Why countries need the Global Biodiversity Information Facility: Lessons from Belgium

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As global challenges such as biodiversity loss, invasive species, and climate change intensify, open biodiversity data infrastructures like the **Global Biodiversity Information Facility** (GBIF) offer vital tools for evidence-based decision-making, placing the best available research evidence at the heart of policy development and implementation[1]. Belgium's experience demonstrates how participation in GBIF enhances national capacity, supports scientific excellence, and delivers significant economic, ecological, and strategic returns for biodiversity science, policy and practice. This policy brief encourages governments to follow Belgium's lead in leveraging GBIF to support sustainable development, conservation, and innovation.

Belgium as a biodiversity data powerhouse

Belgium contributes over 55 million species observation records to GBIF, including 5.8 million in 2024 alone. 42 million records about Belgian biodiversity come from over 1,400 datasets, many of which originate from institutions abroad. This reflects Belgium's global integration in biodiversity research and the strategic importance of open data.

Institutions such as **Meise Botanic Garden, The Royal Belgian Institute of Natural Sciences, Flanders Marine Institute, The Research Institute for Nature and Forest, Natuurpunt, Belgian Biodiversity Platform, and the Universities of Liège and Ghent** play leading roles, actively publishing data, shaping national and international collaborations and promoting evidence-based decision-making processes. These efforts enhance European biodiversity monitoring and support transnational research on species distribution, ecosystem change, and conservation priorities.

1 Young, E., & Quinn, L. (2012). *Making research evidence matter: A guide to policy advocacy in transition countries*. Open Society Foundations. http://advocacyguide.icpolicyadvocacy.org

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Tangible Economic and Strategic Returns

Belgium's GBIF participation is not just a scientific contribution, it is a smart investment with measurable returns:

- According to a 2023 **Deloitte analysis**, every €1 invested in GBIF yields up to €3 in direct benefits, and as much as €12 in broader societal gains.
- GBIF significantly reduces duplication of effort by standardising data and centralising access.
- GBIF significantly speeds up information flow including warning systems, living dashboards, monitoring systems, and real-time assessments.
- GBIF encourages the development of modular, open-source tools and workflows that can be reused and adapted across regions and projects and ensures long-term maintainability.
- We estimate Belgium's direct use of GBIF-mediated data saves the scientific community a minimum of €2 million a year—an estimate that does not include all savings from avoiding duplicative research and supporting rapid decision-making by public authorities.

Participating in GBIF translates into more cost-efficient environmental policy, stronger research competitiveness, and enhanced national and international standing in biodiversity governance.

What is GBIF?

The Global Biodiversity Information Facility is an international network and open-data infrastructure funded by governments worldwide. It enables free access to biodiversity data published by thousands of institutions through a shared platform, supporting science, policy, and conservation.

Data from the GBIF network come from independent datasets contributed by museums, herbaria, research institutes, NGOs, citizen science projects, and businesses. These data are used in six peer-reviewed scientific publications each day and contribute to policy at all levels, including the UN Sustainable Development Goals and the Kunming-Montreal Global Biodiversity Framework.

Learn more: **gbif.org**

Informing policy with data

Belgium's biodiversity policy increasingly draws on open data and transparency. GBIF data underpins:

- The National Biodiversity Strategy and its alignment with EU and international targets.
- Land-use planning, environmental impact assessment, climate resilience strategies, conservation planning including protected area designation.
- Early warning and invasive species management enabling timely policy and management responses.
- Reporting on the Sustainable Development Goals, to which 92% of GBIF users link their work, such as targets on biodiversity (e.g., SDG 14.5, SDG 15.5), sustainable agriculture (SDG 2.4), and climate resilience (SDG 13.1).

The availability of quality data ensures that policy decisions are evidence-based, cost-effective, transparent and accountable.

Environmental and Agricultural Benefits

GBIF data also plays a pivotal role in land management, agriculture, and forestry:

- Supports forest health monitoring and climate adaptation.
- Helps optimise land use by identifying ecologically valuable areas.
- Enhances agricultural productivity through better pest and pollinator knowledge.
- Monitoring farmland biodiversity indicators in support of agri-environmental schemes.
- Supports pollinator conservation under EU and regional Pollinators Initiatives.
- Supports national strategies for sustainable food systems and the shift toward agroecological farming systems.
- Supports One Health approaches by linking ecosystem integrity with human and animal health.

These benefits directly translate to environmental sustainability and socio-economic resilience, demonstrating the multi-sectoral value of biodiversity data.

Building Capacity Through Participation

Belgium's GBIF engagement has:

- Developed national expertise in biodiversity informatics and data management.
- Supported training and mentoring networks, preparing a new generation of biodiversity data professionals.
- Fostered a culture of open science and data sharing.
- Empowered Citizen Scientists and their organisations as data providers.
- Created collaborations with neighbouring and associated countries, including those with more limited resources.

The cost of going it alone

GBIF offers a platform for capacity building and knowledge transfer, making participation especially valuable for countries seeking to strengthen their environmental data systems.

In contrast, countries or institutions that do not use GBIF face higher operational and strategic costs. Significant resources are spent on developing and maintaining parallel infrastructures, collecting data that may already exist, and processing heterogeneous datasets without shared standards. These efforts are frequently duplicated, less sustainable, and harder to align with international frameworks. Moreover, without a common platform like GBIF, data quality assurance, proper attribution, and reproducibility become more complex and less transparent, ultimately limiting the effectiveness of biodiversity policy and research.

This is clearly demonstrated in the case of Belgium, where much of the biodiversity data work simply wouldn't happen without GBIF's infrastructure and support.

Combating biological invasions: A replicable model

Invasive species pose serious ecological and economic threats. Belgium uses GBIF data to:

- Aggregate data using common community standards as FAIR and open data.
- Track and respond to species invasions in real time.
- Support international projects like **OneSTOP**, which rely on GBIF for biosecurity monitoring.
- Supports Belgium's obligations to notify and report on invasive species of EU concern, enabling better coordination across Member States.

Belgium's approach demonstrates how integrating GBIF into national systems can empower faster, data-driven responses to biosecurity risks, a strategy readily adaptable by other nations.

Using GBIF to build integrated biodiversity data cubes

By publishing Belgium's biodiversity data through GBIF, we enable its integration into spatially and temporally aligned data cubes, combining species records with climate, land use, and ecosystem data. This approach supports more robust policy decisions by providing a unified framework to assess trends, identify hotspots, and anticipate future change. It turns scattered observations into strategic tools for planning, conservation, and climate adaptation.

This concept is being developed further through the **B-Cubed** project, which demonstrates how GBIF-mediated data can power scalable, cross-thematic data infrastructures for biodiversity monitoring and policy support across Europe.

How do I join GBIF?

GBIF's infrastructure is open to all data publishers, individuals, research groups, NGOs, citizen science projects, and institutions worldwide. Anyone can contribute data to GBIF without needing to be a formal member or participant.

However, participation in GBIF, through national governments or international organisations, offers strategic advantages. Only countries and certain eligible organisations can become formal GBIF participants. This status enables them to take part in GBIF's governance, access targeted capacity-building, and connect more directly to a global network of biodiversity infrastructure and expertise. While participation is not required for publishing, it plays a key role in shaping and sustaining the shared infrastructure that benefits all contributors.

Steps to join:

- Express interest: Contact the GBIF Secretariat to initiate discussions about participation.
- Nominate a node: Designate a national or thematic organisation to coordinate GBIF activities.
- Sign the **GBIF Memorandum of Understanding**.
- Participate in GBIF's governance (e.g., voting on priorities, contributing to strategy), and benefiting from capacity-building, collaboration, and infrastructure access.

More information: **gbif.org/become-member**

Conclusion

Belgium's experience shows that contributing to and using GBIF:

- **Strengthens national research and policy capacity.**
- **Increases economic returns and institutional efficiency.**
- **Supports global biodiversity goals and international cooperation.**

For countries seeking to modernise their biodiversity data infrastructure, Belgium provides a proven, scalable model. Joining GBIF is a strategic decision that pays dividends for the environment, economy, and society.

With new countries like Mongolia and the Dominican Republic joining GBIF in 2025, the network continues to grow, reflecting wider recognition of the value of open biodiversity data for research, policy, and sustainability.

Further reading

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This policy brief was developed with insights and examples drawn from several collaborative initiatives that advance biodiversity data for science and policy:

TrIAS – Tracking Invasive Alien Species, a Belgian Science Policy (BELSPO) project, that demonstrated how GBIF-mediated data can be used for early warning, risk assessment, and policy reporting on invasive species (Grant Agreement No. BR/165/A1/TrIAS).

B-Cubed – Biodiversity Building Blocks for Policy, funded by the European Union's Horizon Europe programme (Grant Agreement No. 101059592), supports the development of scalable tools such as biodiversity data cubes and improved workflows to increase the policy relevance of biodiversity data across Europe.

OneSTOP – OneBiosecurity Systems and Technology for People, Places and Pathways (Grant Agreement No. 101180559), focuses on integrating biodiversity data workflows to serve reporting needs and conservation planning on invasive species.