continued support will be in place for all stakeholders within society to be involved in and assume responsibility for innovation, knowledge and action relating to biodiversity conservation and for the structures and parameters governing volunteer work in nature conservation, and changes to these will ensure that (even) more people commit to being actively involved in nature conservation.

The target explained:

The natural world is important for everyone. To stem the continual loss of biodiversity at the national and global levels, we need broad alliances and the incorporation of a wide range of perspectives. All groups within society are to be taken into consideration and need to have the chance to be involved and participate in solving problems and shaping their environment. This work will take into account the fact that access to nature differs depending on age, gender, disability, social and ethnic origins, prosperity, poverty, and cultural, religious and educational background.

An ageing society, recruitment problems, the individualisation and pluralisation of society, and scarcity of free time all have an effect on volunteering in nature conservation. The success of conservation efforts depends on the indispensable and important work of volunteers; for example, volunteer-based structures do the heavy lifting on key tasks like bird monitoring. To date, there is a lack of empirical data on the current state of volunteering in nature conservation.

Action area 6: Digitalisation, data and research

Digitalisation, the expansion of key data pools and research can be pivotal in supporting the achievement of national biodiversity targets. Digital applications, infrastructure, and new methodologies and technology for collecting, connecting, assessing and modelling data need more development to serve conservation-related purposes, and they need to be made available to the generality of stakeholders in the field of nature conservation and beyond. There is a fundamental need for more informative data on the status of and trends in biodiversity in Germany. Over and above specific biodiversity data, more interdisciplinary and transdisciplinary research is needed into the variables that influence biodiversity, and the available data needs to be connected up so that the effects of human activities (including digitalisation itself) on biological diversity can be better understood and the best possible measures to protect the natural world can be implemented. Data from citizen science, for example, plays an important role in that context and will be taken into account. Not least among the potential uses for the data collected are authorisation procedures and other administrative activities. In addition, further gaps in the research on implementing transformative change for effective conservation and sustainable use of biodiversity need to be identified and closed.

Target 6.1: Exploiting the opportunities of digitalisation

By 2023, the opportunities of digitalisation and AI will be more fully exploited for the surveying, conservation, restoration and sustainable use of biodiversity.

The target explained:

Digitalisation can be a catalyst for the achievement of biodiversity targets. Greater use is to be made of the potential of digital tools and methodologies in situations where it might exert positive leverage in the pursuit of biodiversity-friendly and conservation-related goals. This will involve evaluating, deploying and further developing established and new digital technologies, such as remote sensing, metabarcoding, acoustic species survey, machine learning, modelling and visualisation, and enabling nature conservation stakeholders (nature conservation authorities and administrative bodies, research institutions, learned societies, planning offices, and conservation and environmental organisations) to apply these in their work. Moreover, civil-society and economic stakeholders in such sectors as agriculture, forestry, fisheries, and urban and municipal development can benefit from digital tools and AI applications which support them in taking biodiversity into account in their own decisions and activities, including production and planning processes, supply-chain management and investments.

Target 6.2: Improving data pools and biodiversity monitoring

By 2030, nationwide biodiversity monitoring will have been further developed and expanded at the National Monitoring Centre for Biodiversity, with the involvement of all ministries and stakeholders,

and will make data on biodiversity in Germany available on a scale which, among other things, will facilitate better measurement of adherence to the targets in this strategy.

The target explained:

Effectively counteracting biodiversity loss will require reliable data on the status of nature and landscapes, on changes to them and on the major factors affecting them. The biodiversity monitoring coordinated at the National Monitoring Centre for Biodiversity comprises standardised, systematic and long-term surveys and needs to be continuously maintained and expanded, with due regard for existing systems. Furthermore, additional data and information on factors influencing biodiversity is vital for comprehensively assessing the status of and trends in biodiversity and for investigating the causes of biodiversity loss. Reviewing the monitoring programmes and indicators that have already been developed can serve to reveal gaps.

Target 6.3: Research on biodiversity conservation

By 2030, the major gaps in the research needed to survey and maintain biodiversity and bring about the necessary transformative change will have been identified, and research projects for biodiversity will have been expanded accordingly.

The target explained:

Although much is already known about the status of biodiversity, trends and interactions within it, and biodiversity-friendly measures, there are still large gaps in our knowledge, particularly in the interdisciplinary and transdisciplinary fields concerned with biodiversity, sustainable use and nature-based climate action. It is essential to integrate environmental, economic and social perspectives and create sound foundations for transformative ideas.

II. Biodiversity targets for different habitats

Action area 7: Forests

Forests are home to a large share of biodiversity, and they are valuable spaces for many people to enjoy recreation and be close to nature. Left to nature, 90% of Germany would be covered in forest. Germany is at the heart of beech country in Europe and therefore bears special responsibility for Europe's beech forests. Centuries of land use and intensive exploitation, including forestry, greatly altered the species composition and structures of Germany's forests. By the 18th or 19th century, they had shrunk to just over 10% of its total area. Thanks in part to the more recent increase in public awareness of the manifold importance of forests, in combination with the measures to increase forest cover undertaken by the forestry sector, today, more than 32% of Germany's land area is forested again. And although competition for land is high in densely populated Germany, that proportion has risen slightly in recent decades.

Especially in light of climate change, maintaining and restoring the functions and structures of forest ecosystems is ever more important. Key terms here are the diversity and diversification of forests, which need to be considered from various perspectives – such as species composition and genetic diversity, structural and functional diversity, natural processes, site conditions and diversity of management methods. Biodiversity-friendly measures must be taken to facilitate the adaptability and resilience of forests and support conservation-related concerns in mainstream forestry, including but not restricted to regulatory requirements. All in all, the multiple ecosystem services supplied by forests, must be re-established in a more balanced manner, particularly to enhance their capacity for biodiversity conservation and climate mitigation, without casting doubt on or inappropriately restricting the use of forests as a source of raw materials.

Target 7.1: Status of biodiversity in forests

By 2030, species diversity and landscape quality in forests will have markedly increased and attained an improved status. By 2050, the naturalness of forests will also be markedly improved.

The target explained:

The 2022 National Forest Inventory designated 14% of Germany's forest as dominated by human influence, 7% as characterised by human influence, 41% as partly semi-natural, 22% as semi-natural and 15% as almost natural. The tree species composition of the main forest cover is slightly closer to natural than it was in the previous inventory. To maintain forests so that they remain available as biodiversity hotspots in the long term and can once again function as greenhouse gas sinks, harmful influences need to be reduced, natural processes of succession nurtured and damaged forests restored. Moreover, forests dominated or characterised by human influence are to be converted into semi-natural, richly structured and climate-resilient forests largely comprising native tree species adapted to climate change. The vision of semi-natural forests being pursued here is generally considered more resilient in the face of climate change, improves the water balance in the landscape

in question and, in terms of biodiversity conservation, is a better habitat for many species of flora and fauna. Additionally, historical forms of forest management, such as simple or compound coppicing or forest pasture, can contribute to biodiversity conservation and should be maintained and fostered wherever possible and helpful.

Target 7.2: Adapting forests to climate change

By 2030, the resilience and adaptability of forests in relation to the effects of climate change will be improved as a function of forest management by means of maintaining and fostering the biodiversity typical of forests.

The target explained:

The damage caused to forests by natural disasters since 2018 demonstrates that a considerable proportion of forests today are not sufficiently adapted to the effects of climate change. This primarily affects forests with a composition of tree species ill adapted to their location. Efforts to develop forests in such a way that they can withstand climate-change-induced alterations in local conditions, regain their function as greenhouse gas sinks in the long term, remain a habitat for many animal and plants species that depend on forests, and supply timber as a renewable raw material need to be continued and intensified. In that endeavour, it is important to develop climate-sensitive forests into richly structured, climate-resilient mixed forests largely comprising native tree species in order to reduce the risk of calamitous damage affecting large areas as a result of disruptive events like droughts, windthrow, forest fires and insect infestations. Natural rejuvenation as well as sowing and planting are to be possible without special conservation measures.

Other important criteria for adapting forests to the effects of climate change are to avoid fragmenting forested areas and to restore and maintain intact landscape hydrology, for example with measures to improve water retention in forests, protect forest soils or renature sections of water bodies, forested peatlands and other wooded wetland biotopes (see also target 3.1 on restoring ecosystems, target 4.1 on maintaining healthy soils and action area 9). The biotope network remains an important factor to consider in the interests of supporting genetic exchange between populations and enabling forest species to adapt their ranges to climate change (see also target 2.3 on continuing the development of a functional biotope network and target 19.1 on the ecological permeability of transport routes). Natural reforestation of open landscapes and natural forest development can also make an important contribution to adaptation (see also target 7.4 on natural forest development).

Target 7.3: Increasing forest cover

By 2030, Germany's forests will have been increased by 10,000 hectares by creating or encouraging the development of climate-stable, semi-natural forests, without converting high nature value open landscapes.

The target explained:

Afforestation measures can help raise the capacity of forests for carbon storage and sequestration over the long term and, if biodiversity-friendly stipulations are respected, can generate synergies between climate action and biodiversity conservation. Moreover, if the focus is placed on regions with a little forested area, it can serve to improve biotope connectivity (see also target 2.3 on continuing the development of a functional biotope network, target 8.2 on increasing the number of landscape features and structural elements and target 19.1 on the ecological permeability of transport routes). In pursuit of this target, the afforestation support measure under the Joint Task for the Improvement of Agricultural Structure and Coastal Protection will soon be supplemented by a support programme for increasing forest cover in the Federal Action Plan on Nature-based Solutions for Climate and Biodiversity.

Target 7.4: Natural forest development (5% target)

By 2030, forest left to develop naturally will make up at least 5% of Germany's forested area, or 10% of publicly owned forests.

The target explained:

If forests are left to develop naturally, largely free from human interference, they tend to acquire a diverse mixture of species and structures typical of its location over time, which can enhance their capacity to perform ecological functions and adapt to climate change. Forests characterised by natural forest development can already serve as places to learn about the treatment and development of forests for the future. Both protected areas and sites outside protected areas will count towards the target for the percentage of forest left to develop naturally. The salient criterion is that the areas set aside for permanent natural forest development must be legally secured.

Action area 8: Agricultural landscapes and food

More than half of land in Germany is used for agricultural purposes. Consequently, farming has played a leading role in shaping the nature and appearance of the cultivated landscape. No other sector is as dependent on intact natural resources, a stable climate, healthy soils, clean and sufficient water, and species diversity as the agricultural sector. Agricultural landscapes can offer a great variety of habitats for wild species, which can find refuge, food and opportunities for reproduction there. Protecting and fostering diverse and richly structured agricultural landscapes also contributes effectively to climate action. Resilient agri-ecosystems enhance an area's function as a carbon sink, reduce soil erosion and regulate the landscape hydrology. Additionally, diverse cultivated landscapes are particularly important for local recreation and tourism. At the same time, however, the decline in biodiversity in Germany is especially marked in agricultural landscapes. Intensive farming not only results in some places in too high substance inputs, especially nutrients and pesticides, which to date have led to a creeping disappearance of species and habitats that depend on low-intensity land use. It also involves greater frequency of use, and units of farmland have successively increased in size, which has in the past meant the active removal of field margins, boundary strips, field copses and hedgerows. By contrast, particularly in peripheral regions characterised by low-intensity farming, which are still home to great species diversity in places, biodiversity is at risk from underuse and the discontinuation of agricultural activities. The degree to which agriculture and ultimately food security depend not only on intact natural resources and ecosystem services but also on broad genetic diversity among livestock and crops must not be ignored, particularly in times of crisis. One important concern is to develop and preserve plant varieties and livestock breeds that are, for example, robust and climate resilient, by breeding new strains and preserving heritage breeds and varieties.

A key instrument governing the nature and intensity of agricultural use is the EU's Common Agriculture Policy (CAP) and its national implementation. The CAP has the potential to be pivotal in stopping biodiversity loss in the agricultural landscape and contributing more effectively to the protection and conservation of biodiversity in the agricultural landscape and production in future. That approach was partially reinforced by the most recent reform of the CAP.

Agricultural policy and subsidies must in future effect the shift to a sustainable, economically viable, diverse farming sector, at least part of which is less intensive, and to a wide range of differently structured agricultural landscapes. Only resource-efficient sustainable agriculture will be able to contribute to food security and emergency food supplies in the long term. That was also the conclusion reached by the Commission on the Future of Agriculture (ZKL) in 2021 and reaffirmed in its joint vision in 2024: "Biodiversity is seen and valued as a fundamental resource, forming the basis of ecosystem functions. Activities that promote biodiversity and especially the protection of insects are the order of the day. The farming countryside is characterised by structural diversity, often with interconnected habitat structures such as flowering areas, hedges and green strips."

In future, key specifications for shaping the agricultural landscapes will be derived from the National Restoration Plan. The first draft of that plan, which is a requirement of the EU Nature Restoration Regulation, is to be submitted to the European Commission by 2026.

At the same time, how and what we eat affects the climate, the environment and living conditions for all life on Earth, while our choice of foods and the environmental conditions in which they are produced

have an influence on human health. Worldwide, the global agri-food system is responsible for up to 80% of the decline in biodiversity, as the conversion of natural ecosystems into farmland has been the principal cause of habitat loss for many species (Benton et al. 2021). In many parts of the world, the objective of producing food in increasing quantities at the lowest possible cost has led over recent decades to a form of agriculture that demands more and more pesticides, fertilisers, energy, land and water. Above all, the industrial production of foods of animal origin has had a pronounced effect on biodiversity, land use, the climate and the environment, while the condition of environmental media has affected the quality of the food produced and, in consequence, human health.

Global agri-food systems need to be transformed in long-term, sustainable ways, in environmental, social and economic terms, to contribute to healthy life on Earth. Both human health and the adequacy of global food supplies depend crucially on the state of the environment and the climate, on biodiversity and on the ecosystem services it supplies. What is particularly essential for safe and environmentally friendly nutrition within planetary boundaries is a shift in eating habits towards a more plant-forward diet, as recommended by the EAT-*Lancet* Commission with its planetary health diet. Foods of animal origin should primarily be produced in connection with environmentally sound use of grassland or the utilisation of agricultural by-products.

Excursus/cross-reference:

Common Agricultural Policy

Introduced back in 1962 with the purpose of creating common EU policy for a sector that, in particular, ensures the security of food supplies and offers people working in it a fair income, the Common Agricultural Policy (CAP) has undergone many stages of development in its long history. The 1992 CAP reform brought a departure from the market and price support which had, up to that point, caused a considerable intensification of agricultural land use with all the associated adverse consequences. Since then, the focus has shifted on direct aids, or direct payments, to farms. Accompanying measures were also introduced, such as extensification and afforestation within the scope of the agricultural structures policy. Agenda 2000 effected another cut in support prices, offset by an increase in direct payments. At the same time, aspects of the agricultural structures policy were amalgamated into a second policy area under the CAP, support for rural development, which became known as its second pillar. As direct payments were successively decoupled from production, they became attached firstly to the land for which support was provided and secondly to compliance with certain (environmental) requirements and standards. The key changes in the latest CAP reform, which came into effect on 1 January 2023, were an increase in the requirements, or conditionality, tying direct payments to environmental criteria and the introduction of eco-schemes to pursue green objectives under the first pillar of the CAP. In conjunction with conditionality and the environmental measures of the second pillar, particularly the agri-environment-climate measures, these form the green architecture of the CAP. The German government's aim is to replace the direct payments with suitable financial support for farmers as recompense for their environmental and climate efforts. This is also in line with the recommendations expressed by the Commission on the Future of Agriculture in 2021 and 2024.

Commission on the Future of Agriculture

Following an agriculture summit convened by then Federal Chancellor Angela Merkel in late 2019, the German government of the time set up the Commission on the Future of Agriculture. Its appointed members were leading figures from the major associations in three areas – agriculture, business and consumers, and environmental protection and animal welfare – or researchers in agriculture and environmental science. The Commission was established with the task of "drawing up recommendations and proposals to ensure that agriculture in Germany is environmentally, economically and socially sustainable into the future." Its final report, unanimously adopted on 29 June 2021, attracted a great deal of notice and support.

In that report, the Commission concludes that, given the external costs of prevailing forms of production, today's agriculture and food system must undergo a radical transformation process which should be considered a task for society as a whole. The spotlight here is on the reorganising of animal husbandry, the role of agriculture in climate action, and the also urgently necessary conservation of biodiversity. The Commission believes it is imperative to reverse the trend as quickly as possible. To that end, it calls for radical reform of the CAP.

Target 8.1: Status of biodiversity in farmland

By 2030, species diversity and landscape quality in farmland will have markedly increased and attained a good status.

The target explained:

The agricultural landscape consists of different agricultural regions, each with its own location-specific characteristics and parameters and consequently presenting different underlying conditions and challenges for fostering and using biodiversity. The type, intensity and scale of agricultural use are key factors in the status and development not only of biodiversity but also of natural assets like soil and water. The image of the agricultural landscape in Germany is dominated in places by rapid and homogeneous crop rotation in large fields, and a significant proportion of agricultural use is characterised by excessive intensity, which has a negative impact on species, habitats, the ecological balance and ecosystem services. Moreover, particularly in peripheral regions such as the upland areas dominated by low-intensity pasture, biodiversity is at risk from underuse and discontinued use. Nationwide monitoring, which has the potential to further buttress the foundations for policy decisions on biodiversity in farmland, must be specially tailored to agricultural landscapes with a view to providing a scientifically robust set of data on the status of and trends in biodiversity and the key reference values. Key constraints – regarding the selection of indicators, for example – and prompts relating to the above can be derived from the EU Nature Restoration Regulation.

Target 8.2: Increasing the number of landscape features and structural elements

By 2030, an upward trend will have been established in the share of agricultural land with high-diversity landscape features, which will also help improve the connectivity of habitats.

The target explained:

Various landscape features and structural elements, like hedgerows, individual trees and tree rows, field margins and waysides, near-natural streams and fallow fields provide refuge, feeding and breeding habitats for many wild animals and plants which are otherwise absent in intensively farmed landscapes. They therefore play a major role in improving the ecological quality and functionality of the agricultural landscape as habitat and corridor for flora and fauna. It is a diverse mixture of permanent and temporary biodiversity-friendly structures that, when suitably spatially arranged, connects habitats, facilitates genetic exchange between populations and results in greater biodiversity and enhanced provision of regulatory ecosystem services. A high level of species diversity also helps to promote beneficial insects, thereby supporting pest control, and to control diseases and pests that affect crops. Moreover, landscape features and structural elements – and structural forms of production, such as meadow orchards and agroforestry systems – can help prevent soil erosion, regulate the water balance and local climate, and reduce nutrient inputs in water bodies. They also function as carbon sinks.

Target 8.3: Fostering regional, diverse and climate-adapted food production

By 2030, low-emissions, sustainable and environmentally friendly food-production value chains will be reinforced. Measures to foster regional, sustainable and healthy diets prioritising plant-based products will be developed further. At the same time, the sustainable use of grassland for animal nutrition and nature conservation will be reinforced and more transparency will be achieved on animal-welfare matters.

The target explained:

Producing food of animal origin sometimes demands quantities of feed crops that equate to several times the energy it contains, can be associated with higher greenhouse gas emissions and environmental impacts and, depending on how it is organised, puts more pressure on limited resources like water, fossil fuels and soils than producing plant-based food to feed humans directly.

Things are different when it comes to use of grassland. Depending on how it is managed, and assuming it has not been established on drained peatland, permanent grassland can be highly beneficial to biodiversity and climate action, and the biomass from grassland is usually only usable for animal feed or energy generation. In arable farming, grassland vegetation like grass-clover lye can be a useful addition to crop rotation and contribute to biodiversity in arable landscapes. The reorganisation of animal husbandry is to ensure that synergies are generated between biodiversity conservation, sustainable land management and animal welfare and that farms can operate profitably within that framework. The federal programme to support the reorganisation of animal husbandry (funding for

investments and running costs) started in 2024, taking ratios of livestock numbers to land area into consideration.

Fattening, when it uses imported (arable) fodder, has proved in parts to be environmentally unsustainable. The agricultural sector needs to be offered new prospects of securing revenue long term through forms of farming that generate synergies between food security, animal welfare, protection of natural resources and biodiversity conservation. The Protein Crop Strategy and the Arable Farming Strategy, both produced by the Federal Ministry of Food and Agriculture, make important contributions on that score. The reorganisation of animal husbandry in the direction of more humane forms is a major challenge. It also needs to be economically viable. The conservation and sustainable use of permanent grassland and the advancement of more sustainable arable farming are important goals. Accordingly, funding options are already in place under funding area 4 of the Joint Task for the Improvement of Agricultural Structure and Coastal Protection.

Target 8.4: Availability of vegetables, fruit and legumes for sustainable and healthy nutrition

By 2030, a sustainable and healthy diet with a large proportion of minimally processed, seasonal regional vegetables and fruit, wholegrain foods, legumes and nuts will be made more easily accessible.

The target explained:

The conversion of natural ecosystems into agricultural land is a driver behind the loss of many species' habitats. Producing food in increasing quantities at the lowest possible cost has led over recent decades to a form of agriculture that demands more and more pesticides, fertilisers, energy, land use and water.

More plant-forward nutrition focuses on vegetables, fruit and legumes and is more beneficial in addressing the effects of producing food of animal origin on biodiversity, land use and the environment, which can be considerable. A large proportion of our recommended daily protein intake should therefore come from plant-based sources, particularly legumes, nuts, seeds, alternative protein sources and high proportions of wholegrain foods.

Target 8.5: Halving food waste

By 2030, the amount of food waste from private households, hospitality and catering, trade and production in Germany will have been halved (in relation to 2015 levels).

The target explained:

Currently, around 11 million tonnes of food waste are disposed of in Germany every year. That amount is split fairly equally between avoidable waste and unavoidable waste (things like peels, shells and bones).

Target 8.6: Expanding organic farming

The German government intends that organic farming will be practised on 30% of agricultural land by 2030.

The target explained:

Research has shown that organic farming tends to result in increased benefit to biodiversity compared with conventional farming, even if per-hectare yields, and thus the productivity of each hectare, are sometimes reduced. This means that additional incentives are needed to bolster organic farms' biodiversity contributions, with existing and new measures and funding schemes made attractive by dint of tailoring them to suit the needs of organic farming. Simultaneously, the benefits of organic farming need to be communicated better to the general public in order to improve its market position. A key contribution to this is the 2030 Organic Strategy produced by the Federal Ministry of Food and Agriculture.[40]

Target 8.7: Reducing the use of plant protection products and the adverse effects of such use

By 2030, the risk and the use of synthetic chemical plant protection products is to be cut by 50% (in relation to 2011-2013). Their use and the risk they pose are to be brought to a level that does not impair biodiversity or ecosystem functions.

The target explained:

The use of pesticides is a notable driver of species loss, as demonstrated by extensive scientific findings.[41] Plant protection products reduce the losses in yield and quality caused by harmful organisms and microorganisms, thereby helping to safeguard harvests, but they can also have adverse effects on organisms other than those they are intended to target. In particular, the assessment methods involved in the authorisation procedure for plant protection products are currently not adequate for covering their cumulative and indirect impacts on biodiversity. Therefore, more sustainable agriculture that does not adversely affect biodiversity also means a change of direction on pest management based, where necessary, on the principle of harmonisation. The ongoing evolution of the principles of good professional practice in pest management, more systematic application of integrated pest

[40] See https://www.bmel.de/SharedDocs/Downloads/DE/Broschueren/bio-strategie-2030.html
[41] e.g. IPBES 2016, Niggli et al 2020

management, and technological advances in, for example, the means of application, make it possible, in addition to organic farming, to adequately reduce the use of pesticides on farmland and the risk it poses.

Target 8.8: Nature- and eco-friendly fertilisation and animal husbandry

By 2030, nitrogen surpluses from agriculture will be further reduced, aiming to safely reach the target of 70 kg of nitrogen per hectare per year as a first step.

The target explained:

Surplus nitrogen from agricultural systems plays a major role in species loss. 70% of all Red List species respond very sensitively to an excess of reactive nitrogen in the environment and are displaced by species that benefit from nitrogen more effectively and quickly. When nitrogen surpluses are too high, they therefore contribute significantly to a less diverse, even homogeneous, distribution of species. In consequence, cutting agricultural nitrogen surpluses is an effective and essential means of protecting biodiversity. However, surpluses currently differ distinctly from region to region as a result of regional differences in livestock density and variations in the sensitivity of ecosystems. A single national value for agricultural nitrogen surpluses is therefore only a political target which must always be assessed in combination with other nitrogen-related environmental quality targets, such as eutrophication from atmospheric nitrogen inputs and nitrate pollution in the groundwater. A reduction in nitrogen surpluses is also necessary with a view to achieving the current nitrogen-related environmental quality standards and health targets.

Moreover, manure from intensive livestock farming contains high levels of antibiotics and other veterinary drugs or their metabolites, to some extent. Intensive fertilisation can cause these very powerful substances to accumulate in the soil and damage soil biodiversity (see action area 4).

Target 8.9: The precautionary principle in genetic engineering and synthetic biology

Up to and beyond 2030, provision will be made to ensure that synthetic biology, genetic engineering including new genomic techniques and other new developments in biotechnology do not on the whole have a negative impact on biodiversity; potential positive impacts on biodiversity of modern breeding techniques are to be made harnessable, with due respect for the precautionary principle.

The target explained:

At present, no genetically modified organisms (GMOs) are cultivated in the open air in Germany. A legal framework to govern new genomic techniques is currently being negotiated at the EU level. As the negotiations continue, Germany will be considering the possible opportunities and risks in relation to biodiversity with due respect for the precautionary principle.

Action area 9: Inland waters, floodplains and peatlands

Water bodies, floodplains and peatlands are hugely important, particularly to biodiversity conservation, the water and nutrient balance within a landscape, flood protection, climate action and adaptation to the effects of climate change. Those vital habitats, however, are endangered in Germany. Over recent centuries, peatlands were drained so that they could be used for farming and forestry, as well as for peat extraction. Biodiversity in inland waters is impaired, for example, by their use for inland shipping and tourism and by the construction of transverse structures. Embankment, river regulation and straightening, stabilisation of banks and intensive use of floodplains alongside rivers have left many areas deprived of natural floodable areas, which can have catastrophic consequences, especially in the event of heavy rain caused by climate change. Drought events exacerbated by climate change likewise present a growing threat to the biodiversity of aquatic and semi-aquatic habitats. In view of this, there is a need for more efficient management and extensive nature restoration measures to preserve or restore inland waters, floodplains and peatlands as important habitats and make them more resilient to the effects of climate change.

Excursus/cross-reference:

National Water Strategy

The National Water Strategy describes how water supplies for humans and the environment can be secured in sufficient quantities and the necessary quality up to and beyond 2050. For ten strategic issues, the strategy describes what developments Germany intends to undergo in the direction of viable water management for the future and what objectives and measures it will pursue to that end. Those issues include restoring and protecting a near-natural water balance and securing it for the long term and enhanced efforts to protect the groundwater and restore near-natural streams, rivers and lakes.

Intact water ecosystems, like river landscapes and the associated floodplains, are among the most biodiverse habitats in Central Europe, so the National Water Strategy also has a role to play in the achievement of the targets in this NBS action area.

Target 9.1: Status of biodiversity in inland waters and floodplains

By 2030, species diversity and landscape quality in inland waters and floodplains will have markedly increased and attained a good status.

The target explained:

Intact water bodies and floodplains are biodiversity hotspots. They provide humans with a wide range of ecosystem services and contribute to the conservation and development of habitats for plants and animals which have become rare. To improve their performance of that function, we need even better coordination between nature conservation and work to protect water bodies, so that win-win measures to implement the Natura 2000 directives and the Water Framework Directive (WFD) can be

identified and put into effect, and other nature restoration measures can also be planned and carried out.

Excursus/cross-reference:

Germany's Blue Belt

Adopted by the German government in 2017, Germany's Blue Belt is a federal programme created jointly by the Federal Environment and Transport Ministries. The aim is to carry out nature restoration measures along federal waterways and in their floodplains to build a biotope network of national significance. Little-used secondary waterways have great potential for ecological development thanks to the near-natural water body structures they retain, while also being important to society for leisure, recreation and enjoying natural surroundings. In the intensively used core network of federal waterways too, however, nature restoration measures are to be carried out to create ecological stepping stones for the biotope network, where compatible with the relevant transport objectives. In this way, Germany's waterways are to be returned to a more natural state and woven into a network.

The floodplains funding programme allows municipalities, clubs, associations and others to apply for funding from the Federal Agency for Nature Conservation to develop floodplains along the federal waterways into near-natural hubs of biodiversity and arteries of the biotope network.

The Federal Waterways and Shipping Administration, in line with its statutory mandate, will implement development measures on federal waterways designed to implement the water management objectives of the WFD.

The Institute for Federal Real Estate will carry out nature restoration measures in federally owned floodplain areas.

Target 9.2: Continuity of watercourses

By 2030, additional important sections of watercourses in Germany will be passable or free flowing.

The target explained:

Germany's water bodies lack passability as a result of many transverse structures, particularly in connection with small hydropower plants. Especially fish which migrate for long distances up and down rivers, like salmon or eels, depend on the upstream and downstream passability of those water bodies to successfully complete their lifecycles.

Passable waters also give fish and other aquatic lifeforms a chance to adapt to changes in climate. The ecological passability of water bodies needs to be further improved by, for example, constructing new, functioning fish ladders.

Moreover, Article 9 of the EU Nature Restoration Regulation requires that long stretches of rivers be restored into free-flowing rivers, primarily by removing obsolete barriers.

Target 9.3: Revitalising floodplains

By 2030, watercourses will have 10% more natural floodable area (active floodplains) available to them over all compared with the 2021 Status Report on Floodplains in Germany.

The target explained:

Near-natural floodplains in Germany have grown rare. Almost everywhere, rivers have been corseted by narrow constraints and the functionality of floodplains has been greatly limited. Less than 10% of riparian floodplains are still ecologically intact. As green infrastructure, floodplains are crucial not only for flood prevention but also for water retention, particularly during periods of low water levels and drought. Therefore, significantly more measures – such as dyke relocation, reconnection of abandoned channels and re-establishment of alluvial forests – need to be carried out to reclaim floodplains as natural retention areas and as habitats for many rare animal and plant species as well as for alluvial forests, which can only exist in such areas.

Target 9.4: Restoring and protecting peatlands

By 2030, all natural and near-natural peatlands will be protected and at least 70% will have a good conservation status or a secure outlook for their development.

By 2050, another 25% of currently drained peat soil areas will have been returned to a near-natural state by raised water levels and nature conservation measures and will be under protection, have a secure outlook for their development or be used for farming or forestry in the form of paludiculture.

The target explained:

In Germany, only a very small area of natural or near-natural peatlands remains, most of it in small residual islands. Almost all of Germany's raised bogs that are still intact are protected, but the same applies only to a small proportion of its fens. In general, peatlands are very often found to have a bad conservation status. They are directly or indirectly affected by draining and various other harmful influences. There is therefore a need for systematic protection and the restoration of natural or near-natural peatland complexes in currently drained peat soil areas, both used and unused. Permanently raising the water level stops peat decomposition and, in the long term, facilitates peat formation and carbon storage. Besides its positive impact in terms of climate action, rewetting peat soils can also affect biodiversity – particularly for species typical of and specific to peatlands. This is especially true of the rewetting and restoration of near-natural peatlands, though it also applies to the use of rewetted peatlands as wet grassland or for paludiculture (e.g. cultivation of reeds and bulrushes). To achieve the targets set in section 3a of the Federal Climate Change Act (*Klimaschutzgesetz*), however, rewetting measures are required that go beyond this target. The interests of all stakeholders and groups directly or indirectly affected by rewetting schemes should be heard through participatory processes and taken into account as appropriate.

Excursus/cross-reference:

National Peatland Protection Strategy

The Federal Cabinet adopted the National Peatland Protection Strategy on 9 November 2022, thereby setting out the policy framework for all aspects of peatland protection at the federal level for the coming years. The strategy covers ten fields of action, with 49 goals and 117 measures. At its heart is the rewetting of drained peatlands and peat soils and their climate-friendly use with a long-term outlook. On the basis of the target agreement between the Federal Government and federal states on climate change mitigation through peat soil conservation, annual greenhouse gas emissions must be reduced by at least 5 million tonnes of CO_2 equivalent by 2030. The measures will simultaneously foster biodiversity in peatland regions.

Biodiversity conservation is the second focus of the strategy, alongside nature-based climate action. There are strong synergies between these two objectives, as rewetting peatland supports those species that are specific to peatland habitats. Only a small percentage of peatlands are still in a near-natural condition, so the species diversity typical of peatland areas is very much at risk. Near-natural peatlands are therefore to be systematically protected, their hydrological condition improved and their functionality as carbon sinks enhanced. The National Peatland Protection Strategy is rooted in the idea of voluntary participation and financial incentives. To underpin the credibility of its calls for voluntary participation, it also emphasises the Federal Government's role as a model of good practice.

Action area 10: Coasts and seas

Coasts and seas are the largest ecosystems on the planet. They are home to an abundance of biodiversity, sequester a large portion of anthropogenic emissions of carbon dioxide and constitute the world's largest natural carbon reservoir. They supply raw materials and nutrition, serve as transport routes and recreational spaces, and possess ready stores of renewable energy. Rising levels of contamination with nutrients and pollutants, alongside the intensive use of coasts and seas, for activities such as shipping, fisheries, coastal protection, renewable energy expansion, and industrial or port installations, are having a negative impact on biodiversity and ecosystem functions in coastal and marine areas. In light of this, special attention needs to be paid to strengthening the protection of marine biodiversity.

Through various international and regional organisations, collaborations, agreements, and EU regulations and directives (CBD, UNESCO, OSPAR, HELCOM, International Conference on the Protection of the North Sea, Trilateral Wadden Sea Cooperation, ASCOBANS under the CMS, Ramsar Convention, Habitats Directive, Birds Directive, Nature Restoration Regulation, WFD, MSFD), Germany has committed itself to undertake a wide range of measures within particular timeframes for the conservation of coastal and marine ecosystems and its habitats, biotope types and species. One means by which Germany is expressing that commitment is by developing a National Marine Strategy designed to facilitate the implementation of specific measures for effective and sustainable marine protection in the areas of sea for which the German Federal Government is responsible.

Excursus/cross-reference:

EU Marine Strategy Framework Directive (Directive 2008/56/EC)

The Marine Strategy Framework Directive (MSFD) establishes a legal framework for the measures required from all EU member states to "achieve or maintain good environmental status in the marine environment" in all the seas of Europe. The term "marine environment" is explicitly understood to include protecting marine species and habitats and preventing biodiversity decline, so it covers a good many aspects of marine biodiversity conservation.

The characteristics and parameters required for assessments and measures are identified in the Annexes to the MSFD. These set out, for example, the seabed and water column habitat types alongside the biological communities, fish populations, marine mammals, reptiles and seabird species associated with them. To achieve a good environmental status under the MSFD, specific programmes of measures are developed and updated in a continuous six-year cycle. In Germany, these are drawn up and agreed on within the framework of BLANO, the Federal/State Working Group for the North and Baltic Seas, before being reported to the European Commission.

Target 10.1: Status of biodiversity on coasts and in seas

By 2030, species diversity and habitat and landscape quality in coastal and marine areas will have significantly improved, and good environmental status of marine waters as defined by the MSFD will have been achieved.

The target explained:

High levels of habitat quality and species diversity on coasts and in seas are key to a functioning, resilient and sustainably usable marine ecosystem that can adapt to outside influences such as climate change and maintain its important life-sustaining functions. That objective will also require that measures be implemented to improve species diversity, habitats and landscape quality. To pay due regard to the special conditions of the ecosystem, the introduction of non-native species is to be avoided, pollution reduced, direct human exploitation of resources reduced and in some areas halted, and strictly protected refuge and resting areas established for species and habitats. Another key component here are the targets for marine protected areas (see action areas 1, 2, 14 and 15).

Target 10.2: Restoring coastal and marine habitats

By 2030, under the EU Nature Restoration Regulation, restoration measures will be implemented in at least 20% of the area comprising the exclusive economic zone (EEZ), Germany's territorial sea and the associated river basins, and coastal protection measures will prioritise Nature-based Solutions. This must be accompanied, among other things, by a considerable reduction of impacts from human activities.

The target explained:

On coasts and in the sea, as elsewhere, restoration measures are needed to protect biodiversity effectively and to preserve marine and coastal ecosystems, and their services and functions, to enhance climate resilience. Alongside technological measures, which are an indispensable instrument of coastal protection, more use is to be made in future of Nature-based Solutions, such as the restoration of marine and coastal habitats. The measures to be implemented may consist in removing or minimising stressors or interventions (reduction of human intervention) to enable habitats to recover and species to return naturally.

Target 10.3: Nature-friendly use of the seas

By 2030, marine resources will be used more sustainably and with greater respect for ecosystems, so species and marine ecosystems will have a more favourable ecological status.

The target explained:

Negative trends in species diversity, habitat quality and fish stocks are caused, among other things, by the negative impacts of human utilisation of the seas, such as fisheries, shipping, construction activities

such as offshore structure installation, seabed resource extraction like sand and gravel mining, tourism in coastal areas, etc. Land-based inputs – nutrients, pollutants, plastic waste – and the effects of climate change are factors too. To protect the species and habitats threatened by those influences and to preserve marine ecosystems and their biodiversity, measures may be necessary that include restricting usages and ensuring they are nature friendly.

Action area 11: Cities, urban landscapes and other settlements

More than three quarters of Germany's population now live in towns and cities. Many settlements are characterised by a high degree of sealed soils, a disordered water balance and their own micro climates. Varied and near-natural green spaces and the preservation and reclamation of open spaces by means of space-saving building and circular land-use management therefore play a pivotal role in improving quality of life in the urban sphere. Near-natural green and blue infrastructure, for example, has a positive impact on inhabitants' health and wellbeing and creates important spaces for cooling, recreation, exercise, sports and socialising. As the Nature Awareness Study shows,[42] particularly people in economically disadvantaged households lack day-to-day contact with the natural world; a diverse range of urban greenery within walking distance is important for people's appreciation of biodiversity, and it improves environmental justice by making nature accessible for everyone. Moreover, urban green spaces serve as habitats and life-sustaining resources for numerous animal and plant species and are often home to more species than the surrounding countryside, as they accommodate various beneficial local conditions within a relatively small area. In relation to climate change, too, urban greenery plays an important role in adaptation to climate change (heavy rainfall events or heatwaves), improves the local microclimate and so generates healthier living conditions.

Target 11.1: Status of biodiversity in cities and other settlements

By 2030, species diversity and landscape quality in cities and other settlements will have markedly increased and attained a good, future-proof status.

The target explained:

Cities and other settlements are already important habitats for native flora and fauna. To protect biodiversity, these habitats must be preserved and reinforced in spite of the infilling that is required in many places. Richly structured and near-natural green spaces and small-scale biotopes form the basis of species diversity in cities and other settlements. Designing and maintaining green spaces accordingly is therefore essential for biodiversity. New elements of green and blue infrastructure, like green roofs, green walls and near-natural rainwater management, also have potential and need qualitative improvement. The German government will continue to support municipalities in increasing urban species and biotope diversity and, on federally owned premises, to fulfil its role as a model of biodiversity-friendly practice for public administration.

Target 11.2: Greening cities and other settlements

By 2030, the greening of cities and other settlements will be further developed and qualitatively enhanced with an eye for structural diversity, health, recreation and nature conservation targets.

[42] https://www.bfn.de/en/nature-awareness

For example, the intention is for all residents to have urban greenery, parks, etc. within walking distance in future.

The target explained:

Urban greenery provides the inhabitants of urban areas with important spaces for cooling, recreation, exercise, sports and socialising. Green and open spaces also play a key role in spatially and functionally connecting biotopes both within a town or city and with the countryside surrounding it. The German government therefore supports municipalities in doing more to preserve and develop green spaces that are accessible to all and have a wide range of characteristics and functions and in improving the ecological functions of urban greenery by means of those development and upgrading efforts. Further greening cities and other settlements is also part of target 12 of the GBF, Article 8 of the EU Nature Restoration Regulation and the New Leipzig Charter, in which "the green city", alongside "the just city" and "the productive city", is an essential dimension of sustainable urban development, and it occurs within a tripartite approach to urban development that balances green spaces, building and urban mobility.

Excursus:

Federal Biological Diversity Programme – funding priority: urban greenery

The urban greenery funding priority under the Federal Biological Diversity Programme was used to implement a key measure from the *Stadtnatur* master plan for urban greenery, a package of measures for vibrant and attractive cities which the German government adopted in 2019. One aim is to increase the share of near-natural green and open spaces rich in species and structures by means of environmentally friendly green-space management. Another aim is to raise public awareness, running educational schemes to communicate the value and significance of urban greenery to the general public and to people in politics, public administration, business, clubs, associations and educational institutions. Municipalities will also receive support for creating and implementing municipal biodiversity strategies. These are intended to cement the mainstreaming of biodiversity conservation across all areas of municipal government.

Target 11.3: Nature-based climate adaptation in cities and other settlements

By 2030, increased application of nature-based solutions in cities and other settlements will ensure that measures to adapt them to climate change also protect and foster biodiversity.

The target explained:

Municipalities are currently facing major challenges in connection with adapting to climate change. The intention is to implement multifunctional measures wherever possible, which take an integrated approach to human health and wellbeing, biodiversity, climate action and adaptation to the effects of climate change (e.g. sponge cities). Nature-based Solutions should be prioritised, such as green walls and roofs on buildings, rain gardens, bioretention areas, flower meadows and pocket parks. Such Nature-based Solutions are often more cost-effective in the long term than purely technological solutions and constitute important building blocks that need to be developed further, tried out and, above all, brought into widespread use. Nature-based solutions should not only be planned as distinct measures but should flow together into an integrated overarching network, complementing one another wherever possible.

Action area 12: High-altitude mountains

The only high-altitude mountain landscapes in Germany are in the Alps. Biodiversity loss is particularly severe in that region. A crucial factor here is climate change. For example, the average temperature in the Alps has risen by almost 2°C in the last 100 years, compared to a global rise of around 0.8°C. This has a powerful effect on the species spectrum and on the migration patterns of single species. However, a particular problem in connection with climate change is presented by the melting of glaciers, the effects of which – acute water scarcity, landslides, rockfalls, etc. – are either expected or already making themselves felt. Numerous other factors are also responsible for biodiversity loss in the Alps. They include tourism, which continues to grow, transport, landscape fragmentation, air pollution and changing land-use systems. Pan-alpine cooperation is of singular importance. That means making use of existing institutions and developing them further.

Excursus/cross-reference:

Alpine Convention

An important instrument for the Alpine region is the 1995 Alpine Convention with its implementing protocols, which established a binding framework under international law for sustainable, environmentally friendly development. The 27 articles of the Protocol Relating to Nature Protection and Landscape Conservation describe general and specific measures for the protection of areas and species, connectivity (ecological network), participation, international cooperation, territorial and landscape planning, and research and monitoring.

Target 12.1: Status of biodiversity in high-altitude mountains

By 2030, species diversity and landscape quality in the Alps will have markedly increased and attained a good status.

The target explained:

Species diversity and landscape quality form the basis of sustainable development in the Alps and serve as a buffer against the effects of climate change. To bring about transformative change that will benefit biological diversity, biodiversity conservation needs to be integrated into the tourism, transport, farming, forestry, energy and water sectors.

The topic of environmental and climate education has been prioritised for the first time under the current Slovenian presidency of the Alpine Convention. This focus should continue under Germany's presidency in 2027.

III Targets for mitigating adverse effects on biodiversity and maintaining ecosystem services

Action area 13: Climate change

Climate action and biodiversity conservation are closely interconnected. Sensitive ecosystems and species are greatly affected by climate change. To protect biological diversity, therefore, successful climate action is indispensable. When ecosystems degrade, large quantities of greenhouse gases are released into the atmosphere and exacerbate climate change. At the same time, intact, resilient ecosystems can capture greenhouse gases, thereby contributing to nature-based climate action and tempering the environmental changes caused by climate change. In consequence, the two crises – biodiversity loss and climate change – need to be tackled together. Natural ecosystems need to be preserved, renatured and restored in order to reinforce their natural climate-stabilising functions. Moreover, near-natural and diverse ecosystems can generally better withstand the effects of climate change, recover more readily and absorb disruptions more effectively: they are more resilient.

Target 13.1: Implementing Nature-based Solutions for climate and biodiversity

Up to and beyond 2030, Nature-based Solutions will be significantly advanced to jointly and effectively address the twin crises of biodiversity loss and climate change and to achieve the targets set in section 3a of the Federal Climate Change Act.

The target explained:

The conservation and nature restoration of ecosystems make Nature-based Solutions a powerful lever for combating the climate emergency and the biodiversity crisis together. In cultivated areas, transitioning to sustainable and near-natural forms of use preserves or recreates natural and near-natural habitats and strengthens their resilience to the effects of climate change. Nature-based Solutions aim to maintain and, where possible, strengthen the climate-stabilising effect of terrestrial, aquatic and marine ecosystems in harmony with the aims of biodiversity conservation. They contribute both to biodiversity conservation and to climate action.

Excursus/cross-reference:

Federal Action Plan on Nature-based Solutions for Climate and Biodiversity

The Federal Action Plan on Nature-based Solutions for Climate and Biodiversity is intended to play a key role in significantly improving the general condition of ecosystems in Germany and boosting their contribution to climate action. Terrestrial and marine ecosystems will be brought closer to a natural state and so rendered more resilient Agriculture and forestry will become more sustainable and allow space for a diverse range of flora and fauna on cultivated land. Sustainability in this context means involving local people as participants and co-creators, since those who own and/or work the land and those in positions of municipal or city responsibility know where the most urgent need and the greatest

potential lies. The measures set out in the action plan therefore focus particularly on funding, in order to create financial incentives for voluntary implementation of Nature-based Solutions for climate and biodiversity.

The Federal Action Plan on Nature-based Solutions for Climate and Biodiversity is the German government's key instrument for achieving the targets set in section 3a of the Federal Climate Change Act for the greenhouse gas emission balance of the land use, land-use change and forestry (LULUCF) sector. To that end, the emissions of the LULUCF sector have to be reduced as quickly as possible and existing sinks that capture greenhouse gases from the atmosphere must be stabilised and expanded. Achieving the incrementally rising targets for the LULUCF sector by 2045 will take measures focused on maintaining and expanding existing carbon-capture capacities, reliable and long-term funding, and continuous adaptation of the action plan.

The plan covers all the necessary steps for protecting and strengthening ecosystems. They range from determining the status of ecosystems and investigating the causes or degradation, to developing suitable countermeasures and the requisite capabilities, to putting in place permanent measures and the associated monitoring. The action plan contains 69 measures across ten fields of action.

The Federal Action Plan on Nature-based Solutions for Climate and Biodiversity makes nature-based climate action a key component of Germany's climate policy. That being said, the climate-stabilising potential of the natural world should not be overestimated, nor should it be taken as the sole criterion for nature conservation. Nature conservation is also the foundation for reinforcing ecosystems' resilience to the effects of climate change and consequently essential to the sustainable use of ecosystems in times of climate change.

Target 13.2: Making climate policy nature-friendly and adapting nature conservation strategies to climate change

By 2030, federal measures to alleviate and adapt to climate change will be designed and implemented to be as nature friendly as possible, while nature conservation work and related planning will be conducted with the greatest possible consideration for the challenges of climate change, particularly with a view to enhancing the climate resilience of ecosystems and their species.

The target explained:

There is also an urgent need to systematically integrate climate considerations into nature conservation work and related planning activities. It is important to make nature conservation targets more flexible, so that they can be amended in view of changes in the climate, and to prioritise implementing no-regrets measures, which will have a positive effect on biodiversity and the resilience of ecosystems (e.g. connectivity between protected areas) even under projected future changes to the climate. Additionally, the resilience of ecosystems and species needs to be continuously strengthened. Wherever possible, species and habitats need to be given the chance to use their natural adaptability, so that they can adapt to changing climate conditions.

Conflicts over competing uses of land are proliferating. The expansion of renewables, like wind power, solar power and bioenergy, including distribution and storage, is leading to changes and sometimes increases in the demand for land compared with Germany's former system of centralised energy generation and supply (see target 14.1 on the nature-friendly expansion of renewable energy). Ensuring measures are nature friendly and exploiting synergies is important for making sure that the expansion of renewables, the expansion of natural sinks and biodiversity conservation do not obstruct one another. Precautionary adaptation to the effects of climate change also benefits from the maintenance and restoration of ecosystem services (e.g. stabilisation of the water balance) and requires resilient forms of land use (agriculture and forestry).

Certain climate protection measures can pose a threat to biodiversity and impair the natural environment. For example, the various carbon dioxide removal (CDR) technologies currently under discussion may heighten demand for biomass, thereby leading to conflicts between forms of use and exacerbating conflicts over land. In such cases, biodiversity conservation and climate action must be treated equally.

Action area 14: Energy transition and raw materials

The transition of the energy supply system in Germany to renewable sources is a key element of meeting climate action goals. In the course of the energy transition, there is to be a shift away from the unsustainable use of fossil fuels and nuclear power to a sustainable supply of energy from renewable sources. That endeavour faces challenges, however, in the form of growing global demand for energy and resources and the conflicts resulting from the energy transition in relation to the conservation of nature, landscapes and species. It is important that the energy transition is nature friendly so that the restructuring of the energy supply system does not have detrimental impacts on biodiversity. To take an example, the manufacturing of batteries for electric vehicles is increasing demand for metallic raw materials. The expansion of infrastructure requires considerable quantities of sand, gravel, plaster, etc. The key point is therefore to unlock the enormous climate potential of the energy transition without losing sight of biodiversity conservation. Improved energy efficiency is key to ensuring that the energy transition can be implemented in harmony with nature; every kilowatt-hour of energy saved helps the cause.

Target 14.1: Nature-friendly expansion of renewable energy

Up to and beyond 2030, the urgently needed expansion of renewable energy will be conducted in harmony with nature. The means of achieving that will include managing the expansion at a spatial-planning level.

The target explained:

Under the applicable laws, expanding renewables in harmony with nature relates to the nature-friendly selection of locations, procedures for selecting sites, the building and design of facilities, repowering and the associated dismantling, and nature-friendly grid expansion. A key point is to have as little recourse as possible to areas that are in a natural state or otherwise of value for nature conservation or to valuable farmland, particularly for building ground-mounted photovoltaic (PV) systems which take up a lot of land. The installation of ground-mounted PV systems is to be directed more strongly towards already sealed or contaminated areas. As the expansion cannot proceed quickly enough using only such areas, it is currently necessary to exploit a certain amount of natural and agricultural land as well, in order to meet the target. Agriphotovoltaics (agri-PV) is a technology seeking to use land for renewable energy generation and farming at the same time. The principle of multiple use – using the same area for two or more compatible purposes – can ease the rate of land consumption and is to be enshrined in the Federal Spatial Planning Act (*Raumordnungsgesetz*). Moreover, in the interests of renewables expansion in harmony with nature, the use of an area for ground-mounted PV systems is to be limited to the lifetime of that energy-generation use. This is an option under section 9 (2) of the Federal Building Code (*Baugesetzbuch*). Establishing the subsequent form of use secures the opportunity to expand PV while also keeping those areas for nature conservation or agriculture in the long term, as they will be returned to that purpose when their use for energy generation ends. It should be noted that the use of PV systems for energy generation is not limited to the duration of funding under the Renewable Energy Sources Act (*Erneuerbare-Energien-*

Gesetz). Furthermore, it must remain possible to repower PV sites. The expansion targets set by the Renewable Energy Source Act need to be met and maintained for the long term.

Target 14.2: Sustainable production and use of biomass

By 2030, biomass flows will be comprehensively considered in the light of competing uses across different sectors and measures and the principles of circularity, co-product use and cascading.

The target explained:

The growing demand for biogenic raw materials to defossilise the energy market and all sectors of industry is raising the pressure on agriculture and forestry to increase production, which heightens the risk of negative impacts on biodiversity, soils and water bodies. The production and use of biomass is not necessarily sustainable. Challenges arise, for instance, from the increasing competition for land for food and animal feed, Nature-based Solutions for climate and biodiversity, and other uses such as ground-mounted PV systems and construction. However, producing biomass on rewetted peatlands (e.g. paludiculture) demonstrates powerful synergies between biomass production, nature-based climate action and biodiversity. Wherever possible, therefore, residues and waste should be utilised and consumption of primary biomass reduced.

The use of biomass to generate energy is especially hotly debated. When biomass is burned, the greenhouse gases they contain are directly released. The net greenhouse gas footprint of using biomass for energy can differ – and fall short of greenhouse gas neutrality – depending on the type of biomass used, substitution effects, supply-chain emissions, the greenhouse gas emissions released during the use of biomass as fuel, and the amount of time it takes for the CO_2 released to be recaptured.

In consequence, the use of biomass for energy should preferably be restricted to applications where the technology for using alternative renewable resources is not currently available. The priority for biomass is on material or industrial uses with the longest possible lifespan, where the biomass and the products made from it are used within efficient cycles or cascades for as long as possible, ending with energy generation where it primarily replaces fossil fuels. It therefore makes sense for bioenergy generation to shift its focus onto using biogenic waste and residues that have no other use in accordance with the cascading principle. Use of timber should be focused more strongly on the efficient, circular use of biomass in high-quality, long-lived products in order to reduce conflicts over the resource and to strengthen the biodiversity and climate function of forests. Burning more primary timber conflicts with that.

Target 14.3: Nature-friendly extraction and use of biomass

By 2045, the use of primary raw materials the extraction of which can entail severe biodiversity loss will be markedly reduced.

The target explained:

Although the greatest share of land-use-related biodiversity loss can be traced to the cultivation and use of biomass, the extraction and processing of metallic and non-metallic mineral resources and fuels are not to be discounted.[43] After all, extraction and processing of material resources (metals and non-metallic minerals, fuels and biomass) account for over 55% of global greenhouse gas emissions and 40% of health impacts related to particulate matter. This comes with increasingly severe consequences, not least for biodiversity, as material use has increased more than three times over the last 50 years and continues to grow.[44] Therefore, and in view of limited resources, it is also essential to reduce primary raw material extraction as much as possible by means of longer product lifetimes, greater resource efficiency, cascading and circularity in materials management, and new technologies.

[43] Global Resources Outlook 2019, Summary for policymakers, p. 17, https://www.resourcepanel.org/reports/global-resources-outlook-2019
[44] Global Resources Outlook 2024, Summary for policymakers, p. 6, https://www.resourcepanel.org/reports/global-resources-outlook-2024

Action area 15: Substance inputs and other impairments to ecosystems

Inputs of substances that exert pressures on the environment, such as nitrogen compounds (e.g. ammonia/ammonium and nitrogen oxides including nitrate or nitrous oxide), and other inputs like refuse and plastics, have a direct influence on habitats and biodiversity as a whole. For example, higher levels of nitrogen compounds in the soil result in changes in nutrient availability for plants. Sensitive species that require less nutrient-rich ecosystems can lose part or all of their habitats. Pollutants can have an impact, for example, on the reproduction, stress resistance and behaviour of water organisms, which can have a knock-on effect on their populations and consequently on the species composition of their ecosystems. Limiting inputs of pollutants is also important for human health. Plastics or microplastics that are consumed by aquatic organisms reduce or prevent their uptake of nutrition and so jeopardise their survival. Harmful substances can enter the food chain via microplastics in the sea or in plants grown for food or animal feed and thereby end up in the human body. Throwaway culture and short product lifespans generate vast amounts of waste, bringing ecosystems to the limits of what they can naturally withstand. Alongside pollution in the form of contamination of the soil, water and air, light pollution is also a problem for biodiversity, as it can affect species' orientation and behaviour and impair their reproduction and ability to find food.

Target 15.1: Reducing pollution with substances dangerous to the environment

By 2030, pollution from all sources will be further reduced in order to provide the best possible protection for biodiversity, the functionality of ecosystems and human health.

The target explained:

Pollution directly impairs habitats and biodiversity, so inputs from all sources of substances dangerous to the environment must be reduced to a minimum by, for example, regulating certain applications, substituting substances of concern for others and making stipulations about waste disposal, alongside boosting decontamination efforts. This target applies to all substances and mixtures, unless this strategy provides a more specific target (e.g. nutrients, plant protection products, plastics). The vast majority of legal provisions governing chemicals are harmonised at the European level. With its Chemicals Strategy for Sustainability and its zero-pollution ambition, and in light of the European Green Deal, the EU supports the goal of a toxic-free environment achieved by better protection of human health and the natural world. This includes protecting biodiversity from harmful substances and mixtures in line with the applicable legislation.

Target 15.2: Reducing the impact on ecosystems caused by nutrient inputs (nitrogen and phosphorus)

By 2030, the area of sensitive ecosystems where nitrogen levels exceed critical loads will be reduced by 50%. After 2030, the area where critical loads are exceeded will shrink further in line with a national total emissions target for nitrogen which is still to be set.

By 2030, nitrogen emissions from all sources and in all environmental media will be reduced by 50% in accordance with target 7 of the Global Biodiversity Framework (GBF).

By 2030, concentrations of phosphorus in flowing waters will stay below the values set out in the Ordinance for the Protection of Surface Waters (*Oberflächengewässerverordnung*). It remains Germany's ambition to meet the targets of the EU Water Framework Directive in 2027, ahead of the EU target.

The target explained:

Reactive nitrogen, particularly ammonia, nitrate and nitrogen oxides, and also phosphorus impair human health, diminish water and air quality, lead to eutrophication, and contribute to biodiversity loss and climate change. Total emissions of reactive nitrogen, despite successful reductions in many sectors, remain too high. This target is intended to help ensure that nationwide good ecological status is largely achieved in Germany, such that no damage to biodiversity, ecosystem functions or human health is expected from the effects of such inputs. It corresponds to target 7 in the GBF.

Target 15.3: Reducing plastics in the environment

By 2030, inputs of plastics into the environment will be significantly reduced and the discarding of plastic waste will be greatly reduced.

The target explained:

Pollution of the natural world with waste, particularly plastic waste, is a problem that has grown ever larger over time because of how long plastics take to decompose. In Germany, the problem is tackled by means of an effective waste-disposal and recycling system which needs to be further improved and expanded in future. The spotlight is on avoiding unnecessary waste and pursuing circularity for raw materials and products, especially plastics. In recent years, Germany has already taken numerous steps to discourage littering and otherwise avoid inputs of plastics into the environment. In the realm of packaging, these have included a ban on the distribution of lightweight plastic bags and an obligation to charge a deposit on almost all single-use plastic drinks bottles and all drinks cans. In addition, various items of legislation to reduce the negative impact of single-use plastic products have been adopted to transpose the EU's Single-Use Plastics Directive. These include, for example, the Prohibition of Single-Use Plastics Ordinance (*Einwegkunststoffverbotsverordnung*), which bans placing certain single-use plastic products on the market, and the Labelling of Single-Use Plastics Ordinance (*Einwegkunststoffkennzeichnungsverordnung*), which requires labelling that indicates the negative impact of improper waste disposal for certain products. The Single-Use Plastics Fund Act

(*Einwegkunststofffondsgesetz*) was the final element in transposing the Single-Use Plastics Directive and introduced extended producer responsibility for certain single-use plastic products. It requires the producers of certain single-use plastic products to make an annual payment into the Single-Use Plastics Fund. The revenue from that fund accrues to the public purse, reimbursing some of the costs it incurs to free public spaces of the waste from single-use plastic products. The fund is thus an important tool for preventing the accumulation of litter in the environment.

Target 15.4: Curbing light pollution

By 2030, the increase in artificial lighting and the associated biodiversity loss will be reduced to a minimum and the share of landscapes where the night sky is dark will have grown.

The target explained:

Ecosystems and organisms largely structure their shared lives on the basis of diurnal rhythms. Increasingly, those fundamentally stable cycles are being ever more frequently interrupted, changed and disturbed by artificial lighting. Artificial lighting is used at locations, times, spectrums and levels of intensity at which light would not occur naturally. This has consequences for biodiversity, ecosystems, and humans too. Artificial nocturnal lighting has been proven to adversely affect many different animal and plant species. One well-known example is phototaxis, the 'vacuum cleaner' effect that artificial light has on insects.

Action area 16: The economy, financial flows and consumption

Our society and economy in many respects depend on biodiversity and the services provided by an intact natural world, including for food, medicines, building materials and many other natural resources. Great importance also attaches to nature's regulating services, such as protecting the climate, purifying the air and providing clean drinking water, and cultural services like recreation, health and quality of life. Those hidden qualities of the natural world – natural capital – have not been adequately reflected in political and economic decisions to date. And although the increasing loss of biodiversity is associated with considerable economic risk, many of the causes of biodiversity loss can be traced to economic activities that, through supply and value chains, are connected to German consumer behaviour and production practices. The consequences, in the form of biodiversity loss and destruction of ecosystems, can be seen not only in Germany but around the world.

A change of economic practices is therefore required to preserve biodiversity and to live up to the shared responsibility that arises from the growth of global commercial exchange. Alongside the overarching objective of establishing the eco-social market economy as the new economic model, a green legal framework is needed for a nature-friendly economy. A key point is to deploy all suitable tools – information campaigns, legal requirements, economic incentives, labelling, public procurement – to mobilise businesses for biodiversity conservation.

There is also a need for further development of the underlying conditions for sustainable consumption, a sustainable financial system and sustainable investments to ensure that biodiversity concerns are not only sufficiently recognised but also backed by adequate funding. At the same time, the classic metrics of economic policy – GDP chief among them – must be supplemented by sustainability indicators within an expanded system of prosperity measurement. The 2024 Annual Economic Report included, for the first time, a representative indicator of biodiversity in Germany.

Target 16.1: Value of natural capital

By 2030, the value of natural capital in Germany – ecosystems and ecosystem services – will find greater expression in the annual economic reports issued by the German government and in political and economic decisions (including strategies, programmes and planning) in all relevant sectors.

The target explained:

In addition to the value it has in and of itself, the natural world has economically significant value due to its various ecological, provisioning and cultural services which, all too often, is nonetheless not taken into consideration in private and public decisions. An economic perspective creates greater transparency here. This is not about putting price tags on plants and animals; rather, it is about making the hidden value of biodiversity and ecosystem services – the value of natural capital – visible to people and society.

Target 16.2: Corporate responsibility for biodiversity and public procurement

By 2030, businesses will take specific measures to align their strategies, reporting systems, activities and financial flows more closely with the Kunming-Montreal Global Biodiversity Framework, reduce their negative impacts on biodiversity and ecosystems, and boost their positive impacts. Adequate legal and planning certainty will be created for voluntary temporary nature conservation measures (applying the 'temporary nature' concept). Alongside relevant legal obligations, there will be greater awareness and implementation of the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct, including their stipulations relating to biodiversity.

By 2030, the German government and state enterprises will take biodiversity criteria into account in suitable cases when procuring products and services, thereby sending important signals to the private sector.

The target explained:

Businesses and their supply and value chains have a major influence on biodiversity and on the state of ecosystems in Germany and around the world. Businesses should therefore, within the framework of applicable legislation and international standards – particularly the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct – integrate biodiversity into their business strategies, engage to that end with established scientific findings on risks and opportunities for biodiversity in connection with economic activity, analyse and reduce the adverse effects of their activities, including their value chains and financial flows, and boost their positive impact on biodiversity and ecosystems. Duplication of requirements should be avoided. By raising the level of consideration given to sustainability criteria, which is planned for the upcoming public procurement reform, the German government will be leading by example and setting new benchmarks. This is the public sector using its influence for the green transformation of the economy.

Target 16.3: Nature-friendly consumption

By 2030, in the European internal market, biodiversity considerations will be incorporated into environmental certification and labelling schemes for products and services and into footprint calculations, so that information for consumers on the biodiversity impact of their consumption and on nature-friendly options for action is significantly improved. Germany's consumption footprint is already to be reduced by 2030.

The target explained:

The conservation of biodiversity around the world requires a fundamental change in consumer behaviour in Germany. The cultivation or extraction of many raw materials and foods and the manufacturing of products are associated with serious impacts on the natural world in the countries where they occur. Not only consumers but also decision-makers and producers need to be informed about those connections, and nature-friendly alternatives need to be transparently identifiable. Information on product lifetimes and repairability, or higher standards for the environmental

statements on labels, can help achieve that. Product reuse and sufficiency-oriented lifestyles also play a role in shrinking the environmental footprint of consumption.

Target 16.4: Biodiversity in the financial sector

By 2030, the German government will work to ensure that the biodiversity impacts and risks of financial decisions are made even more transparent. That work will take various forms. The German government will take an active role in initiatives at the international and European levels.

The target explained:

Making the biodiversity impacts and risks of financial decisions ever more transparent will raise awareness among market participants of the fact that biodiversity loss can be associated with financial risks. This will enable market participants to pay more attention to biodiversity conservation in their financial decisions. Important elements will be keeping red tape minimal and operating on the basis of a global minimum standard.

Target 16.5: Public biodiversity financing in the strict sense

By 2030, established and effective funding programmes for the conservation and restoration of biodiversity and ecosystems will be continued, they will have been refined in light of their impact, and new measures to achieve biodiversity targets in Germany will have been developed as appropriate.

The target explained:

At the EU level, there is no separate funding instrument for nature conservation/biodiversity. Instead, in line with what is known as the integrated approach, funding for nature conservation is provided from various EU funds for other policy areas, primarily from the agricultural, structural and cohesion funds, the European Maritime, Fisheries and Aquaculture Fund (EMFAF) and the LIFE programme for the environment and climate action.

Action area 17: Health

An intact natural world and environment is beneficial not only to humans' physical health but also to our mental health. The health of the environment, plant health, animal health and human health are inextricably intertwined. The One Health approach provides a cross-sectoral, transdisciplinary and cooperative concept for addressing that fact with preventive measures.

Target 17.1: Services provided by nature that aid health and wellbeing

By 2030, the German government will work at the national and international levels to ensure that the environment and the natural world is returned to a condition that is supportive of human health. Moreover, it will ensure a fair sense of shared ownership of the environment and the natural world and of its benefits to health for this and future generations. To that end, considerations regarding the connections between environmental and human health will be incorporated into decision making in all sectors.

The target explained:

The health of humans, domestic and wild animals, plants and the wider environment, including ecosystems, is closely intertwined and interdependent. An intact environment and natural world makes a valuable contribution to people's physical, mental, social and spiritual health. Biodiversity conservation, like climate action and protecting the environment, is therefore also health promotion.

Excursus/cross-reference:

One Health

One Health is an integrated, unifying approach that aims to sustainably balance and optimise the health of the environment, people, animals and plants. Consistent application of this approach can markedly reduce the risk of zoonoses and environmental degradations that influence the health of humans, animals and plants.

The Food and Agriculture Organization of the UN (FAO), the World Organisation for Animal Health (WOAH, formerly OIE), the UN Environment Programme (UNEP) and the World Health Organization (WHO) created an advisory body in early 2021, the One Health High-Level Expert Panel (OHHLEP). Referring to the OHHLEP definition, implementing the approach requires the mobilisation of multiple sectors, disciplines and communities at varying levels of society to work together to foster wellbeing and tackle threats to health and ecosystems, while addressing the collective need for clean water, soil, energy and air, safe and nutritious food, promoting action on climate change, and contributing to sustainable development.

Action area 18: Tourism and sports

Protected areas like national parks, nature parks and biosphere reserves, regional parks near cities, and cultivated landscapes typical of their regions are attractive destinations for recreation, sports and tourism and have economic significance. Tourism is, on the one hand, an indirect driver of biodiversity loss, particularly in ecologically sensitive areas; on the other hand, it also contributes to more widespread enjoyment of natural surroundings and greater awareness of environmental concerns. Managing tourism, recreation and sporting activities to be sustainable and compatible with nature can help reconcile these objectives of conservation and use.

Target 18.1: Nature-friendly tourism and sport

By 2030, the negative impacts of tourism, sport and other outdoor activities on nature and the landscape, particularly in ecologically sensitive areas, will be further reduced, the positive synergies will be reinforced, and recreational and tourist activities and infrastructure in Germany will be adapted to green, nature-friendly models.

The target explained:

Nature and the landscape in all their diversity and beauty offer spaces for recreation, sports and contact with the natural world. Tourism and sports are therefore important partners in matters of nature conservation, as their reach within society enables them to raise awareness of the value of nature and mobilise support for biodiversity conservation measures. However, certain forms of tourism, recreation and sporting activities can be detrimental to nature and the landscape and have a negative impact on biodiversity. Stakeholders in the tourism sector, like tour operators, accommodation providers, restaurants, tourist destinations and outdoor sports organisers, platform operators, digital media and sports organisations, can take targeted steps to help protect ecologically sensitive habitats and their animal and plant species and to reduce negative impacts on biodiversity. This applies with regard both to the services they offer and to the planning and installation of infrastructure.

Action area 19: Transport infrastructure and federally owned property

Built barriers like transport routes or weirs often hamper important processes of exchange and interactions between different natural habitats. Habitats become fragmented, islands form, and noise, light pollution and contamination with harmful substances cause disruption. Habitat fragmentation needs to be systematically combated in order to protect biodiversity. Implementing revitalising and connectivity measures can, for example, contribute to the restoration of ecosystems and improve the quality of natural habitats. At the same time, incorrect soil management (storage and use of contaminated soils), badly adapted planting and transport can introduce alien or invasive species which may represent a threat to native biodiversity.

Target 19.1: Ecological permeability of transport routes

By 2030, new transport routes – roads, railways, waterways – will have sufficient ecological permeability for all animal and plant species and material flows affected by fragmentation as a result of their construction.

By 2030, high-priority corridors will be identified and defragmentation measures planned for existing transport routes (measures to be implemented by 2050).

The target explained:

Alongside loss of open space and intensification of use, and not least under conditions of climate change, the fragmentation and islandisation of habitats are further impacts that pose a long-term threat to biodiversity. Fragmentary effects are fundamental, direct degradations brought about by transport routes with linear infrastructure. In the existing transport network and in expansions to it, the aim must be to enact measures throughout Germany, across borders and long term, to maintain and restore ecological corridors in the longitudinal, lateral and vertical dimension of the routes – particularly in the case of combined transport routes (e.g. shared by road and rail). The procedures and evaluation methodology of federal transport infrastructure planning are to be amended with that in mind.

Excursus/cross-reference:

Federal Defragmentation Programme

In 2012, the Federal Cabinet adopted the Federal Defragmentation Programme. The aim of the programme is to reestablish the connectivity of the nationally significant habitat corridors for flora and fauna which have been fragmented by the regional road network (defragmentation). The fragmentation of habitats by transport infrastructure and the increasing density of traffic have led in part to the islandisation and qualitative deterioration of those animal and plant habitats that remain. Moreover, the obstructive effect of roads can impair exchange within and between populations and the settlement of new habitats. Accidents involving wildlife, which are also dangerous to road users, can adversely affect populations of endangered species. Building crossing aids on roads for animals

and for habitat connectivity, such as green bridges, and taking habitat corridors into account in future transport route planning helps maintain the continuity of the landscape and thereby protects and preserves biodiversity. Alongside road construction, the fields of action in the Federal Defragmentation Programme include nature and landscape conservation, and integrated spatial planning. Securing the route sections with high defragmentation priority will require the interplay of all three of those fields (e.g. for nature conservation measures in the countryside and planning safeguards for habitat corridors).

Target 19.2: Biodiversity conservation on federally owned property

By 2030, federally owned property will move towards more biodiversity conservation.

The target explained:

In adopting its strategy for modelling consideration of biodiversity concerns on all federal properties, the German government has set itself the objective of preserving biodiversity on all the land it owns, not least to enhance climate resilience, thereby leading by example and living up to its special responsibility for nature conservation. Federal properties include, for example, land formerly and actively used for military purposes, federal waterways, federal trunk roads, the Deutsche Bahn rail network and areas flanking those routes.

Excursus/cross-reference:

National natural heritage

National natural heritage is a unique federal nature conservation initiative. Since 2005, the German government has forgone the sale of selected, valuable natural areas it owns and has instead placed them at the disposal of the federal states, the German Federal Environmental Foundation, and nature conservation associations and foundations, to which responsibility has passed for taking care of and developing those areas in the interests of nature conservation. In some of these natural heritage sites, the Federal Government is undertaking the nature conservation work itself. National natural heritage currently comprises approximately 164,000 hectares. It includes former military sites, areas along the former border between East and West Germany (the Green Belt), areas from the privatisation of publicly owned GDR assets, and decommissioned open-cast lignite mining areas in East Germany. Land designated as national natural heritage is permanently set aside for nature and will be kept as natural heritage for future generations. This means upholding and implementing strict conservation standards on those sites, many of which boast high species diversity today.

Strategy for modelling consideration of biodiversity concerns on all federal properties

Adopted by the German government in 2016, the *Strategie zur vorbildlichen Berücksichtigung von Biodiversitätsbelangen*, or strategy for modelling consideration of biodiversity concerns on all federal properties, is a means of implementing the objectives of the 2007 National Strategy on Biological Diversity on federal land. It serves as a model of good practice and contains measures for the various federal bodies responsible to protect, maintain and foster biodiversity now and in the years to come. The strategy applies to all federally owned property. The projects of national significance include the Federal Defragmentation Programme and Germany's Blue Belt.

IV Targets for global biodiversity conservation[45]

Action area 20: Germany's contribution to global biodiversity conservation

Next to the immense benefits that biodiversity offers humans as part of the natural foundations of life and as a contributor to climate action, there are many other reasons to protect biodiversity. As a consequence of lifestyles and business practices in Germany and the EU, Germany contributes to the destruction of biodiversity in other countries too. Biodiversity knows no political borders. If we are to combat biodiversity loss, climate change and pollution effectively, therefore, we need to cooperate at the international and multilateral levels. In a globalised economy, collaborative solutions are needed for biodiversity conservation in transnational economic areas and value chains. Germany, too, bears special responsibility in that arena and can help pave the way in the context of socio-environmental transformation. A key point is to support the countries of the Global South in their pursuit of global targets for biodiversity conservation as well as the sustainable use and restoration of ecosystems and their services and to foster cooperation with state and non-state actors. That involves, for example, respect for human rights and the effective and meaningful inclusion and participation of indigenous peoples and local communities. In addition, international agreements on biodiversity, climate action and the environment need to be dovetailed, and their implementation and future development coordinated, in the interests of improved cooperation and implementation, and the Nagoya and Cartagena Protocols need to be implemented around the world.

Target 20.1: Implementing and further developing international biodiversity agreements

Up to and beyond 2030, Germany will continue to fulfil the requirements and targets of its biodiversity-related international agreements, take an active role in their further evolution, purposefully nurture synergies between those agreements and advocate against inefficient duplications.

The target explained:

In the interests of successful implementation of the Global Biodiversity Framework (GBF), Germany must itself comply with the requirements and decisions of the Convention on Biological Diversity (CBD) and the obligations established by other biodiversity-related agreements, such as the UNFCCC, UNCCD, CITES, CMS, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the International Plant Protection Convention (IPPC), the Ramsar Convention, the Alpine Convention and the UNESCO World Heritage Convention and translate the substance of those agreements into reality. Identifying synergies and creating cohesion between international agreements and relevant

[45] Conservation in this context comprises the triad of conservation, restoration and sustainable use.

UN forums, bodies and agencies, like the FAO, helps set strategic focuses, ensure work is led by science, concentrate resources for implementation and avoid duplication of effort. It is also important to address agriculture, forestry and fisheries in such agreements, as they have a great influence on the main direct drivers of biodiversity loss. In doing so, Germany is playing its part in driving a shift towards restoration of the natural world.

The task of making agriculture, forestry and fisheries biodiversity friendly, which is particularly relevant to the second objective of the CBD, is far from complete. This pillar therefore needs to be reinforced in the coming years. Germany will work with its international partners to advocate for binding rules to that end.

Target 20.2: International support for biodiversity conservation

Up to and beyond 2030, the German government will strengthen its cooperation with states and non-state actors and support partner countries in achieving the targets of the Global Biodiversity Framework and other biodiversity-related agreements.

The target explained:

Implementing the Global Biodiversity Framework (GBF) adopted in 2022 demands a great deal of effort. Besides consistently fulfilling its own obligations, Germany has a responsibility, and considers it in its own interest, to support other countries and stakeholders in implementing their national biodiversity strategies and action plans (NBSAPs) and contributing to the achievement of international goals. A central element of this is cooperation between the Parties to the CBD, particularly targeted support for and collaborative dialogue with developing and emerging economies and active cooperation with non-state actors. The main focuses are policy advice and development, capacity building, and financial, technical and scientific cooperation.

Target 20.3: Global joint efforts to tackle biodiversity loss, climate change and pollution

Up to and beyond 2030, Germany will assume international responsibility regarding the coordination and implementation of biodiversity and climate goals, particularly in the form of constructive interventions by the German government on these matters in international negotiations.

The target explained:

Climate action, safeguarding natural carbon sinks, climate adaptation, soil protection and biodiversity conservation need to be pursued in a cooperative manner worldwide. In all areas of international cooperation, extensive measures have to be undertaken to jointly advance biodiversity conservation and climate action and adaptation, not least through ambitious political targets, dialogue between partners, funding programmes, knowledge sharing and capacity development. In international cooperation, there needs to be more focus on measures to mitigate or adapt to climate change that

have a lot of synergistic cross-over with biodiversity, and negative side-effects for environmental, economic and social concerns need to be avoided Additionally, Germany advocates for the multilateral development banks to do more to nurture global public goods like the climate and biodiversity.

There is an urgent need to take into consideration the effects and ramifications that Germany's domestic measures to mitigate or adapt to climate change have on other countries, particularly in the Global South. The influence of global changes on biodiversity and social structures in each of those countries also needs to be examined.

Target 20.4: Continuing to develop and implementing the Nagoya Protocol and the CBD multilateral mechanism for benefit-sharing from the use of digital sequence information on genetic resources

Up to and beyond 2030, Germany will actively advocate for efficient national rules to be established worldwide for easier access to genetic resources and for making available, sharing and providing open access to digital sequence information (DSI) on genetic resources. Germany also continues to push for implementation of the CBD multilateral mechanism for equitable benefit-sharing from the use of DSI on genetic resources. At the national level, Germany is working to ensure that the users and providers of genetic resources in Germany know the requirements of the CBD, other relevant international access and benefit-sharing (ABS) instruments and the national legislation transposing them, and it is developing measures both to motivate DSI users to share benefits fairly and to support the provision of DSI.

The target explained:

Research into genetic resources and digital sequence information (DSI) on genetic resources has substantial ecological, economic and social value. It can lead to gains in knowledge and development of applications that are very important for the conservation and sustainable use of biodiversity as well as for innovations. Researchers in Germany very much rely on uncomplicated and efficient national regulations for providing, sharing and accessing genetic resources in other countries and on legal certainty. At the same time, those who benefit from their use are invited to contribute to fair and equitable benefit sharing. This is one of the three core objectives of the CBD. The German government advocates internationally for the mechanism as implemented at the national level not to entail any taxes or charges. It also advocates internationally for

- further developing existing ABS instruments and the national implementation acts transposing them with an eye for efficient, standardised, multilateral and simplified solutions, in order to dismantle obstacles to research and guarantee the provision of, sharing of and uncomplicated access to genetic resources and open access to DSI,
- creating legal certainty for providers and users,
- avoiding duplicate benefit-sharing requirements from different ABS instruments,
- creating possible incentives for the private sector to contribute to the Cali Fund,

- preventing the emergence of a hierarchy between the various instruments and ensuring that they are implemented in mutually supportive ways.

Target 20.5: Implementing the Cartagena Protocol

Up to and beyond 2030, Germany will continue to fulfil its obligations under the Cartagena Protocol on Biosafety and the requirements of the Implementation Plan and the Capacity-building Action Plan.

The target explained:

The Cartagena Protocol on Biosafety (CPB) is an additional protocol to the CBD and is intended to ensure that the environment and human health are protected when living (genetically) modified organisms are transferred across borders, handled or used. Germany signed the CPB in May 2000 and ratified it by passing the Cartagena Protocol Act (*Gesetz zum Protokoll von Cartagena*) in November 2003. In 2022, at their tenth COP meeting, the Parties to the Cartagena Protocol adopted an Implementation Plan and a Capacity-building Action Plan for the time up to 2030, which were anchored in target 17 of the GBF.

Action area 21: Responsibility for adverse effects of economic activity based on global division of labour

In many cases, the consequences of overuse of the natural world in highly industrialised countries like Germany can still be felt in far away places. The cultivation and extraction of raw materials, for example, is often associated with the overuse or transformation of natural ecosystems in the countries of origin, the excessive consumption and pollution of water resources, overfertilisation and other forms of pollution. Manufacturing procedures and transport can cause additional emissions of greenhouse gases and pollutants and contribute to the spread of invasive species. To reduce the negative influences on worldwide biodiversity of economic activity based on global division of labour, and to live up to our global responsibilities, work should continue on making international trade and supply chains sustainable and respectful of the rights and involvement of indigenous peoples and local communities. The positive effects of economic activity based on global division of labour are to be nurtured, when conscious purchasing decisions and the production of and trade in sustainable goods – like sustainably produced timber or coffee and wildlife-friendly products – protect and even foster biodiversity in countries of origin. The German government recognises that an economy based on global division of labour can drive the diffusion of advanced and more environmentally friendly production methods.

Target 21.1: Mitigating the adverse effects on biodiversity of economic activity based on global division of labour

Up to and beyond 2030, the German government will advocate for mitigating the adverse effects on biodiversity of economic activity based on global division of labour.

The target explained:

By importing raw materials and products, industrialised countries like Germany often outsource the adverse effects on biodiversity and health that are associated with cultivation and extraction to other parts of the world. Biodiversity in many developing and emerging economies is suffering increasingly as a result of unsustainable production conditions exacerbated by rising consumption. The negative environmental consequences of economic activity based on global division of labour need to be highlighted and reduced in order to protect biodiversity not only in Germany but around the world. To lessen the adverse effects of trade on biodiversity, multilateral environmental standards and support for transparent and sustainable supply chains are essential. The need to maintain an appropriate balance between biodiversity conservation, trade-policy objectives and obligations imposed by trade law also colours the implementation, performance analysis and, where appropriate, revision of existing EU provisions and due diligence legislation, such as the Regulation on Deforestation-free Products (EUDR), and – where necessary and compatible with trade-policy objectives and obligations under trade law – the development of new voluntary instruments on social and environmental responsibility in countries of origin and value chains. This should take place on equal terms and on the basis of consensus with the third countries involved, perhaps in the form of a collaborative approach where partner countries receive implementation support. It is currently happening, in relation to the EUDR,

via a global Team Europe Initiative with the financial involvement of the European Commission and various EU member states.

Target 21.2: International trade and sustainable use of species

By 2030, the sustainable use of species taken from the wild will be assured by monitoring their trade into the EU, strengthening the enforcement of regulations on the commercial wildlife trade and the fight against species trade, undertaking measures to educate consumers and ensuring the sustainable use of wild species living in Germany.

The target explained:

Taking specimens from the wild in excessive numbers can threaten their population; trading them can exacerbate that threat. With regards to pet trade, Germany is a destination market for the legal trade in wildlife and a transit market for illegally and legally traded wildlife, and hence plays a key role and consequently bears special responsibility. That applies also to the trade in medicinal and aromatic plants as a result of Germany's position as one of the world's major importers and exporters. The removal and use of wildlife specimens, including trade in them, needs to be organised in a legal, sustainable and safe way that aligns with species conservation, both in Germany and in other countries of origin. It comprises hunting, fishing, timber harvesting, collecting, and trade within and into Germany (into the EU). Trade in endangered species involves living animals and plants, parts thereof and products derived from them (e.g. leather, wood, ingredients). Under certain conditions, moreover, the wildlife trade brings with it a heightened risk of transmission of pathogens.

E. Implementation

Further developing the NBS 2030, its action plans and follow-up strategy

The NBS 2030 is a stand-alone German government strategy intended to set out Germany's national biodiversity targets. It advances the measures under federal responsibility that are required to achieve these targets. The measures are subject to a competence reservation and a funding proviso with respect to the federal budget, being viable only if responsibility to fund them lies with the Federal Government and they are financed from within the relevant ministerial budget or policy area.

Like the NBS 2007, it is the German government's core strategy for nature conservation and the most important instrument for implementing international agreements concerning nature conservation in Germany. Furthermore, the NBS 2030 is part of a holistic nature conservation regime and builds on the experience and individual measures of the NBS 2007. The knowledge gained from the implementation of the NBS 2007 will be used to strengthen the NBS 2030 and to continue the development of processes already under way. The NBS 2030 will generate important impetus and will also address new challenges both with regard to the overarching biodiversity objectives – protection of species, protected areas, restoration of ecosystems, etc. – and in relation to other topical issues. These include nature-based climate action, the energy transition, plant protection, marine conservation, urban greening, the role of the private sector and issues of finance.

The NBS 2030 provides for a longer-term strategy for the period up to 2030 – in parts up to 2050 – with clearly formulated quality objectives and essential targets, as well as national action plans containing specific measures for the shorter term. These action plans have a strong focus on implementation and on current demands and challenges. The first action plan sets out measures to be implemented between 2024 and 2027. Building on the insights gained and implementation achieved by 2027, the subsequent action plan will contain follow-up and potentially new measures for 2027 to 2030. This means measures can be used for purposeful course-correction on a shorter timeframe, which improves the chances of achieving the targets by 2030.

2030 will not be the end of the efforts taken to conserve, improve and sustainably use biodiversity. The next update of the NBS, to take effect after 2030, is therefore to be started during the runtime of the second action plan beginning in 2027. Moreover, the list of measures in the action plans is not exhaustive; all ministries are also called on to take biodiversity into account in their own programmes and strategies and, within the limits of their remits and means, to look into and, if appropriate, undertake additional measures to assist the achievement of targets.

Review and reporting

The assessment of the NBS 2030 implementation is based on two pillars, with priority being given to unbureaucratic implementation. The first pillar concentrates on reviewing achievement of targets. The extensive set of indicators and metrics in the NBS 2030 makes it possible to transparently and

quantitatively measure progress towards most of the targets. Currently, the indicator set and metrics are undergoing further development. The aim is to maximise the use of existing data and to digitise and automate data collection and analysis wherever possible.

A second pillar examines the progress made in implementing the measures. To secure continuous follow-up, annual updates on implementation are gathered from the responsible ministry on each measure. This should be done with a view to inter-ministerial cooperation in the interests of administrative efficiency. Should the need arise, that will allow necessary steps to be taken to support measures while the current action plan is still in effect.

An assessment of the implementation of the NBS 2030 will be conducted in 2027. It will be based on the evaluation of target achievement provided by the indicators, the metrics and the update on the implementation of measures. It will point out both successes and room for improvement. The insights gained will feed into the ongoing implementation of the NBS 2030 and into the second action plan for the years up to 2030. Another assessment will be performed in 2030. This is consistent with the Bundestag decision of 28 June 2006 (printed paper 16/1996) to fulfil Germany's national and international responsibilities by means of a comprehensive strategy on biodiversity.

Agreed at the fifteenth Meeting of the Conference of the Parties to the CBD, the new Kunming-Montreal Global Biodiversity Framework (GBF) is flanked by additional decisions on reviewing the implementation of the GBF. The national report for the CBD is due twice between now and 2030: the seventh national report is due by 28 February 2026, and the eighth by 30 June 2029. Reporting for the CBD is done via an online reporting tool and is compiled separately from the national assessments.

Cooperation with the federal states and municipalities

The NBS 2030 is the German government's core nature conservation strategy and focuses on federal tasks and responsibilities. The federal states and municipalities play an important role in achieving the objectives of this strategy. Without them, it will be impossible to combat biodiversity loss effectively. Of the 16 federal states, 15 have developed their own state strategies or comparable action plans. The sixteenth is being drafted. In addition, the Kommbio alliance of municipalities for biodiversity, which was founded in 2012 with a membership of 60 municipalities, now comprises more than 400 municipalities, cities and districts across Germany.[46] Those members combined represent more than 32.7 million people, or 39% of Germany's population. All members have signed the Biodiversity in Municipalities declaration, pledging to take steps to protect and strengthen biodiversity. As of 2024, the Kommbio alliance receives institutional funding of 500,000 euros annually from the federal budget. Dialogue and collaboration with the federal states and municipalities on biodiversity conservation will continue with a view to working together on pursuing and effectively achieving the national biodiversity targets.

[46] https://kommbio.de/kommbio-municipalities-for-biodiversity-in-germany/

Even while the NBS 2030 was being drafted, representations from the federal states and municipalities were incorporated through workshops, the dialogue forums set up for them, and interviews with experts on particular subjects. The outcomes of those participation formats fed into the NBS 2030.

Those regular meetings and cooperative processes have great importance and are to be maintained for the implementation of the NBS 2030, further reinforcing the potential for connectivity between the federal and state strategies. The intended aim is to strengthen cooperation at all levels of politics and to create useful links between the biodiversity strategies of the federal states and municipalities and the NBS 2030, so that biodiversity is strengthened at all levels of politics.

F. Strengthening dialogue and communication – from strategy to action

The National Biodiversity Strategy 2030 aims to upgrade the dialogue and communication process that flanks implementation and to focus more tightly on results and action. The protection, restoration, valuation and sustainable use of biodiversity is an agenda for society as a whole which can only be fulfilled with commitment at all levels of politics and support from the whole of society. Primary responsibility for implementing the NBS 2030 and its two action plans lies with the ministries of the Federal Government. However, also the federal states and municipalities bear special responsibility for achieving the targets (see chapter E). Likewise, the input and support of nature conservation and users' organisations, business associations, scientists and many other elements of civil society – educational institutions, sports clubs, religious communities, etc. – are essential. So are contributions from members of the public, who can, for example, get actively involved as citizen scientists in biodiversity monitoring (e.g. pollinator monitoring) or in the evaluation of targets and measures (restoration of habitats, wildflower strips, etc.).

Communication

Translating the strategy into action requires active involvement, acceptance and support from the public regarding the issues concerned and what needs to be done. To achieve this, the implementation of the NBS 2030 will be accompanied and advanced by targeted public communication.

Stakeholders should raise the topic of biodiversity more consistently in political and social discourse in order to raise awareness across society regarding the urgency of reaching the NBS 2030 targets for the sake of health, wellbeing, prosperity and quality of life. Knowledge is one of the basic conditions for the purposeful action that is required to guarantee the long-term conservation, restoration and sustainable use of biodiversity.

Simultaneously, greater understanding needs to be fostered regarding the links between individuals' own actions and their ramifications for nature, as does individuals' capacity to exercise initiative. This must be the focus of communication.

Dialogue with stakeholder groups

An entirely crucial element in ensuring the strategy's whole-of-society implementation is the NBS 2030 dialogue process. The dialogue process is geared particularly towards stakeholder groups with the potential to contribute substantially to the implementation of the NBS 2030. Its purpose, via various target-group-specific event formats, is to involve key stakeholders and multipliers from politics, business, public administration, science, academia and society at large in the implementation of the NBS 2030. In addition, the dialogue process aims to connect stakeholders to motivate them to support the intended measures and initiate their own activities.

To that end, tried and tested dialogue formats, like the National Forum and the forums for federal states and associations, will be continued, developed further and added to. Additional discussion forums will address and gather input from representatives of young people, municipalities, business, science and academia, civil society – associations, initiatives from various milieus, etc. – and other societal actors. This can also be organised in collaboration with cooperation partners such as Unternehmen Biologische Vielfalt ("Enterprise Biological Diversity"). Particular attention will be paid to ensuring that the dialogue process delivers tangible outcomes and includes specific options for action proposed by the participants and stakeholder groups involved.
The outcomes of each dialogue format will be published on the NBS dialogue platform.

NBS dialogue platform

The NBS dialogue platform (www.biologische-vielfalt.de) is the central information portal for all matters concerning the National Biodiversity Strategy 2030 and is particularly geared towards people and organisations actively involved in the implementation process. The platform provides useful information on the NBS 2030 and transparently sets out the progress made on implementing measures and meeting targets. It fosters ties and dialogue between stakeholders, generates visibility for the many different participation channels and highlights options for action, thereby supporting collective effectiveness. Motivating potential stakeholders to advocate for and support the NBS 2030 targets and biodiversity in Germany will be a key factor in achieving the targets. The platform also provides visibility and traceability regarding the dialogue process and its outcomes.

Additional contemporary communication formats will be used to keep stakeholders and the interested public informed about current developments, new projects, proposals for implementing the NBS 2030 and the recruitment of new partners and to publicise contributions to the implementation of the national strategy.

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H. Annex

I Annex – indicators/metrics in each action area

The majority of the targets in the NBS 2030 are underpinned by indicators and metrics which are reviewed on a regular basis. The following provides an overview of the potential indicators and metrics for each action area. Their status is given as “available”, “in development”, “to be developed” or “to be examined”. The indicators marked “in development” or “to be developed” are to be developed in the course of the implementation of the NBS 2030, to measure progress towards the targets. Some of the targets cannot be evaluated in terms of metrics. What selection of indicators and metrics will be used to measure overall progress will be decided in the course of implementing the NBS 2030.

Vision for 2050 under the NBS 2030

Name	Description	Category	Status
Vision for 2050			
Species diversity and landscape quality	The indicator provides information about trends in species diversity, landscape quality and the sustainability of different forms of land use. It combines, in a single measurement for the German landscape as a whole, data on nationwide population sizes for selected, representative bird species in the country’s primary landscape and habitat types. By 2030, the sub-indicators (see target 7.1 on the status of biodiversity in forests, target 8.1,on the status of biodiversity in farmland, target 9.1 on the status of biodiversity in inland waters and floodplains, target 10.1 on the status of biodiversity on coasts and in seas, target 11.1 on the status of biodiversity in settlements and target 12.1 on the status of biodiversity in high-altitude mountains) and the overall indicator are intended to reach a target of 100%. That value represents the size which experts believe the population in question could have reached if European and national	Main NBS indicator	Available

	legislation relating to nature conservation and principles of sustainable development had been swiftly implemented.		

Action area 1: Protection of species

Name	Description	Category	Status
1.1 Reversing the trend in species diversity and intraspecific diversity			
Endangered species	The indicator represents species endangerment data from the national Red Lists in a single measurement. The underlying data is based on the classification of species into Red List categories, which reflect a graded scale of threat levels up to and including extinction.	NBS indicator	Available
Conservation status of Habitats Directive habitats and species	The indicator is an index value derived from assessments of the conservation status of habitats and species in Germany protected under the Habitats Directive. The data is drawn from the national Habitats Directive reports, which contain the assessment results for the habitats set out in Annex I and the occurrence of animal and plant species listed in Annexes II, IV and V.	NBS indicator	Available
1.2 Reversing trends of decline in insects and their species diversity			
Red List trends	Development of the short-term trend in the Red Lists for assessed insect species		To be developed
Insect biomass	Development of insect biomass with reference to nationwide insect monitoring (components: flying insects in open landscapes; ground beetles and ground-dwelling spiders in grassland, arable land and forests; saproxylic beetles in forests) Supplemented in farmland by already developed monitoring strategies (MonViA indicators on the diversity of organisms addressing biomass:		To be developed

	insect biodiversity in viticulture, earthworm communities, honeybees, wild bees, beneficial insects in refuge habitats, microorganisms)		
Insects in agricultural landscapes	Insect monitoring gathers suitable data to be collated and processed (see action area 8). Supplemented by the monitoring strategies specially developed for agricultural areas (MonViA indicators on the diversity of organisms, particularly pollinator monitoring: wild bees and honeybees, hoverflies)		To be developed
Development of insect populations	The development is investigated using various components of nationwide insect monitoring (landscape as a whole, forests, grassland, arable land, settlements). To that end, insect monitoring as currently implemented gathers suitable data to be collated and processed. Option of supplementing by MonViA indicators to be examined		To be developed
Recording quantitative and qualitative data on biotopes and their characteristic features	Within ecosystem monitoring, data is gathered nationwide in representative sample plots. Ecosystem monitoring as currently implemented gathers suitable data to be collated and processed. Supplemented by MonViA indicators from the habitat diversity modules on land use, intensity of land use and landscape elements		To be developed
HNV indicator	Share of farmland with high nature value (HNV) (see action area 8)	NBS indicator	Available
MonViA indicators on landscapes and land use, small structures and landscape elements, and intensity of land use	The indicators describe the diversity of landscapes and land use and reflect the variety of classes of land cover. The indicators can serve as a measure of landscape fragmentation as well as describing the composition of land-use types across an area. They can be used to depict the chronology of different crop species in a field and the intensity of use. They also record the non-productive share of agricultural land and the changes in humus inputs and fertilisation intensity resulting from		Available

	management practices. The indicators contain an index of areas reflecting landscape elements and small structures and edges.		
MonViA indicator on biodiversity in small water bodies	The indicator describes the status and diversity of macrozoobenthos communities in small water bodies and facilitates insights into habitat diversity.		To be examined
Presence of pollutants	Gathering data on the presence of pollutants (e.g. pesticides) in the soil, insect populations and plants		To be developed
Share of the agricultural landscape providing refuge areas for insects	e.g. MonViA indicators on small structures and landscape elements (index of areas reflecting landscape elements, index of edge density, quality of woody landscape features) and beneficial insects in refuge habitats		In part still to be developed
1.3 Dealing with alien species			
Invasive alien species	The indicator states the number of invasive alien species newly introduced to Germany and the number of them becoming established and spreading, on the basis of the current list of invasive alien species under Regulation (EU) No 1143/2014 with significant potential to threaten naturally occurring ecosystems, habitats or species.	NBS indicator	Available
Non-native species	The indicator assesses the introduction rates of non-native species in the marine ecosystems of the North and Baltic Seas, which are recorded in ports by means of standardised data gathering. The status of this indicator in German marine waters will be deemed good if, based on the status quo (the number of non-native species present at the beginning of the reporting period), the introduction of new species has been reduced to no more than two species in six years (end of the reporting period).	Trend indicator for descriptor (2) of the Marine Strategy Framework Directive	Available

Action area 2: Protected areas, connectivity and wilderness

Name	Description	Category	Status
2.1 Continuing the development of protected areas in Germany			
Protected areas	In pursuit of the EU's targets for protected areas, the existing indicator is to be expanded by sub-indicators in line with the notifications sent to the European Commission, in particular to measure the quality objective and the oceans.	NBS indicator	Available; sub-indicators to be developed
Total area of nature conservation areas and national parks on land	The indicator states the total area of nature conservation areas and national parks in Germany. For this purpose, the area of all terrestrial nature conservation areas and national parks is calculated as a percentage of Germany's land area. This is a continuation of the previous NBS indicator on protected areas.	NBS indicator; sub-indicator	Available
Proportion of total area that is under protection	The indicator quantifies the proportion of protected land and marine areas that already meets the effective-management requirements of the European 30% protected areas target or the proportion of such areas for which specific measures are being planned in order to qualify them for that category by 2030.	Sub-indicator for terrestrial areas; sub-indicator for marine areas	To be developed
Proportion of total area that is under strict protection	The indicator states what proportion of Germany's total marine or terrestrial area is under strict protection regimes and can already be counted at the EU level under the requirements for the EU's strict-protection target (the 10% target) or has specific measures planned to qualify it for that category by 2030.	Sub-indicator for terrestrial areas; sub-indicator for marine areas	To be developed
2.2 Conserving and improving Natura 2000 habitats and species			
Conservation status of Habitats Directive habitats and species	The indicator is an index value derived from assessments of the conservation status of habitats and species in Germany protected under the Habitats Directive. The data is drawn from the national Habitats	NBS indicator	Available

	Directive reports, which contain the assessment results for the habitats set out in Annex I and the occurrence of animal and plant species listed in Annexes II, IV and V.		
Habitats Directive and Birds Directive reports	Based on the Habitats Directive and the Birds Directive: Data on: • the number of habitats and species for which the conservation status has improved by one category or is at least displaying an improving trend • the number of habitats and species which no longer show an overall deteriorating trend (Habitats Directive) or a short-term deteriorating trend with regard to populations of bird species		To be developed on the basis of available data
2.3 Continuing the development of a functional biotope network			
Area proportion of the functional biotope network	Indicator of the areas secured by the federal states for the network of biotopes		To be developed
2.4 Developing and safeguarding more wilderness in Germany			
Increase in wilderness areas/areas for undisturbed development of nature			To be examined and potentially to be developed
Proportion of area for undisturbed development of nature in the 10% target for areas under strict protection	On the basis of the yet to be completed further development of the NBS indicator on protected areas, this indicator is intended to depict the share of the 10% target for areas under strict protection that is fulfilled by areas for undisturbed development of nature		To be examined and potentially to be developed

Action area 3: Restoration of ecosystems

Name	Description	Category	Status
3.1 Restoring ecosystems			
Areas where restoration measures have been conducted MonViA indicators on agri-environmental measures	Data on the areas where effective restoration measures have been introduced MonViA indicators on the creation of special biotopes, mitigation of adverse effects and extensification of land use		To be developed (within the framework of the National Restoration Plan) Supplementary; available

Action area 4: Soil

Name	Description	Category	Status
4.1 Maintaining healthy soils			
Status of the earthworm community	The indicator will be available in 2025. It will serve as a component in describing the biological quality of the soil according to soil type and with reference to its particular use (e.g. grassland, arable land, forests) and will allow the characterisation of deviations relative to the highest attainable status (e.g. “very good”, “good” or “moderate” status). Supplemented by the MonViA indicator on the diversity of earthworm communities		In development

Status of soil mesofauna and microorganisms	The indicator is in development and will supplement the indicator on the status of the earthworm community to give a more comprehensive view of soil biodiversity. It will require site-specific application taking account of differing climatic and pedological conditions, forms of management and land use and is intended to allow the characterisation of deviations relative to the highest attainable status (e.g. “very good”, “good” or “moderate” status). Supplemented by the MonViA indicator on the abundance, diversity and network structures of soil microorganisms		To be examined and potentially to be developed
Soil quality	MonViA indicator on intensity of land use: Humus levels		Available
Degree of soil sealing	The indicator depicts the percentage of soils that have been sealed and changes in that percentage. The idea here is to examine the area of sealed soils as a share of Germany’s total land area; other reference values may also be used. Using Copernicus data, changes in the degree of soil sealing can be reported on a continuous basis via the Federal Statistical Office. The indicator is also being discussed in the context of revising the German Sustainable Development Strategy, so it remains subject to possible amendment. A concrete proposal for an indicator for the Sustainable Development Strategy is expected by autumn 2024. The Federal Statistical Office and the German Environment Agency are currently working on an indicator design and engaging in joint consultation to that end.		To be examined and potentially to be developed
4.2 Reducing the expansion of settlement and transport area			
Expansion of settlement and transport area		DNS indicator	Available

	The indicator shows the average daily expansion of the area used for settlement and transport infrastructure in hectares per day. It allows conclusions to be drawn about, for example, impairments to biodiversity resulting from steadily increasing land use for settlements and transport. The aim is to reduce the expansion to less than 30 hectares per day by 2030, with a view to continuing on that road to achieve circular land-use management (net zero land take) by 2050.		
Density of settlements	Taking 2000 as a base year, the indicator shows the development of population numbers per square kilometre of settlement or transport area, providing information about the efficiency of settlement land use. The aim is to at least maintain settlement density and even to increase building density where possible.	DNS indicator	Available

Action area 5: Public awareness, involvement and participation

Name	Description	Category	Status
5.1 Raising awareness of biodiversity through education and communication			
Awareness of biodiversity	Recast for 2021 The indicator reflects levels of awareness of biodiversity among the German-speaking resident population aged 18 or over and is informed by nature awareness studies conducted every two years. In light of how much needs to be done, the newly established monitoring element is focused on aspects of public motivation and on an evidence-based selection of psychological variables relating to motivation, namely perceived behavioural control, attitudes, social norms, social identity,	NBS indicator	Available

	sense of connection with nature, and knowledge about the problems involved. The possibility of conducting another youth nature awareness study (along the same lines as the youth study flanking the environmental awareness study) and accordingly expanding the indicator to include the 14-17 age group is to be reviewed.		
5.2 Ensuring participation, social justice and social diversity in nature conservation and encouraging volunteering for biodiversity conservation			
Awareness indicator	Awareness indicator (see target 5.1 on raising awareness of biodiversity through education and communication) – questions about collective action The indicator records what proportion of respondents are actively involved in a nature conservation association and/or work with other people to help maintain a nature conservation area.		To be examined and potentially to be developed
German Survey on Volunteering	The German Survey on Volunteering (*Deutscher Freiwilligensurvey*; FWS) gathers data on what proportion of the population are active and involved in environmental affairs, nature conservation and animal welfare in Germany. The FWS is a representative survey concerned with volunteering in Germany and aimed at individuals aged 14 and over. FWS data has been gathered five times to date: in 1999, 2004, 2009, 2014 and 2019.		To be examined

Action area 6: Digitalisation, data and research

Name	Description	Category	Status
6.1 Exploiting the opportunities of digitalisation			
	Currently not measurable		
6.2 Improving data pools and biodiversity monitoring			
Number, scope and subject matter of planned nationwide monitoring programmes	Number, scope and subject matter (particularly number and scope of species groups and habitats) of planned (i.e. preparations under way) and implemented nationwide biodiversity monitoring programmes (good availability of data)		To be developed
6.3 Research on biodiversity conservation			

Action area 7: Forests

Name	Description	Category	Status
7.1 Status of biodiversity in forests			
Species diversity and landscape quality	Sub-indicator: Forests The indicator provides information on species diversity, landscape quality and sustainable use in forests in the form of an index (figures given as percentages) of nationwide populations of selected representative forest bird species.	NBS indicator	Available
Conservation status of forest habitat types and species under the EU Habitats Directive	This sub-indicator to the indicator on the conservation status of habitats and species covered by the Habitats Directive allows statements to be made about habitats and species which are listed in the Habitats Directive and depend on forests.	NBS indicator	Available

Forest insects	The indicator on forest insects is informed by insect monitoring. Insect monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration.		To be developed
Status of forests ecosystems/biotopes	Indicator on the status of forest ecosystems/biotopes based on a) ecosystem monitoring Ecosystem monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration. b) the National Forest Inventory c) the Forest Soil Survey d) the Forest Condition Survey e) use of remote sensing methods		a) To be developed b) Available c) Available d) Available e) To be examined and potentially to be developed
Proportion of semi-natural forests in the total forest area	The National Forest Inventory gathers data at regular intervals on how close to natural the tree species composition of German forests is.		Available
Multi-layered forest comprising native tree species as a share of total forest area	(see also target 7.2 on adapting forests to climate change) Progress can be measured using an indicator which has yet to be developed. Relevant data is currently gathered by the National Forest Inventory and would need to be suitably collated and presented. The possible uses of remote sensing methods are to be reviewed.		To be developed (available in part)
Indicator on quantity and diversity of deadwood	Data on this is collected by the National Forest Inventory and the Carbon Inventory.		To be developed (available in part)
Graded margins as a share of all forest margins	The possibility of developing an indicator involving remote sensing methods is to be reviewed.		To be examined and potentially to be developed
7.2 Adapting forests to climate change			

Endangered spruce stands	The indicator gives information on the decline in the proportion of spruces in areas where cultivating them is associated with varying degrees of high risk as a result of climate change, in accordance with modelling based on the findings of the National Forest Inventory.	DAS indicator	Available
Financial support for forest transformation	The indicator gives information about investments in the conversion of forests and the size of the total area converted. Funding is provided from EU, Federal Government and federal state funds and from budgets for state-owned, collectively owned and private forests.	DAS indicator	Available
Multi-layered forest comprising native tree species as a share of total forest area	(see also target 7.1 on the status of biodiversity in forests) Relevant data is currently gathered by the National Forest Inventory and would need to be suitably collated and presented. The possible uses of remote sensing methods are to be reviewed.		To be developed (available in part)
Native deciduous tree species as a share of total forest area; proportion of forests comprising more than two tree species	The Thünen Institute is to evaluate the possibility of blending these two elements on the basis of National Forest Inventory data.		To be developed (available in part)
7.3 Increasing forest cover			
Monitoring the increase in forest cover	Information on the increase in forest cover can be derived from the National Forest Inventory or greenhouse gas reporting.		To be developed
7.4 Natural forest development (5% target)			
Area permanently set aside for natural forest development as a share of Germany's total forest area	Data relevant to the 5% target is available from NW-FVA, the northwest German forestry research institute. It is essential that the data-collection and reporting structures be made permanent.		Available

Action area 8: Agricultural landscapes and food

Name	Description	Category	Status
8.1 Status of biodiversity in farmland			
Species diversity and landscape quality	Sub-indicator: Farmland The sub-indicator provides information on species diversity, landscape quality and sustainability of agricultural land use in the form of an index (figures given as percentages) on the nationwide populations of selected representative farmland bird species. MonViA indicators on land use, intensity of land use, landscape elements and agri-environmental measures	NBS indicator MonViA	Available Available
Conservation status of Habitats Directive habitats and species	Sub-indicator: Conservation status of habitats and species dependent on or significantly influenced by agriculture (open farmland only, including historical forms of use) The sub-indicator allows statements to be made about Habitats Directive habitats and species the occurrence of which depends on certain low-intensity agricultural practices.	NBS indicator	Available
Insects in agricultural landscapes	The indicator on insects in agricultural landscapes is informed by insect monitoring. Insect monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration. Supplemented by the monitoring strategies specially developed for the agricultural sphere (MonViA indicators on the diversity of organisms, particularly pollinator monitoring: wild bees and honeybees, hoverflies)		To be developed

Status of ecosystems/biotopes in farmland	The indicator on the status of ecosystems/biotopes in farmland is informed by ecosystem monitoring. Ecosystem monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration.		To be developed
High nature value farmland (HNV indicator)	The indicator provides information on high nature value (HNV) farmland as a share of total land used for agriculture.	NBS indicator	Available
8.2 Increasing the number of landscape features and structural elements			
Prevalence of structural elements	A sub-indicator on structural elements is already available under the indicator on high nature value farmland (HNV indicator). The possibility of incorporating additional elements is under consideration. Supplemented by the MonViA indicator on small structures and landscape elements	NBS indicator	To be developed (available in part)
8.3 Fostering regional, diverse and climate-adapted food production			
	To be examined and potentially developed on the basis of the following data: - Agricultural land - Arable land for producing animal feed - Arable land for producing renewable raw materials - Share of agricultural land for growing plant-based food - Permanent grassland as a share of total area - Development of livestock density - Development of share of land used for leguminous and non-leguminous protein crops - Number/proportion of cattle with access to pasture, differentiated by intended use (rearing of dairy cattle, dairy farming, rearing of beef cattle, calf fattening, cattle fattening)		To be examined and potentially to be developed

	- Pasture as a share of permanent grassland - Contribution of rural development programme measures to the development of regional value chains for sustainable products - Contribution of support for measures strengthening regional supply and value chains to developments in the distribution of regional and biodiversity-friendly plant-based foods - Share of agricultural land for growing plant-based food		
	Indicators on the diversity and intensity of land use are reported on the basis of nationwide land-use data (remote sensing) and data from agricultural administration structures (IACS, agricultural statistics). MonViA indicators are also to be taken into account.		In development Available
8.4 Availability of vegetables, fruit and legumes for sustainable and healthy nutrition			
Increase in consumption of plant-based foods	To be examined and potentially developed on the basis of the following data: - Statistics; Allensbach Media Market Analysis; de.statista.com - National Nutrition Monitoring (developed as part of the Federal Government's Food and Nutrition Strategy) - Increase in consumption of plant-based foods/decline in meat consumption (general statistics, Federal Ministry of Food and Agriculture, Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection) - Indicator on the plant-based share of public mass catering - MonViA indicator on crop diversity		To be developed
8.5 Halving food waste			

Quantity of food waste	Quantity of food waste in Germany for all five domains of the food industry (primary production, processing, trade, hospitality and catering, and private households)		Available
8.6 Expanding organic farming			
Organic farming	The indicator provides information on the amount of land devoted to organic farming on farms subject to verification procedures under EU legislation on organic farming. It is calculated as a proportion of total agricultural land and includes both land fully converted to organic farming and land still in the process of conversion. Possible addition of a MonViA indicator giving information on the regional development of organically farmed land, differentiated by arable land, grassland, specialised crops, etc.	NBS indicator	Available
8.7 Reducing the use of plant protection products and the adverse effects of such use			
SYNOPS-TREND	Possible indicator under the National Action Plan on the Sustainable Use of Pesticides Regular reviews should be conducted as to whether these indicators need to be added to or updated in order to reflect the envisaged reduction in the quantities of actually applied plant protection products and the associated risk.	DAS indicator	Available
Crop-specific treatment index	Crop-specific treatment index based on actual application data Regular reviews should be conducted as to whether these indicators need to be added to or updated in order to reflect the envisaged reduction in the quantities of actually applied plant protection products and the associated risk.	DAS indicator	Available

Plant protection product-free refuge areas	Plant protection product-free refuge areas based on the concept of refuge areas (ha/year)		To be developed
8.8 Nature- and eco-friendly fertilisation and animal husbandry			
Agricultural nitrogen surplus	The indicator provides information on the development of agricultural nitrogen surpluses. This allows conclusions to be drawn about potential pressures on environmental media and habitats.	NBS indicator	Available
8.9 The precautionary principle in genetic engineering and synthetic biology			
Genetic engineering in agriculture	The indicator records the total size of all cultivation areas of genetically modified plants in the location register for which authorisation for placing on the market for the purposes of commercial cultivation and release for experimental purposes have been granted. It provides information intended to aid in evaluating the scope and significance of developments in the application of genetic engineering in agriculture. Cultivation of genetically modified agricultural crops does not take place. Moreover, no genetically modified organisms (GMOs) have been released in Germany since 2012. The indicator is suspended until further notice.	NBS indicator	Available
Proportion of monitoring plans	Proportion of monitoring plans for GMOs or GMOs products authorised under Directive 2001/18/EC which address the monitoring of possible GMO exposure in the environment on a differentiated basis (losses during transport, spontaneous occurrence, outcrossings, etc.)		To be examined and developed
GMO imports	Quantity of GMOs and GMO products imported into Germany. The indicator is based on the labelling obligations for GMO seeds and products governed by Directive 2001/18/EC. Developing this indicator will mean examining to what extent relevant data can be collected and analysed (e.g. at the Federal Statistical Office).		To be examined and potentially to be developed

Action area 9: Inland waters, floodplains and peatlands

Name	Description	Category	Status
9.1 Status of biodiversity in inland waters and floodplains			
Species diversity and landscape quality	Sub-indicator: Inland waters The sub-indicator provides information on species diversity, landscape quality and sustainability of land use in the area of inland waters in the form of an index (figures given as percentages) on the nationwide populations of selected bird species representative of inland waters.	NBS indicator	Available
Status of floodplains	The indicator provides information on the status of floodplains as a habitat for plants and animals. It is calculated as an index value reflecting the condition of all floodplains the Status Report on Floodplains in Germany. The status of floodplains provides an overview of local morphological and hydrological conditions and the use of floodplains. These factors are key determinants of habitat quality for plants and animals in floodplains.	NBS indicator	Available
Ecological status of surface waters	The indicator calculates the proportion of surface waters – rivers, streams, lakes, transitional and coastal waters – with good or high ecological status as a percentage of all water bodies assessed. Under the Water Framework Directive, that water assessment is based on the organisms living in the water, as the composition of aquatic biotic communities reflects the totality of influencing factors for each water body type.	NBS indicator	Available
Insects in water bodies	The indicator on insects in water bodies is informed by insect monitoring. Insect monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration.		To be developed

Nature restoration measures	Number and scope of nature restoration measures implemented in pursuit of the objectives of the Water Framework Directive		To be examined
Biodiversity in small water bodies	MonViA indicator on biodiversity in small water bodies: macrozoobenthos, biodiversity and habitat diversity, waterside vegetation		To be examined
9.2 Continuity of watercourses			
Transverse structures	Number of transverse structures dismantled or made passable again, primarily in the watercourses prioritised for restoring passability for migratory fish		To be developed
Increase in free-flowing stretches of river	Quantitative increase in free-flowing stretches of river		To be developed
9.3 Revitalising floodplains			
Loss of floodable areas according to the Status Report on Floodplains in Germany	The Status Report on Floodplains in Germany charts the loss of floodable areas in Germany's floodplains.		Available
Restoration of natural floodplains	Based on the Status Report on Floodplains in Germany The indicator calculates the quantitative increase in natural floodable areas. Connecting them to their water bodies and restoring natural flooding dynamics creates new habitats valuable for the conservation of many rare and endangered animal and plant species and alluvial forests of significance to nature conservation.	DAS indicator	Available
Land use for settlements in officially designated flood plains		DAS sub-indicator	To be examined
9.4 Restoring and protecting peatlands			
Conservation status of Habitats Directive habitats and species	Sub-indicator: Peatlands	NBS indicator	Available

	The sub-indicator permits statements to be made about habitats and species covered by the Habitats Directive whose occurrence depends on peatlands.		
Area of natural or near-natural peatlands	The metric shows the area of natural or near-natural peatlands subject to protection.		To be developed
Threat to peatland biotope types and species	The indicator reflects the level of threat to peatland biotope types and species (e.g. in profiles on species listed in connection with peatland habitat types under the Habitats Directive) on the basis of data from the Red List of Threatened Habitat Types and the Red List of Threatened Species.		To be developed
Proportion of peatland areas that have been renatured	The metric depicts the proportion of peatland areas that have been renatured (as close as possible to a typical peatland water balance, additional restoration measures where appropriate, development as close to natural as possible without subsequent use, typical peatland ecosystem services restored).		To be developed

Action area 10: Coasts and seas

Name	Description	Category	Status
10.1 Status of biodiversity on coasts and in seas			
Species diversity and landscape quality	Sub-indicator: Coasts and seas The sub-indicator provides information on species diversity, landscape quality and sustainability of use in the area of coasts and seas in the form of an index (figures given as percentages) on the nationwide populations of selected bird species representative of coasts and seas.	NBS indicator	Available

Good environmental status of marine waters	In accordance with the Marine Strategy Framework Directive (Directive 2008/56/EC)		Available
Good conservation status under the Natura 2000 directives	In accordance with the Habitats Directive (Directive 92/43/EEC) and the EU Birds Directive (Directive 2009/147/EC), potentially additional indicators based on marine monitoring data		To be examined and potentially to be developed
10.2 Restoring coastal and marine habitats			
Area subject to restoration	Area used for restoration measures		To be examined and potentially to be developed
Proportion of species and habitats on the national Red List	Proportion of species and habitats on the national Red List that are no longer endangered or whose level of endangerment has improved		To be developed
Status of Habitats Directive habitats within marine protected areas	Monitoring within the Natura 2000 framework and harmonised in line with the Marine Strategy Framework Directive		To be examined and potentially to be developed
Success of reintroduction and population-support measures			To be examined and potentially to be developed
Area and positioning of refuge and resting zones	Area (as a percentage of total marine area) and positioning of refuge and resting zones, including the endangered species and habitats occurring within them		To be examined and potentially to be developed
10.3 Nature-friendly use of the seas			
Share of sustainably fished stocks of fish in the North and Baltic Seas	The indicator depicts sustainably managed fish stocks as a share of all the fish stocks subject to fisheries management in the North and Baltic Seas. The maximum sustainable yield (MSY) approach is used for this. The aim of the indicator is to describe the progress made towards the target set in the Regulation on the Common Fisheries Policy, under which all	DNS indicator	Available

	commercially exploited fish stocks must be sustainably managed using the MSY approach by 2020.		
Area of protected areas not subject to (harmful) use			To be examined and potentially to be developed
Intensity of shipping per km^2 of marine area	Particularly within protected areas, refuge zones and resting areas		To be developed
By-catch rates and mortality rates of non-target species (fish, marine mammals, sea birds)			To be examined and potentially to be developed

Action area 11: Cities, urban landscapes and other settlements

Name	Description	Category	Status
11.1 Status of biodiversity in cities and other settlements			
Species diversity and landscape quality	Sub-indicator: Settlements The sub-indicator provides information on species diversity, landscape quality and sustainability of use in settlements in the form of an index (figures given as percentages) on the nationwide populations of selected bird species representative of settlements.	NBS indicator	Available
Insects in settlements	The indicator on insects in settlements is informed by insect monitoring. Insect monitoring as currently implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration.		To be developed
Status of ecosystems/biotopes in settlements	The indicator on the status of ecosystems/biotopes in settlements is informed by ecosystem monitoring. Ecosystem monitoring as currently		To be developed

	implemented gathers suitable data to be collated and processed. Whether this will be a sub-indicator to an overall indicator is still under consideration.		
Landscape quality and structural diversity in settlements	Structural diversity could be given in terms of structural elements such as hedges, solitary or groups of trees and tall herb fringe per area. The indicator could be designed along the same lines as the sub-indicator on the prevalence of structural elements under the HNV indicator.		To be examined and potentially to be developed
11.2 Greening cities and other settlements			
Accessibility of recreational green spaces in cities	The indicator provides information on provision of green spaces within walking distance of people's places of residence in German towns and cities (≥ 20,000 inhabitants). It shows the proportion of inhabitants living ≤ 300 m straight-line distance from their nearest green space of ≥ 1 ha suitable for recreation. The indicator is currently being developed further.		Available (being revised)
Supply of green spaces	The indicator on the supply of green spaces provides information on the ratio of green spaces to total settlement area, thereby describing developments in the greening of the town or city as a whole.		In development
11.3 Nature-based climate adaptation in cities and other settlements			
Urban tree canopy cover	Indicator on tree canopy cover in urban areas (available at the EU level for most major German cities; currently being updated for Germany)		In development (available at EU level)

Action area 12: High-altitude mountains

Name	Description	Category	Status
12.1 Status of biodiversity in high-altitude mountains			
Species diversity and landscape quality	Sub-indicator: Alps The sub-indicator provides information on species diversity, landscape quality and sustainability of use in the Alps in the form of an index (figures given as percentages) on the nationwide populations of selected bird species representative of the Alps.	NBS indicator	Available (Currently suspended because of insufficient data)

Action area 13: Climate change

Name	Description	Category	Status
13.1 Implementing Nature-based Solutions for climate and biodiversity			
Progress on Nature-based Solutions for climate and biodiversity	Indicators of progress on Nature-based Solutions (to be developed alongside the implementation of the Federal Action Plan on Nature-based Solutions for Climate and Biodiversity)		In development
13.2 Making climate policy nature-friendly and adapting nature conservation strategies to climate change			
Consideration of climate change in landscape programmes and framework plans	The indicator gives insights into how well these planning documents account for the effects of climate change and what is consequently required of habitat and species conservation.	DAS indicator	Available

Action area 14: Energy transition and raw materials

Name	Description	Category	Status
14.1 Nature-friendly expansion of renewable energy			

Metrics based on the EEMonReport project			To be developed
Area for the production of intensively farmed biomass			To be examined and potentially to be developed
14.2 Sustainable production and use of biomass			
Consumption of biotic primary materials	Consumption of biotic primary materials, in total and split by sector and type of use (including Nature-based Solutions for climate and biodiversity), or demand for biotic primary materials by sector		To be examined and potentially to be developed
Feedstock in bioenergy heating plants			To be examined and potentially to be developed
14.3 Nature-friendly extraction and use of biomass			
Raw material input productivity	The indicator of raw material input productivity compares the value of all goods provided for final use (in euros, price-adjusted) relative to the mass of the raw materials used domestically and abroad for their production (in tonnes). Final use covers domestic consumption and domestic investments as well as exports.	DNS indicator	Available
	Additional metrics to be examined and potentially developed on the basis of the following data: - Primary materials from extraction and cultivation processes with great potential to endanger biodiversity as a share of total primary raw materials consumption (2023 REFOPLAN project)		To be examined and potentially to be developed

	- Indicators from the EU monitoring framework on the circular economy, e.g. circular material use rate[47] - Indicators are being developed on the sustainable use of biomass and its impact on biodiversity and the environment (monitoring requirements set out in the implementation plan for the Bioeconomy Strategy).		

Action area 15: Substance inputs and other impairments to ecosystems

Name	Description	Category	Status
15.1 Reducing pollution with substances dangerous to the environment			
Achieving good chemical status in accordance with the Water Framework Directive	Achieving good chemical status in accordance with the Water Framework Directive by 2039 by upholding the environmental quality standards for various chemicals derived from Directive 2013/39/EU on priority substances		Available (currently under review/having more substances added)
15.2 Reducing the impact on ecosystems caused by nutrient inputs (nitrogen and phosphorus)			
Eutrophication of ecosystems	The indicator provides information on impairments to biodiversity due to ecosystem-specific critical loads for airborne eutrophying nitrogen inputs being exceeded. These critical loads indicate the amount of a nutrient per area and time period that, according to current knowledge, can be deposited in a given ecosystem without causing damage in the long term.	NBS and DNS indicator	Available
Ecological status of surface waters	The indicator calculates the proportion of surface waters – rivers, streams, lakes, transitional and coastal waters – with good or high ecological status	NBS indicator	Available

[47] https://ec.europa.eu/eurostat/web/circular-economy/monitoring-framework

	as a percentage of all water bodies assessed. Under the Water Framework Directive, that water assessment is based on the organisms living in the water, as the composition of aquatic biotic communities reflects the totality of influencing factors for each water body type.		
Agricultural nitrogen surplus	The indicator provides information on the development of agricultural nitrogen surpluses. This allows conclusions to be drawn about potential pressures on environmental media and habitats. The indicator is calculated as an aggregate nitrogen balance for Germany as a whole. The degree of aggregation does not allow conclusions to be drawn on regional surpluses.	NBS and DNS indicator	Available
Phosphorus in flowing waters	The indicator specifies the share of monitoring points at which the water-body-typical benchmark values of good ecological status regarding phosphorus in flowing waters are not exceeded, according to the Ordinance for the Protection of Surface Waters. The surveillance monitoring network is used, which comprises some 250 monitoring points across the country. The majority of monitoring points were installed in the main channels of major rivers and at the confluence of significant tributaries.	German Sustainable Development Strategy indicator	Available
Emissions indicator based on nitrogen budget			To be examined and potentially to be developed
15.3 Reducing plastics in the environment			
	Currently not measurable		
15.4 Curbing light pollution			
Sky glow	Sky glow e.g. with regard to a classification		To be examined and potentially to be developed

Action area 16: The economy, financial flows and consumption

Name	Description	Category	Status
16.1 Value of natural capital			
Stock take of natural capital (physical)	Existence of a stock take of natural capital with nationwide recording and assessment of ecosystems and their services (physical). The data will be recorded and successively expanded in the context of developing ecosystem accounts at the Federal Statistical Office.		Partly available; partly in development (see development of ecosystem accounts at the Federal Statistical Office)
National Welfare Index (NWI)	The NWI is a welfare measurement tool that quantifies 20 economic, environmental and social components, assigns them monetary values and calculates their sum total. Its trend can be compared to gross domestic product (GDP), which is generally used to measure a society's prosperity.		Available
Valuation of natural capital (monetary valuation of ecosystem services)	Existence of standardised methodologies and (monetary) cost rates for valuing natural capital		To be developed
16.2 Corporate responsibility for biodiversity and public procurement			
Number of corporate sustainability reports (including effects on biodiversity)	Number of corporate sustainability reports that include the companies' effects on biodiversity in accordance with the European Sustainability Reporting Standards (ESRS) under the Corporate Sustainability Reporting Directive (CSRD), and number of businesses which set up transition plans for biodiversity in that context		To be developed (analysis of data in the Federal Gazette on CSRD reports)
Public procurement: Biodiversity criteria in general administrative regulations (federal level)	Biodiversity criteria incorporated into general administrative regulations regarding federal public procurement, which are harmonised with the		In development

	public procurement provisions of the Competition Act (*Gesetz gegen Wettbewerbsbeschränkungen*) on sustainability		
16.3 Nature-friendly consumption			
Environmental footprint of consumption	Environmental footprint of Germany's consumption reduced		Available
16.4 Biodiversity in the financial sector			
	Currently not measurable		
16.5 Public biodiversity financing in the strict sense			
Annual funding for biodiversity	Amount of funding annually available in Germany for biodiversity[48]		Available

Action area 17: Health

Name	Description	Category	Status
17.1 Services provided by nature that aid health and wellbeing			
	Currently not measurable		

Action area 18: Tourism and sports

Name	Description	Category	Status
18.1 Nature-friendly tourism and sport			
Effects of tourism on biodiversity	Tourism indicator relating to biodiversity issues		In development

[48] Data currently only available on federal funds, particularly budget chapter 1604/BMUV for nature conservation, funds for the Action Plan on Nature-based Solutions for Climate and Biodiversity within the Climate and Transformation Fund, and nature conservation funds under the Joint Task for the Improvement of Agricultural Structure and Coastal Protection

Partners of the national natural landscapes	Number of partners of the national natural landscapes, broken down by sector		To be examined and potentially to be developed

Action area 19: Transport infrastructure and federally owned property

Name	Description	Category	Status
19.1 Ecological permeability of transport routes			
Habitat fragmentation	The indicator on unfragmented functional spaces can be used to systematically track progress at the federal level on reconnecting habitats along the regional road network. It may be possible to extrapolate additional strategic requirements.		Available (to be updated)
	Proportion of habitat networks that are dissected by major transport routes; account taken of parcelling together of two or more transport routes or of transport routes and photovoltaic systems		To be developed
	Permeability of transport routes, with account taken of wildlife crossings and corridors to connect habitats and incorporating environmental design and secure connectivity for remote areas		To be developed
19.2 Biodiversity conservation on federally owned property			
Programme of measures for a sustainable federal government	Monitoring of the programme of measures for a sustainable federal government		To be examined

Action area 20: Germany's contribution to global biodiversity conservation

Name	Description	Category	Status
20.1 Implementing and further developing international biodiversity agreements			

Reporting on biodiversity-related agreements	Achievement of this target depends on reporting on biodiversity-related agreements.		
20.2 International support for biodiversity conservation			
Annual funding for international biodiversity conservation	Annual funding for international biodiversity conservation based on CBD and OECD reporting		To be examined and potentially to be developed
20.3 Global joint efforts to tackle biodiversity loss, climate change and pollution			
20.4 Continuing to develop and implementing the Nagoya Protocol and the CBD multilateral mechanism for benefit-sharing from the use of digital sequence information on genetic resources			
Reporting on partnerships and projects put into practice	Reporting on partnerships and projects put into practice, particularly on information and advice provided to researchers regarding access and benefit-sharing (ABS) obligations. No (reporting) obligations for science, research and business will be introduced or extended.		
Number of checkpoint communiqués	Number of checkpoint communiqués published in the ABS Clearing-House by the Federal Agency for Nature Conservation. No (reporting) obligations for science, research and business will be introduced or extended.		
20.5 Implementing the Cartagena Protocol			
National reports on implementation of the Cartagena Protocol on Biosafety	Submission of national reports on implementation of the Cartagena Protocol on Biosafety		To be examined and potentially to be developed

Action area 21: Responsibility for adverse effects of economic activity based on global division of labour

Name	Description	Category	Status
21.1 Mitigating the adverse effects on biodiversity of economic activity based on global division of labour			
	Currently not measurable		

21.2 International trade and sustainable use of species			
	Only parts of this target are currently measurable, e.g. the volume of international trade in species protected under the Convention on International Trade in Endangered Species (CITES). Reporting obligations could allow for qualitative measurement of several parts of the target.		

II Annex – contribution of NBS 2030 targets to implementation of the GBF under the CBD and the EU Biodiversity Strategy for 2030

The matrix below sets out how the national targets in the NBS 2030 contribute to the implementation of the Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity and of the EU Biodiversity Strategy for 2030. National targets address only parts of the global or European agreements in question.

NBS	EUBDS					Kunming-Montreal Global Biodiversity Framework																																				
	Section					Section						Goal				Target																								Section		
Target	1	2.1	2.2	3	4	A	B	C	D	E	F	A	B	C	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	I	J	K
Vision 2050								X		X	X																														
1.1	X	X										X							X																						
1.2												X							X																						
1.3			X									X	X								X																				
2.1		X						X				X						X																							
2.2			X					X				X																													
2.3		X						X				X				X																									
2.4		X						X				X				X		X																							
3.1			X					X				X					X	X				X																			
4.1			X					X				X	X													X															
4.2								X					X			X																									
5.1				X				X					X																	X					X					X
5.2								X							X																				X	X	X		X	X
6.1								X							X																			X	X					X
6.2				X				X							X																			X	X					
6.3				X				X							X																			X	X					

NBS	EUBDS					Kunming-Montreal Global Biodiversity Framework																																					
	Section					Section						Goal				Target																								Section		
Target	1	2.1	2.2	3	4	A	B	C	D	E	F	A	B	C	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	I	J	K
7.1			X					X				X													X																
7.2			X					X				X	X										X			X															
7.3			X					X				X	X				X						X																	
7.4								X				X						X																						
8.1			X					X				X	X												X															
8.2			X					X				X					X																							
8.3													X												X															
8.4													X																		X									
8.5													X																		X									
8.6			X					X					X									X			X															
8.7			X					X					X									X																		
8.8			X					X					X									X																		
8.9														X																	X									
9.1			X					X				X	X				X									X														
9.2			X					X				X	X				X																							
9.3			X					X					X				X																							
9.4			X					X					X			X	X	X					X			X															
10.1		X						X				X	X					X																						
10.2			X					X				X	X				X						X																	
10.3			X					X					X			X				X					X																
11.1			X					X				X															X														
11.2			X					X				X	X														X														
11.3			X					X					X										X			X															

NBS	EUBDS					Kunming-Montreal Global Biodiversity Framework																																				
	Section					Section						Goal				Target																								Section		
Target	1	2.1	2.2	3	4	A	B	C	D	E	F	A	B	C	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	I	J	K
12.1								X				X				X	X																								
13.1	X		X					X				X	X										X			X															
13.2												X	X										X																		
14.1																X																									
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14.3													X																X												
15.1			X					X				X										X																		
15.2			X					X				X	X									X																		
15.3								X				X										X																		
15.4			X					X				X																												
16.1				X				X					X																X												
16.2				X				X					X		X															X											
16.3				X				X					X																		X									
16.4				X											X															X			X	X						
16.5				X				X							X																		X							
17.1	X							X					X							X																				
18.1								X					X														X		X												
19.1								X				X				X																								
19.2												X	X																												
20.1					X			X							X																										
20.2					X			X							X																			X	X		X	X			
20.3					X			X							X								X			X															
20.4								X						X													X														

NBS	EUBDS					Kunming-Montreal Global Biodiversity Framework																																					
	Section					Section						Goal				Target																								Section		
Target	1	2.1	2.2	3	4	A	B	C	D	E	F	A	B	C	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	I	J	K
20.5								X							X																	X									
21.1					X								X																X	X										
21.2					X								X						X	X				X																