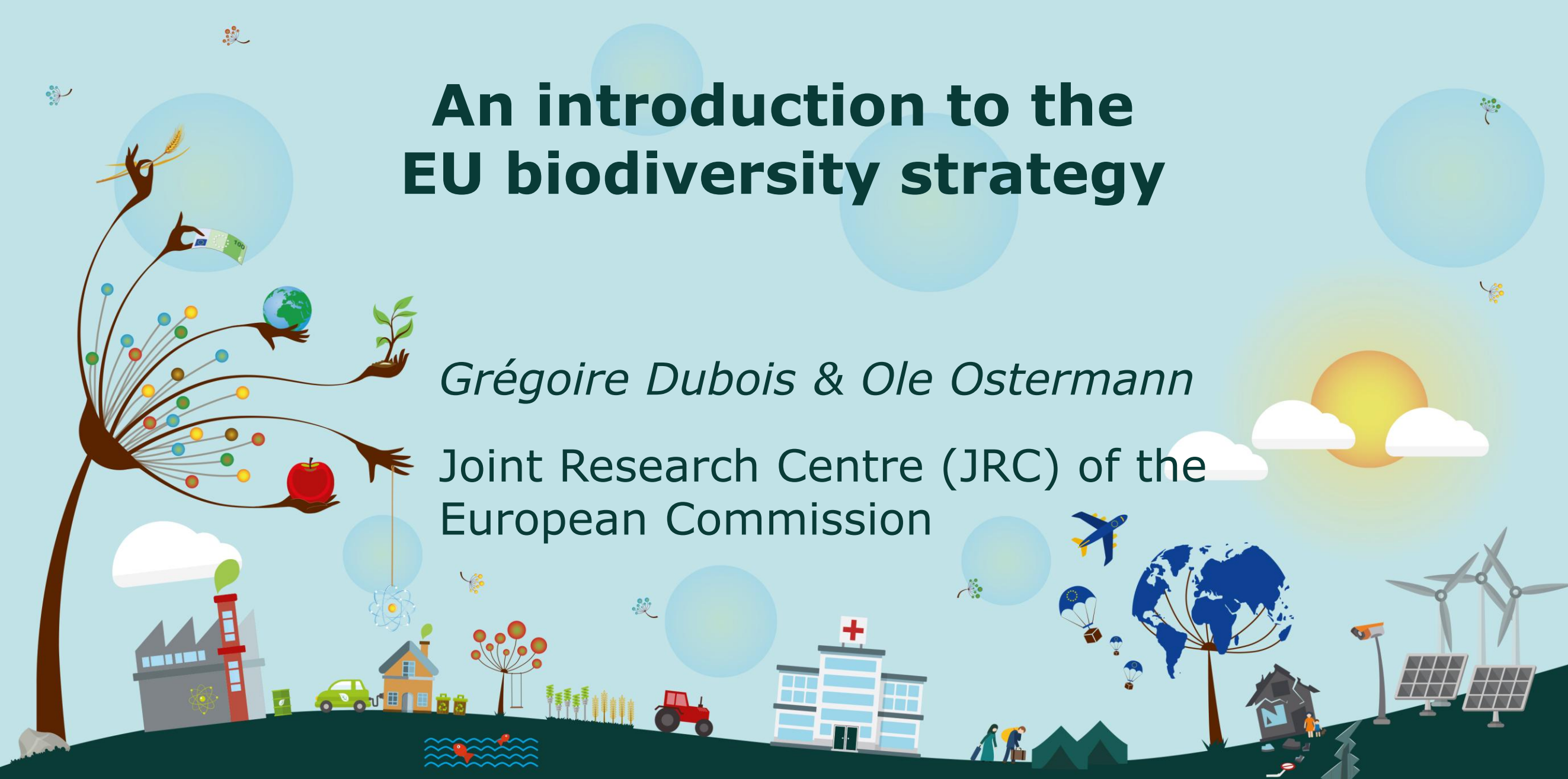


An introduction to the EU biodiversity strategy

Grégoire Dubois & Ole Ostermann

Joint Research Centre (JRC) of the
European Commission

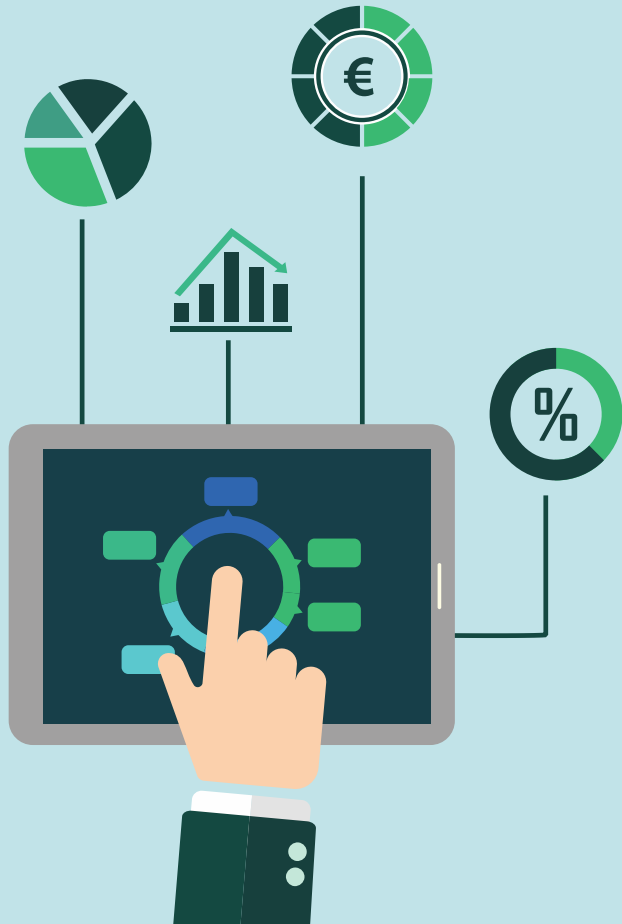


JRC's Mission

***“ As the science and knowledge service
of the European Commission, our mission is to support
EU policies with independent evidence
throughout the whole policy cycle ”***



JRC Role: facts & figures



- 6 locations in 5 EU Member States: **Italy**, Belgium, Germany, The Netherlands, Spain
- Policy neutral: has no policy agenda of its own
- 42 large scale research facilities, more than 110 online databases
- 1500 core research staff, 3000 total staff
- 83% of core research staff with PhD's
- Over 1,400 scientific publications per year
- 10 JRC science areas: Agriculture and food security, Economic and Monetary Union, Energy and transport, Environment and climate, Health and consumer protection, Information Society, Innovation and growth, Nuclear safety and security, Safety and security, Standards

EU = European Union

What is the issue?

- Europe continues to lose biodiversity and it is very unlikely that agreed policy targets would be met.
- Europe's biodiversity and ecosystems face various pressures such as habitat degradation and loss, unsustainable use, pollution, climate change and invasive alien species, which has a severe impact on ecosystem services they provide.
- Recent alarming loss of insects, especially pollinators, illustrates negative effects of unsustainable management in sectors, such as agriculture.

What is the issue?

- Biodiversity is the rich variety of life, which exists on Planet Earth, and ensures the survival of people.
- It concerns all species of plants and animals, as well as people, their genetic variation and the range of habitats upon which all living things depend.
- It encompasses the whole of the natural world, not just the rare or the endangered. It touches and benefits all aspects of our lives.

What is the issue?

- Humans are dependent on biodiversity, which provides food, feed, fibre, medicines and raw materials, and delivers many other goods and services that support human life.
- For example, forests provide wood, oxygenate the air, purify water, prevent erosion and flooding, help regulate our climate and turn waste into nutrients or raw materials, such as oil and gas.
- Biodiversity also provides cultural heritage and is treasured for its recreational, spiritual and aesthetic values. All these services together are named Ecosystem Services.

The EU Biodiversity Strategy

Recognising the issues, the EU has set up in 2011 a Biodiversity Strategy which aims to halt the loss of biodiversity by 2020.

It builds on other EU legislation, such as:

- Birds and Habitats Directives (FFH), which require the establishment of the Natura 2000 network (1979, 1992).
- Water Framework Directive (WFD), 2000
- Marine Strategy Framework Directive (MSFD), 2008
- Communication on Green Infrastructure (GI), 2013
- Regulation on Invasive Alien Species (IAS), 2014

The EU Biodiversity Strategy

The EU Biodiversity Strategy aims to halt the loss of biodiversity and ecosystem services in the EU and help stop global biodiversity loss by 2020

6 targets to 2020

- Target 1: Protect Species and Habitats
- Target 2: Maintain and restore ecosystems
- Target 3: Achieve more sustainable agriculture and forestry
- Target 4: Make fishing more sustainable and seas healthier
- Target 5: Combat invasive alien species
- Target 6: Help stop the loss of global biodiversity

We will present examples of JRC actions for actions marked in red

The EU Biodiversity Strategy

- Target 1: Protect Species and Habitats

By 2020, the assessments of species and habitats protected by EU nature law show better conservation or a secure status for 100 % more habitats and 50 % more species.

Action 1: Complete the Natura 2000 network and ensure its good management

Action 2: Make sure Natura 2000 sites get sufficient funding

Action 3: Raise awareness of Natura 2000, get citizens involved and improve the enforcement of the nature directives

Action 4: Make the monitoring and reporting of the EU nature law more consistent, relevant and up-to-date; provide a suitable ICT tool for Biodiversity

ICT tool = Information Communication Technology tool



The EU Biodiversity Strategy

- Target 1: Protect Species and Habitats

Action 3: Raise awareness of Natura 2000, get citizens involved and improve the enforcement of the nature directives

MyNatura2000 app

This app provides information about the protected areas of the Natura 2000 network. It allows users to send pictures collected in each site as well as an overall feedback about the protected area.

Natura 2000 is the largest coordinated network of protected areas in the world. It stretches over 18% of the EU land area and almost 6% of its marine territory offering a haven to Europe's most valuable and threatened species and habitats.

<http://digitalearthlab.jrc.ec.europa.eu/app/mynatura2000>

The EU Biodiversity Strategy

- Target 2: Maintain and restore ecosystems

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15 % of degraded ecosystems.

Action 5: Map and assess the state and economic value of ecosystems and their services in the entire EU territory; promote the recognition of their economic worth into accounting and reporting systems across Europe

Action 6: Restore ecosystems, maintain their services and promote the use of green infrastructure

Action 7: Assess the impact of EU funds on biodiversity and investigate the opportunity of a compensation or offsetting scheme to ensure that there is no net loss of biodiversity and ecosystem services

The EU Biodiversity Strategy

- Target 2: Maintain and restore ecosystems

Action 5: Map and assess the state and economic value of ecosystems and their services in the entire EU territory; promote the recognition of their economic worth into accounting and reporting systems across Europe

The fifth MAES (Mapping and Assessment of Ecosystems and their Services) report provides guidance to the EU and its Member States on how to assess the condition (or the state) of Europe's ecosystems.

The report integrates several recognised indicator frameworks to give the first ever comprehensive and consistent list of ecosystem indicators across terrestrial, freshwater and marine ecosystems.

All Member States are actively involved in mapping and assessing the state of ecosystems and their services in their national territory. At EU level MAES-related activities are supported by the Joint Research Centre and other EU bodies.

The EU Biodiversity Strategy

- Target 3: Achieve more sustainable agriculture and forestry

By 2020, the conservation of species and habitats depending on or affected by agriculture and forestry, and the provision of their ecosystem services show measurable improvements

Action 8: Enhance CAP direct payments to reward environmental public goods such as crop rotation and permanent pastures; improve cross-compliance standards for Good Agricultural and Environmental Conditions and consider including the Water Framework in these standards

Action 9: Better target Rural Development to biodiversity needs and develop tools to help farmers and foresters work together towards biodiversity conservation

Action 10: Conserve and support genetic diversity in Europe's agriculture

Action 11: Encourage forest holders to protect and enhance forest biodiversity

Action 12: Integrate biodiversity measures such as fire prevention and the preservation of wilderness areas in forest management plans

The EU Biodiversity Strategy

- Target 3: Achieve more sustainable agriculture and forestry

Action 8: Enhance CAP direct payments to reward environmental public goods such as crop rotation and permanent pastures; improve cross-compliance standards for Good Agricultural and Environmental Conditions and consider including the Water Framework in these standards

- The most frequently reported pressures and threats for terrestrial species, habitats and ecosystems are associated with agriculture.
- Sound agricultural management practices can have a substantial positive impact on the conservation of the EU's wild flora and fauna. Traditional farming contributes to safeguarding certain natural or semi-natural habitats. Many valuable habitats and the presence of species have a direct interdependence with agriculture (e.g. many bird species nest and feed on farmland).
- In 2018 the JRC established the Impacts of selected Ecological Focus Area options in European farmed landscapes on climate regulation and pollination services: a systematic map protocol, in support to the new CAP.

CAP = Common Agriculture Policy

The EU Biodiversity Strategy

- Target 4: Make fishing more sustainable and seas healthier

By 2015, fishing is sustainable. By 2020, fish stocks are healthy and European seas healthier. Fishing has no significant adverse impacts on species and ecosystems.

Action 13: Ensure that the management plans of the Common Fisheries Policy are based on scientific advice and sustainability principles to restore and maintain fish stocks to sustainable levels.

Action 14: Reduce the impact of fisheries by gradually getting rid of discards and avoiding by-catch; make sure the Marine Strategy Framework Directive is consistently carried out with further marine protected areas; adapt fishing activities and get the fishing sector involved in alternative activities such as eco-tourism, the monitoring of marine biodiversity, and the fight against marine litter.

The EU Biodiversity Strategy

- Target 4: Make fishing more sustainable and seas healthier

Action 13: Ensure that the management plans of the Common Fisheries Policy are based on scientific advice and sustainability principles to restore and maintain fish stocks to sustainable levels.

- The JRC was involved in the SafeNet project - Sustainable fisheries in EU Mediterranean waters through a network of Marine Protected Areas.
- SafeNet action aims to identify coherent network(s) of Marine Protected Areas (MPAs) and other area-based fisheries management rules (e.g. temporary closures) whose emergent properties (namely the interactive effect of scaling-up MPAs) can help achieve fisheries maximum sustainable yield (MSY) and maximize over the long-term ecological and socio-economic benefits for the stakeholders in the north-western Mediterranean Sea (NWM).
- <http://www.criobe.pf/recherche/safenet/>

The EU Biodiversity Strategy

- Target 5: Combat invasive alien species

By 2020, invasive alien species (IAS) are identified, priority species controlled or eradicated, and pathways managed to prevent new invasive species from disrupting European biodiversity.

Action 15: Make sure that the EU Plant and Animal Health legislation includes a greater concern for biodiversity.

Action 16: Provide a legal framework to fight invasive alien species

The EU Biodiversity Strategy

- Target 5: Combat invasive alien species

Action 16: Provide a legal framework to fight invasive alien species

- There are two aspects to the problem of IAS in Europe, - the ecological problem created by their entry, establishment and spread, - and the policy failure caused by the fragmented and incoherent policy set up at EU and national levels that is allowing the ecological problem to grow.
- Action on IAS in the EU Member States was predominantly reactive, seeking to minimise the damage already being caused. The Regulation on Invasive Alien Species (IAS), 2014, fixed this issue.
- EU Regulation on invasive alien species (EU, 2014) provides a set of measures to combat IAS, ranging from prevention, early detection and rapid eradication to IAS management. More information is available through the European Alien Species Information Network (EASIN) (JRC, 2018).

The EU Biodiversity Strategy

- Target 6: Help stop the loss of global biodiversity

By 2020, the EU has stepped up its contribution to avert global biodiversity loss.

Action 17: Reduce the impacts of EU consumption patterns on biodiversity and make sure that the EU initiative on resource efficiency, our trade negotiations and market signals all reflect this objective.

Action 18: Target more EU funding towards global biodiversity and make this funding more effective.

Action 19: Systematically screen EU action for development cooperation to reduce any negative impacts on biodiversity.

Action 20: Make sure that the benefits of nature's genetic resources are shared fairly and equitably

The EU Biodiversity Strategy

- Target 6: Help stop the loss of global biodiversity

Action 18: Target more EU funding towards global biodiversity and make this funding more effective.

- The Digital Observatory for Protected Areas (DOPA) is promoting global biodiversity with the DOPA Explorer. The DOPA Explorer is the most advanced global information system characterising the world's terrestrial, marine and coastal protected areas.
- Using global reference datasets, the DOPA supports monitoring and reporting through a broad range of consistent and comparable indicators at country, ecoregion and protected area level. The tool was developed by the European Commission's Joint Research Centre (JRC) in collaboration with the UN Environment World Conservation Monitoring Centre (UNEP-WCMC), the International Union for Conservation of Nature (IUCN) and BirdLife International.
- DOPA indicators help track progress on Aichi Biodiversity Target 11 (Protected Areas) of the Convention on Biological Diversity, and the UN Sustainable Development Goals 14 (Life below Water) and 15 (Life on Land).

Support to Target 6: The Digital Observatory for Protected Areas (DOPA)

- **Global** reference information system focusing on protected areas developed by JRC with reference data partly managed by other partners (UN Environment-WCMC, IUCN, BirdLife International, ...)
- Supports EC, CBD, countries and other users in planning, monitoring, reporting on protected areas (PA) and conservation efforts.
- Broad range of indicators on biodiversity values and threats/pressures to facilitate comparison and prioritization

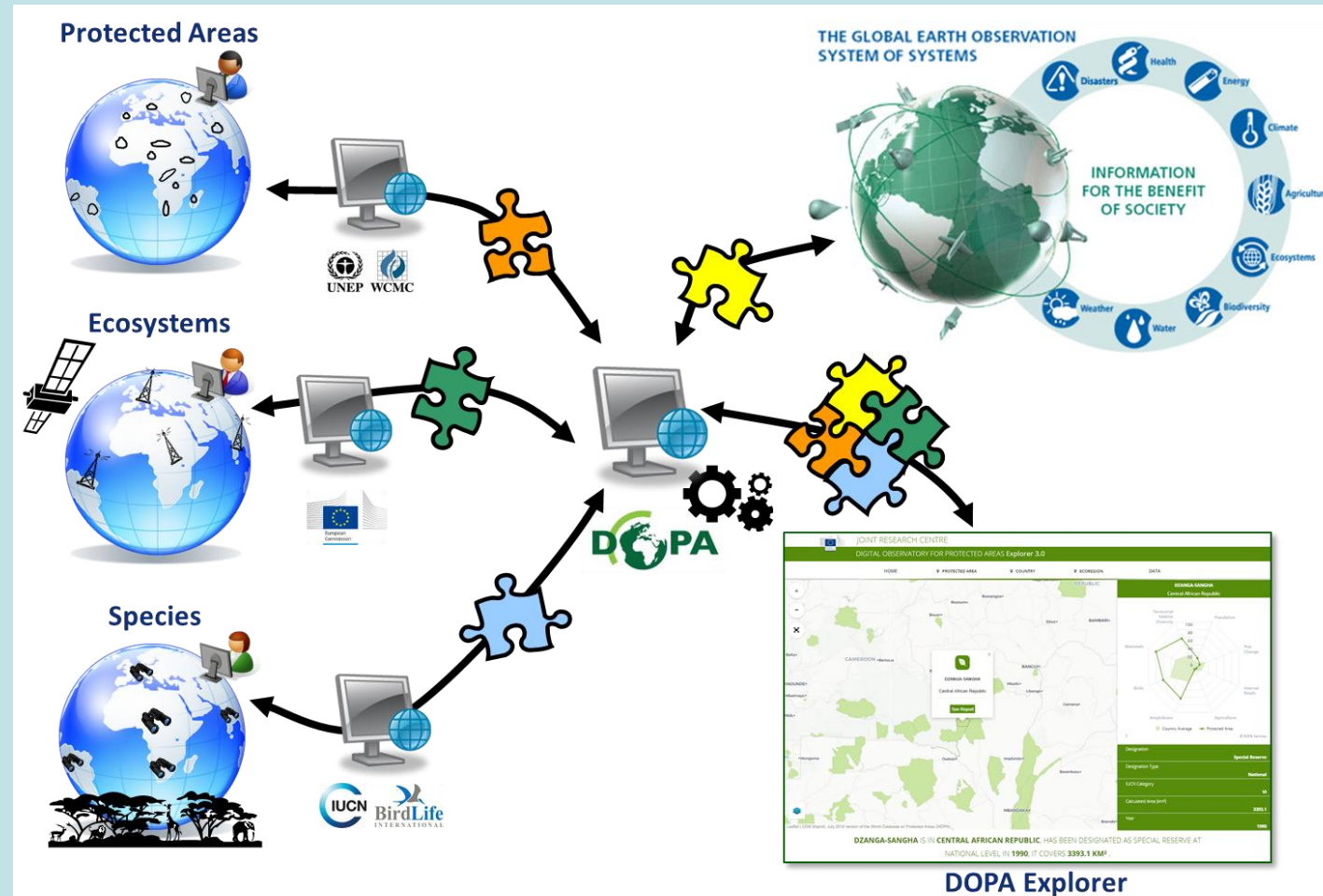


CBD = Convention on Biological Diversity



Support to Target 6: The Digital Observatory for Protected Areas (DOPA)

Among others, DOPA provides for all protected areas $\geq 25 \text{ km}^2$ (around 30,000 PA, 95% of protected land) information on the number of threatened species, land cover and land cover change, land use, population, land degradation, climate, connectivity, etc. at country, ecoregion and protected area level.



Support to Target 6: The Digital Observatory for Protected Areas (DOPA)

DOPA data are available via the DOPA Explorer 3.0, a web based Geographic Information System (GIS) allowing end-users to explore the biodiversity and pressure data at country, ecoregion and site level.

The application is available for no commercial use from

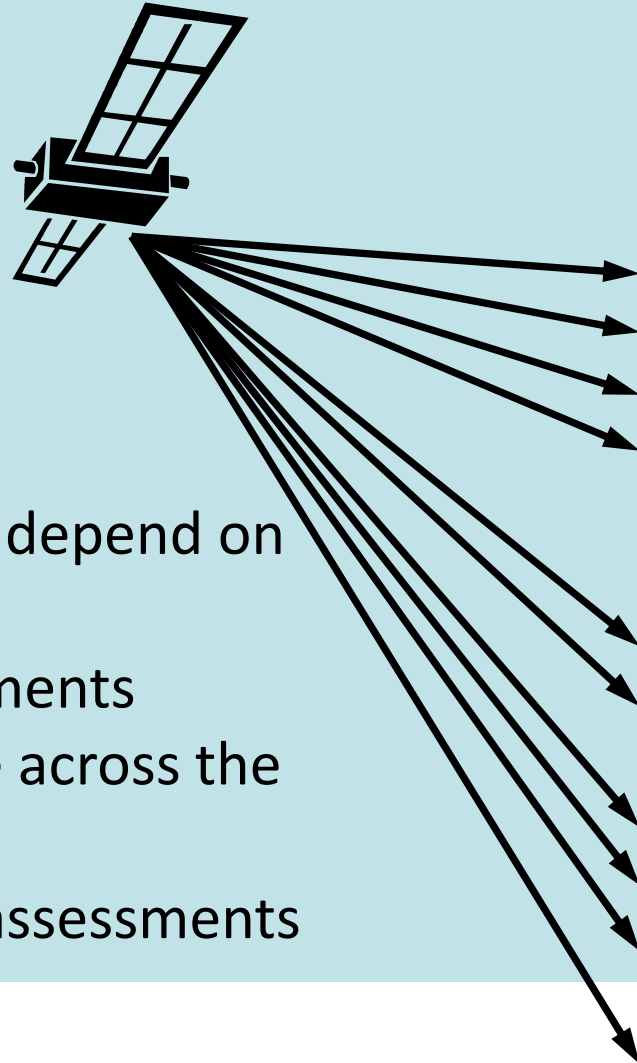
<https://dopa-explorer.jrc.ec.europa.eu/>

| OUADI-RIMÉ-OUADI ACHIM | |
|------------------------------------|----------------|
| Chad | |
| Designation | Faunal Reserve |
| Designation Type | National |
| IUCN Category | IV |
| Calculated Area (km ²) | 83032.3 |
| Year | 1969 |

OUADI-RIMÉ-OUADI ACHIM IS IN CHAD, HAS BEEN DESIGNATED AS FAUNAL RESERVE AT NATIONAL LEVEL IN 1969, IT COVERS 83032.3 KM².



Support to Target 6: The Digital Observatory for Protected Areas (DOPA)



Global analyses increasingly depend on earth observations:

- Facilitates regular assessments
- Observations comparable across the globe
- Less expensive than site assessments

| Key Indicators | Country | Ecoregions | Site level (25 km ²) |
|---------------------------------|---------|------------|----------------------------------|
| Coverage by protected areas | 👤 | 👤 | - |
| Connectivity of protected areas | 👤 | 👤 | - |
| Land cover & change | 👤 | 👤 | 👤 |
| Forest cover & change | 👤 | 👤 | 👤 |
| Surface water change | 👤 | 👤 | 👤 |
| Terrestrial Habitat Diversity | - | - | 👤 |
| Marine Habitat Diversity | - | - | 👤 |
| Threatened species lists | 👤 | - | 👤 |
| Land degradation | 👤 | 👤 | 👤 |
| Land fragmentation | 👤 | 👤 | 👤 |
| Soil carbon | 👤 | 👤 | 👤 |
| Agricultural pressure | - | - | 👤 |
| Population pressure | - | - | 👤 |
| Built-up pressure | - | - | 👤 |
| Road pressure | - | - | 👤 |
| Monthly climate | - | - | 👤 |
| EU funding for conservation | 👤 | - | 👤 |



Support to Target 6: Improving funding coordination

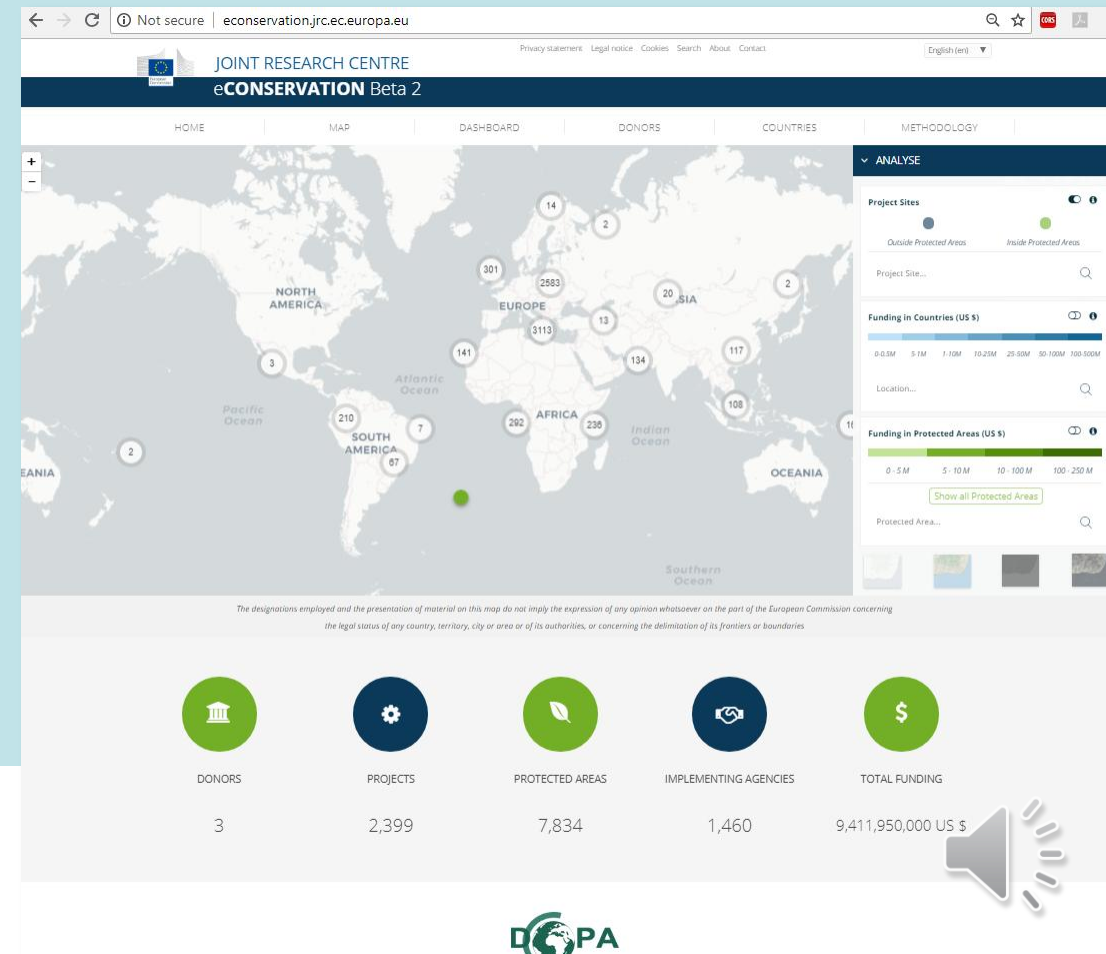
Funding for PAs

- The LIFE programme is the European Union's financial instrument supporting environmental and nature conservation projects throughout the Union.
- GEF funds are available to developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements. (Russia)
- The Commission's Directorate-General for International Cooperation and Development (DG DEVCO) is responsible for designing European international cooperation and development policy and delivering aid throughout the world (Europaid).

Support to Target 6: Improving funding coordination

eConservation (Beta2)

- eConservation is an application that provides critical information in an interactive mapping interface on biodiversity conservation projects funded by big public donors worldwide.
- eConservation is developed at the JRC.
- The application is an important module of the Digital Observatory for Protected Areas (DOPA).
- The aim of eConservation is to better understand who is funding what and where, with a view to improve decision-making on biodiversity conservation.



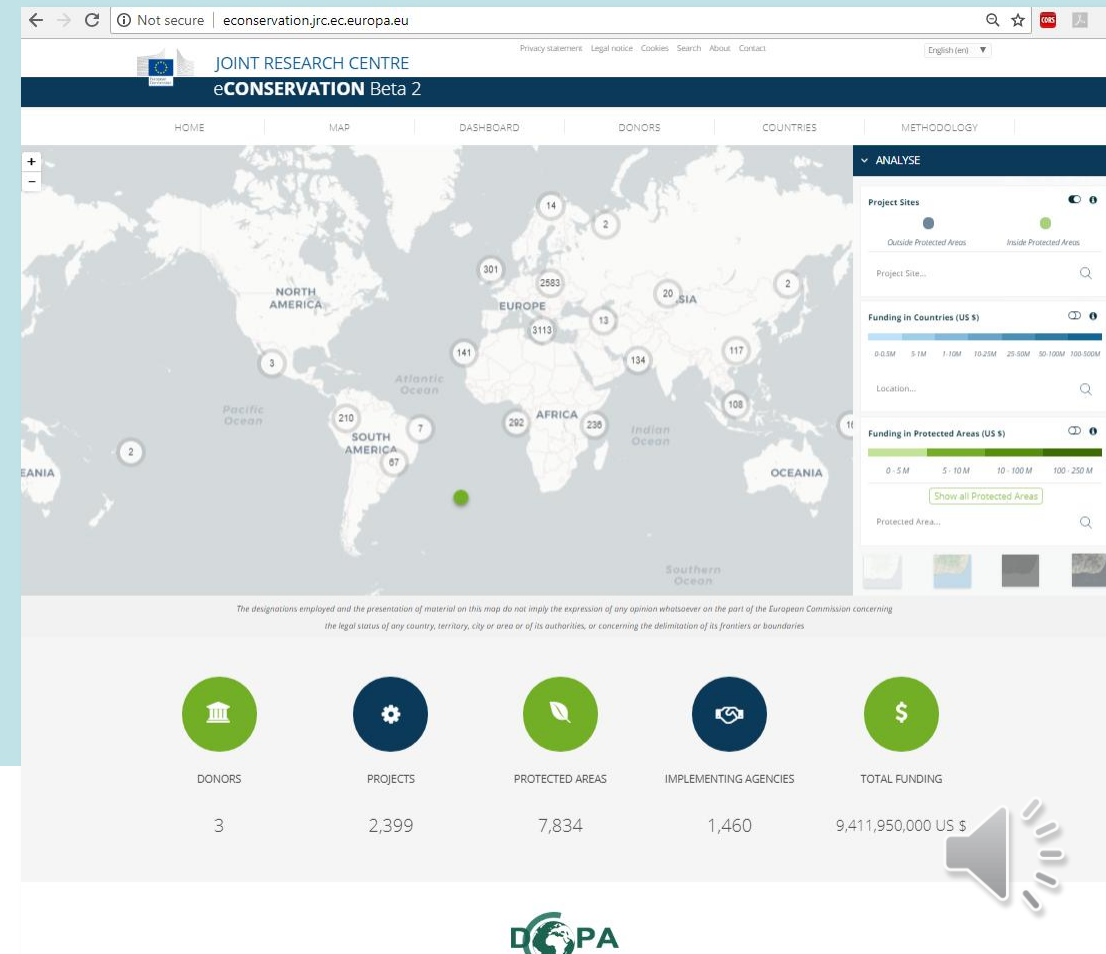
<http://econservation.jrc.ec.europa.eu/>

Support to Target 6: Improving funding coordination

eConservation (Beta2)

A web-based open-access application trying to answer the fundamental question **“who is funding what and where?”**

- Targeting main global donors to improve coordination and identify gaps
- Identifies implementing agencies to strengthen local networking
- A data structure is under development to be proposed to all donors to ease information sharing.



<http://econservation.jrc.ec.europa.eu/>

Who does what?

Worldwide

- UN SDG and CBD processes, IPBES, UNEP
- NGOs: IUCN, WCMC, WWF, BirdLife International

Regional

- Council of Europe

European Union

- DG ENV, DEVCO, EEA, JRC
- 28 MS

Protected Area Connectivity

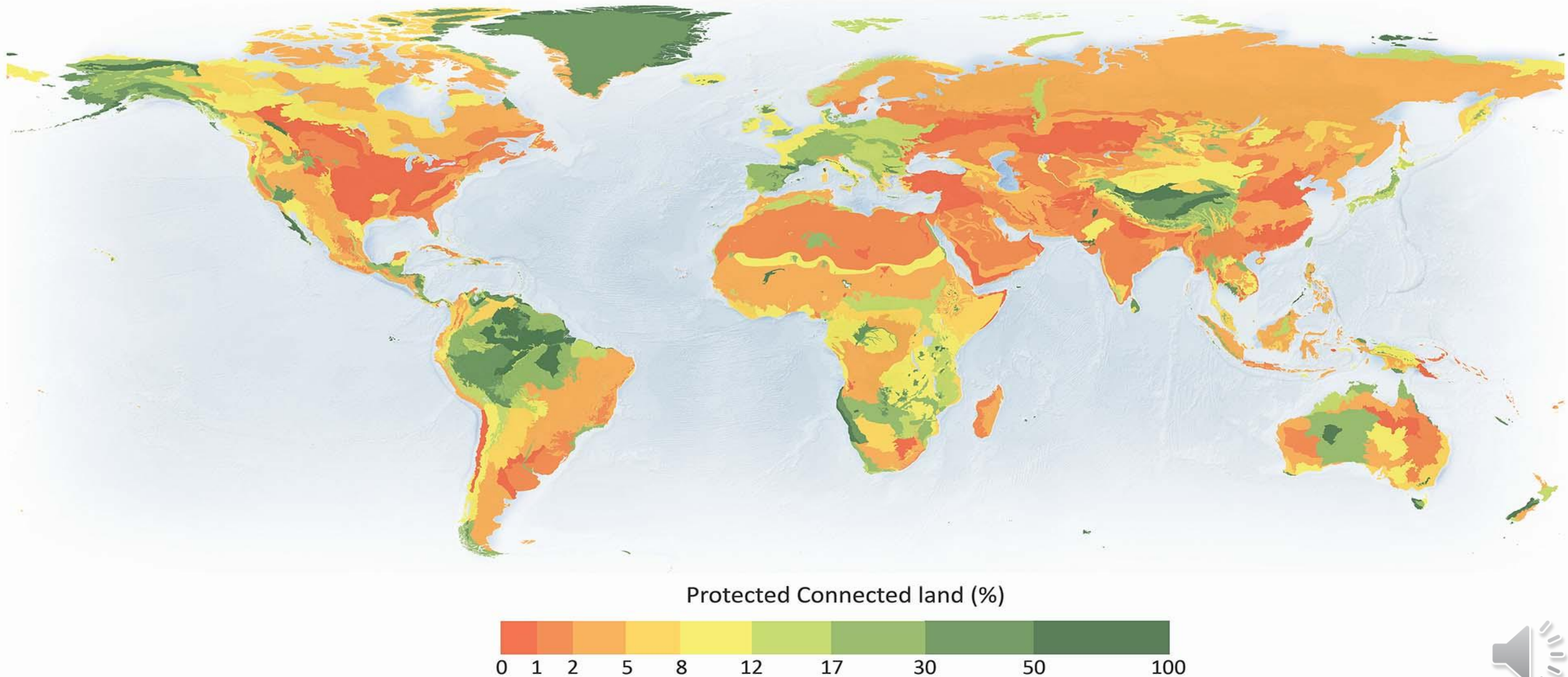


Fig. 3. Protected Connected land (% of ecoregion area) for all the world's terrestrial ecoregions for a reference median dispersal distance of $d = 10$ km. Citation: Saura et al. (2017) Ecological Indicators 76: 144-158.



Protected Area Connectivity

- The JRC has created an indicator of Protected Area Connectivity (ProtConn) based on assumed species distances between protected areas (Saura et al., 2018).
- The connectivity indicator has been adopted as a reference indicator for the CBD, IPBES and SDGs by the Biodiversity Indicators Partnership (BIP).
- In the absence of connectivity in the PA systems, individual PAs may turn into climatic traps under warming, hampering their ability to meet their long-term conservation goals. Therefore, the connectivity of PAs, defined as the ease of species movements and other ecological flows among protected locations, is at the forefront of the concerns for biodiversity conservation.

The BIP is a global initiative to promote and coordinate the development and delivery of biodiversity indicators for use by the Convention on Biological Diversity (CBD) and other biodiversity-related conventions, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Sustainable Development Goals (SDGs) and national and regional agencies.

Council of Europe / Emerald Network

- The Emerald Network is an ecological network made up of Areas of Special Conservation Interest. Its implementation was launched by the Council of Europe as part of its work under the Bern Convention, with the adoption of Recommendation No. 16 (1989) of the Standing Committee to the Bern Convention.
- Setting-up the Emerald Network at national level is considered as one of the main tools for the Contracting Parties to comply with their obligations under the Bern Convention.
- Russia is among non-signatories of the Bern Convention, it has observer status at meetings of the committee.

European policies and strategies addressed outside the EU

Examples of relevant European policies and strategies addressed outside the EU include Target 6 of the EU Biodiversity Strategy to 2020 to ‘help avert global biodiversity loss’, the EU Biodiversity for Life (B4Life) Flagship Initiative, the EU Action Plan against Wildlife Trafficking, and the EU Strategic Approach to Wildlife Conservation in Africa (‘Larger than Elephants’). The CBD and other biodiversity-related conventions, including the World Heritage Convention, the Ramsar Convention on Wetlands of International Importance, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention on the Conservation of Migratory Species (CMS), provide an international framework.

Climate change is affecting our planet's ecosystems and biodiversity

- Changes in climate and weather may force species to migrate to new areas. There is ample evidence already of species' ranges shifting as a result of changing conditions.
- Those that cannot escape their newly inhospitable surroundings or adapt are likely to die off (trees or species confined to mountain-tops and small islands are obvious examples).
- Because species depend on each other for survival, individual extinctions and shifting ranges have a much wider knock-on effect, upsetting the delicate balance of our natural world.
- In a worst-case scenario, we could see food webs and ecosystems collapse completely.

Agriculture as driver for biodiversity loss

- The most frequently reported pressures and threats for terrestrial species, habitats and ecosystems are associated with agriculture, via habitat degradation and loss, unsustainable use, and pollution.
- For freshwater ecosystems, changes of hydrology are most frequently reported as being important, although ‘loss of habitat features or prey availability’ is frequently reported for species, as is ‘pollution to surface waters’ for habitats (EEA).

Poaching (over-exploitation)

- African biodiversity is under ever-increasing pressure, mainly driven by habitat loss and unsustainable and intensifying human use.
- Over 3 million hectares of natural habitat are lost each year in Africa. Deforestation and forest degradation have heavily affected the continent's tropical dry forests and some of the rainforests in Madagascar, West Africa and the DRC (Congo), while mangroves and wetlands have also declined significantly over the past 20 years.
- For many species, the problem is exacerbated by intense wildlife poaching and trafficking (JRC 2018).

Ecotourism

- In 2017, 96% of bathing sites had good bathing water quality. Water recreation like beach holidays, swimming, kayaking, canoeing, and rafting are of increasing interest to the European public and require safe bathing water.
- Areas with high ecological integrity have a higher potential for 'eco-tourism'.
- The proportion of the population connected to urban waste water treatment has increased over the last 10 years with levels now at about 70 % (EEA, 2017). As a result, Europe's bathing waters have also improved.

Do we succeed?

- Europe's protected areas are diverse in character, varying in size, aim and management approach. They are large in number but relatively small in size. Approximately 93 % of sites are less than 1 000 hectares (ha) and 78 % less than 100 ha (EEA, 2018a).
- This reflects the high pressure on land use, arising from agriculture, transport and urban development.
- At the EU level, 23 % of the assessments of species protected indicate a favourable conservation status. At the same time, 60 % of species assessments are unfavourable.

Do we succeed?

- There are still significant gaps in knowledge, especially for marine species. Fish, mollusks and amphibians have a particularly high proportion of species that exhibit a deteriorating trend (EEA, 2016).
- Only 16 % of the assessments of habitats protected under the Habitats Directive have a favourable conservation status at the EU level (EEA, 2015).
- Bogs, mires and fens have the highest proportion of unfavourable assessments, followed closely by grasslands (EEA, 2016).

Do we succeed?

Policy responses, though successful in some areas, have been insufficient to halt biodiversity loss and the degradation of ecosystem services.

- Many local conservation successes have occurred, for instance through the extension of the network of protected areas under Natura 2000, to 18 % of EU lands.
- With support from the LIFE programme, the Spanish Imperial Eagle population in the Iberian peninsula increased from 50 reproductive pairs in 1995 to the population size of over 900 now (BirdLife International, 2019).

European policies have successfully reduced some risks, especially from air pollution and noise.

Stay in touch!



ec.europa.eu/jrc



@EU_ScienceHub



EU Science Hub - Joint Research Centre



Joint Research Centre



EU Science Hub



Thanks

Questions?

You can find us at

gregoire.dubois@ec.europa.eu

ole.ostermann@ec.europa.eu

References and additional sources

www.biodiversityscotland.gov.uk

<http://australianmuseum.net.au/what-is-biodiversity>

https://eacea.ec.europa.eu/erasmus-plus/selection-results/jean-monnet-activities-2018_en

EEA, ETC/BD for biodiversity in EU countries, the European Topic Centre on Biodiversity, of the European Environment Agency <https://www.eea.europa.eu/>

DG ENV http://ec.europa.eu/environment/nature/index_en.htm

DG DEVCO https://ec.europa.eu/europeaid/about-development-and-cooperation-europeaid_en

DOPA <https://dopa-explorer.jrc.ec.europa.eu/>

eConservation <http://econservation.jrc.ec.europa.eu/>

<https://www.coe.int/en/web/bern-convention/emerald-network>

<https://www.thegef.org/about/funding>

http://ec.europa.eu/environment/nature/invasivealien/index_en.htm

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013SC0322>

http://ec.europa.eu/environment/nature/info/pubs/docs/nat2000news/nat22_en.pdf

<https://www.fauna-flora.org/conservation-challenges/climate-change>

<https://ec.europa.eu/jrc/en/news/eu-scientists-see-forest-trees>

<https://forest.jrc.ec.europa.eu/en/european-atlas/>

EASIN <https://easin.jrc.ec.europa.eu/easin>

<http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf>

<https://www.cbd.int/2011-2020/>