



The European Biodiversity Observation Network

EU BON - a Regional Hub for Biodiversity Data

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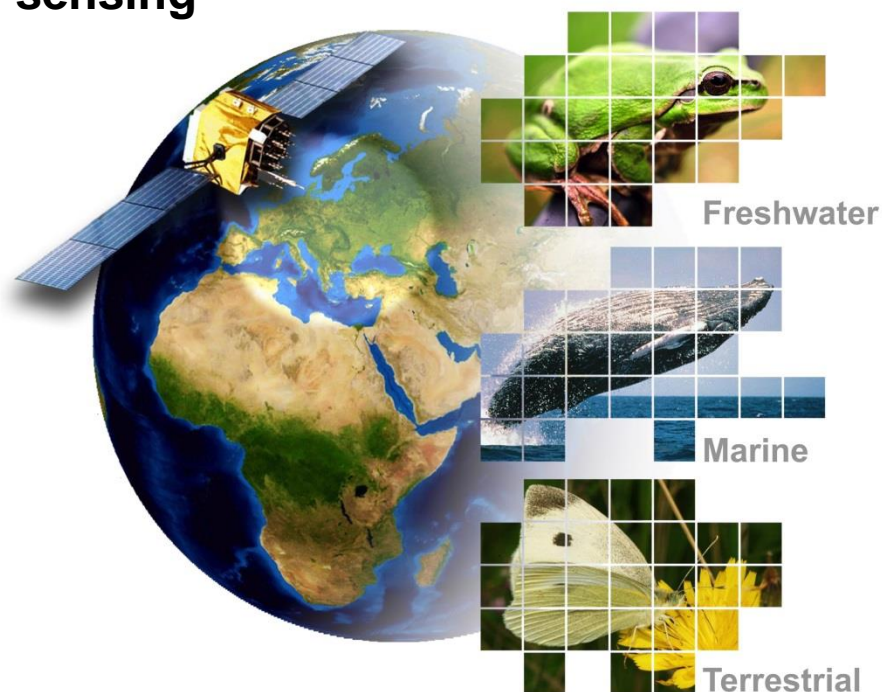
Museum für Naturkunde Berlin - Leibniz Institute for Evolution and Biodiversity Science



The biodiversity-challenge: integration of *biodiversity* data

Remote
sensing

In situ



Images: Mihai Tamsila, Wanetta Ayers, Johannes Penner

Specific challenges (i.p. *in situ*) :

Integration:

- + data standards, interoperability
- + analysis, interpretation, tools
[indicators, patterns and trends]
- + common recording & monitoring schemes
- + information dissemination
- + science policy interface(s)!

Two large realms: **field** („in situ“) + **remote sensing data**



EU BON - key information



EC FP7 - Cooperation Theme 6 “Environment (incl. climate change)”.

- Call ENV.2012.6.2-2: [Assessing global biological resources: the European contribution to the Global Earth Observation Biodiversity Observation Network \(GEO BON\)](#)



- **Project start:** 1st Dec 2012
- **Duration:** 54 months (until May 2017)
- **Project coordination:** MfN, Berlin
- **Consortium:** 31 partners (18 countries)
- **Budget:** 11.6 mio Euro, < 9 mio Euro EC contribution





EU BON characteristics

Key features of EU BON:

Delivery of **integrated**, near-real-time relevant **data** – both from **on-ground observation** and **remote sensing** – to various stakeholders and end users, ranging from local to global levels.

Main objective of EU BON:

Build a substantial (European) part of the **Group on Earth Observations Biodiversity Observation Network (GEO BON)**, with special reference to the **Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES)**.



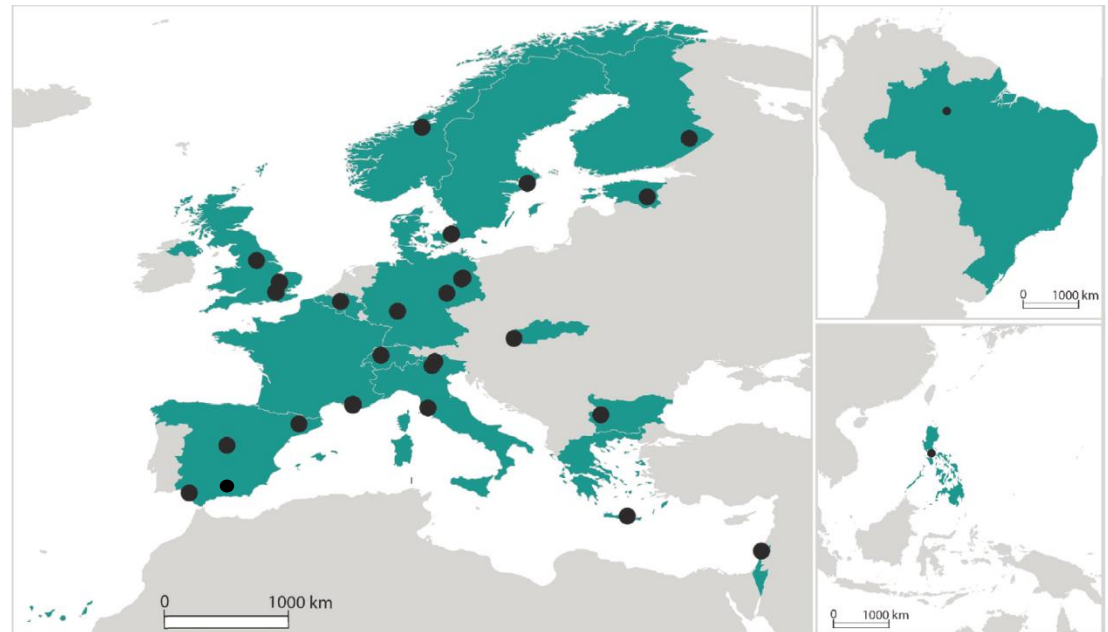
| **GEO BON**



EU BON Partners



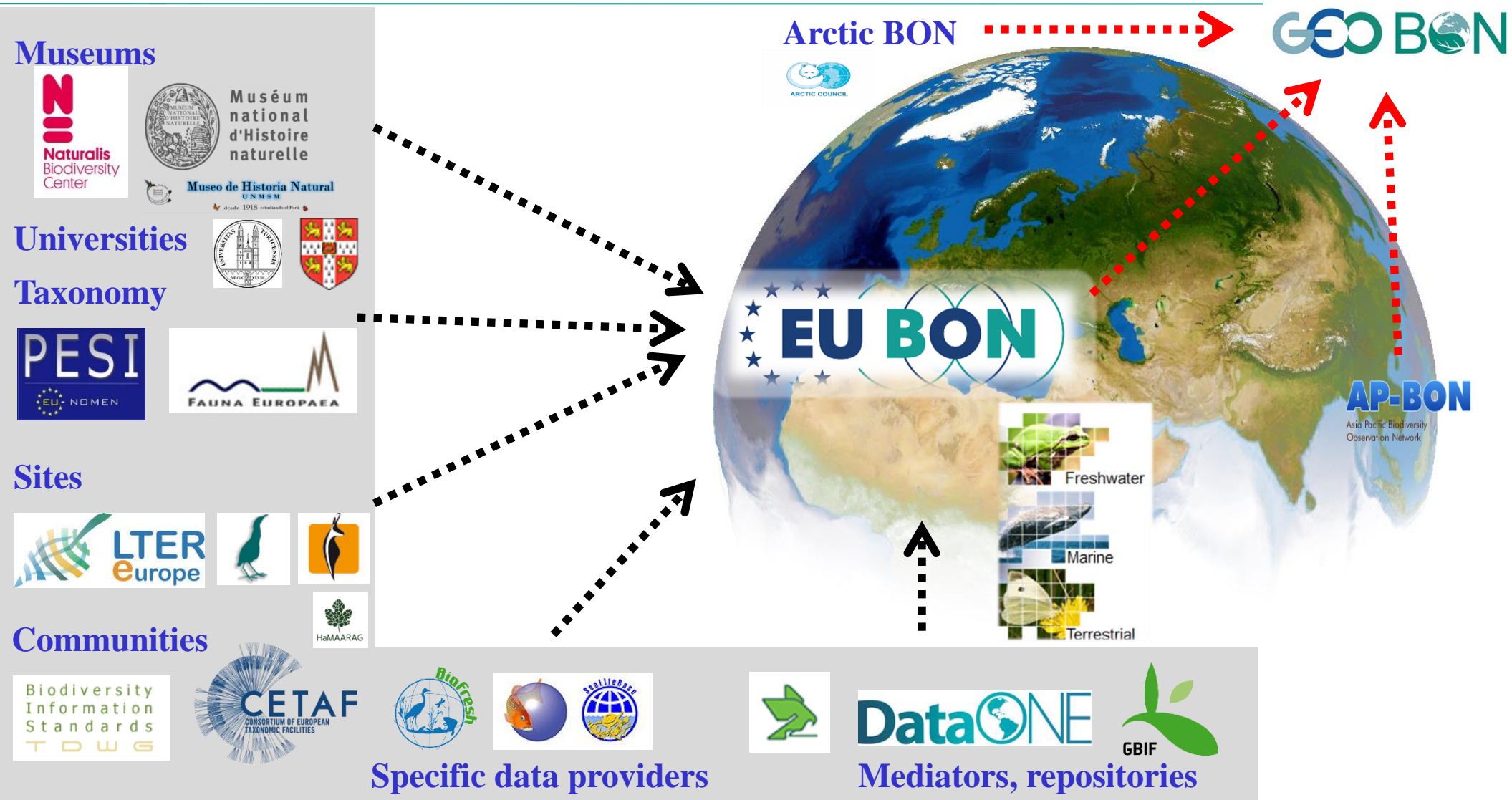
NORWEGIAN BIODIVERSITY
INFORMATION CENTRE



Map: Johannes Penner



Research Integration – Link to Partners & Associated Partners

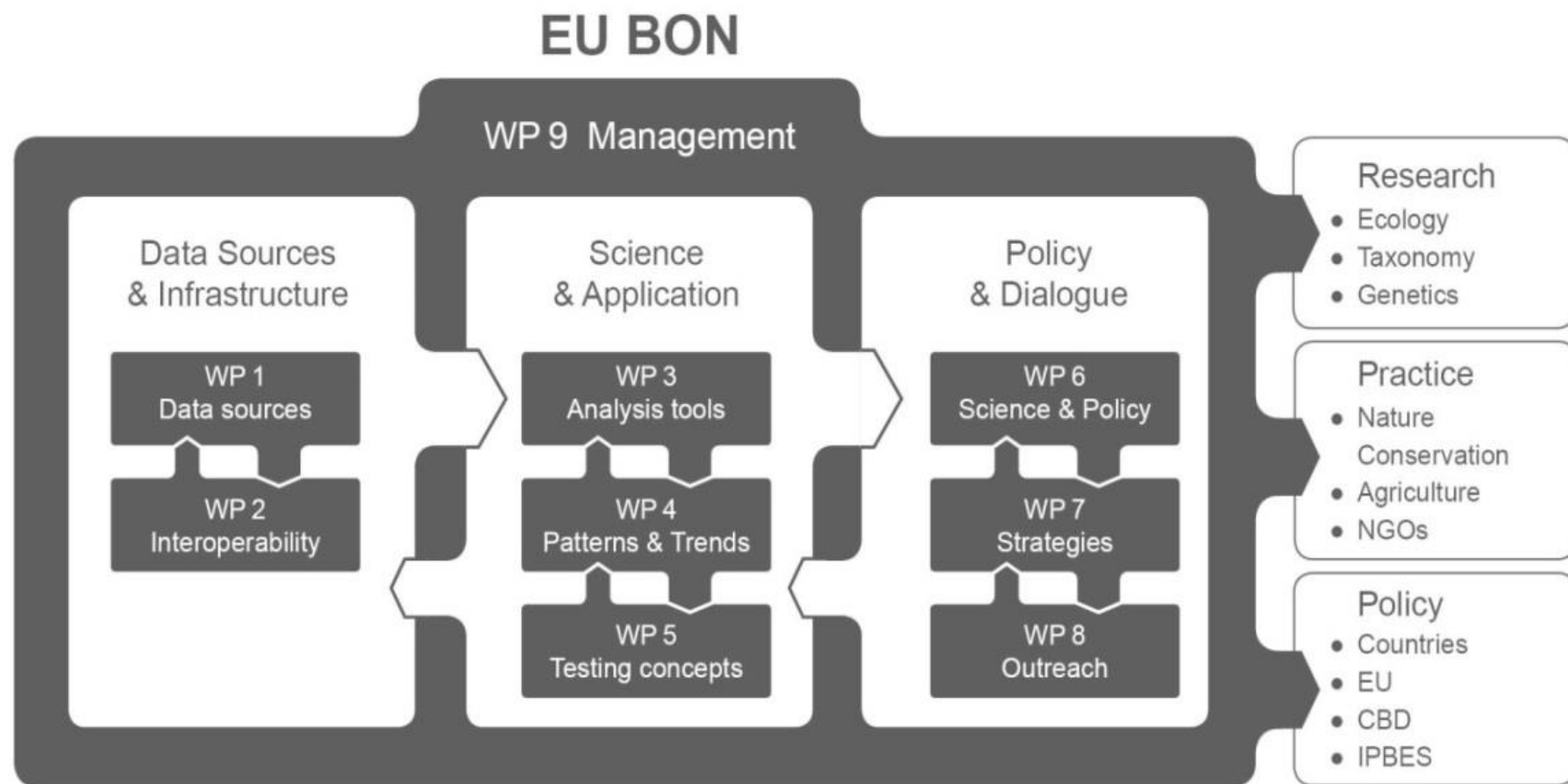




EU BON key output and products

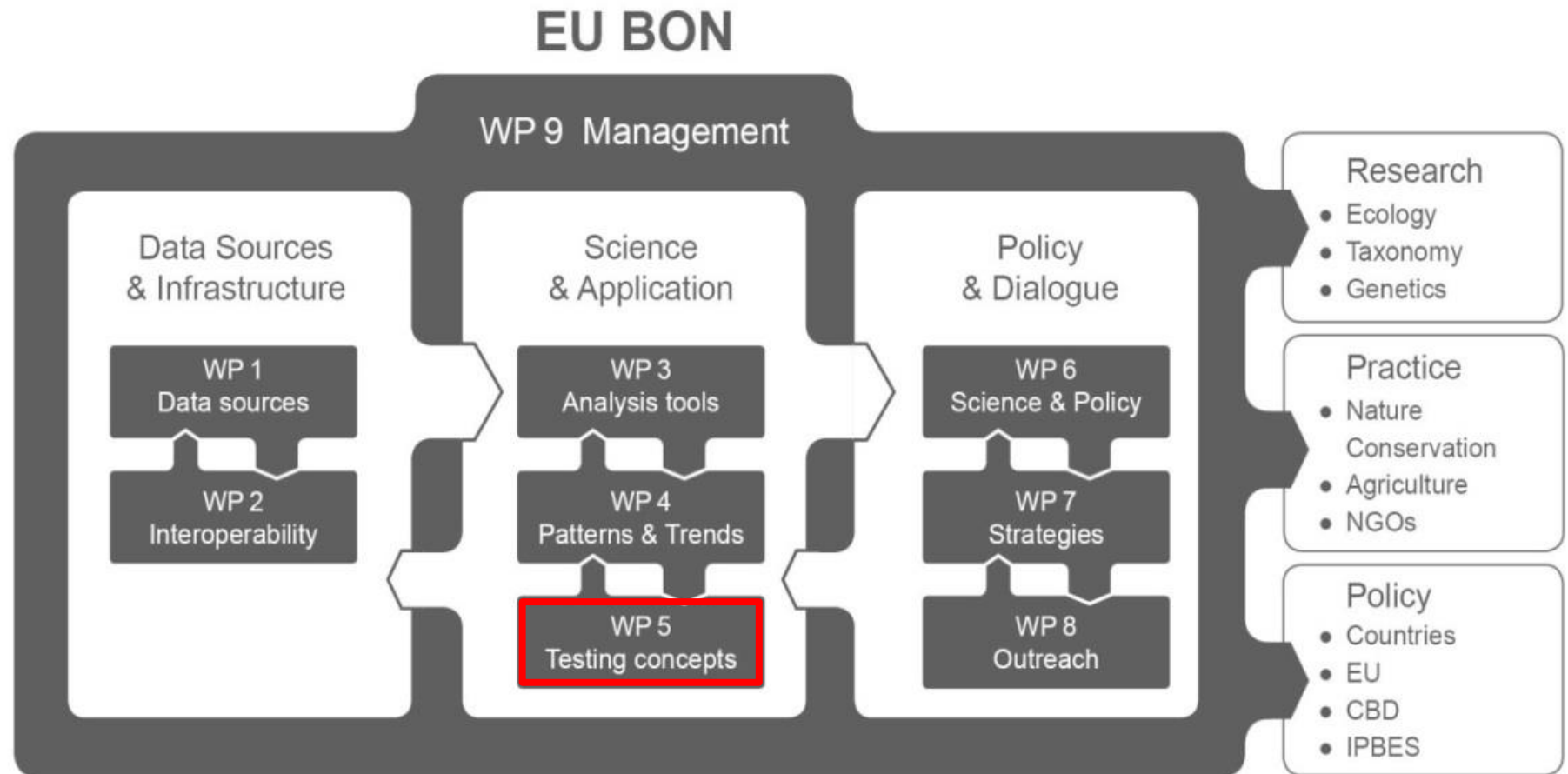
- **Strategies** for targeted **data mobilization** – *in / for Europe*
- **Software tools** & improved **models** - for better biodiversity data recording / mapping and **analysis** / **visualization** of patterns & trends
- **New European Biodiversity Portal** – *for new functionalities*
- Results & lessons learnt from **EU BON (& other) sites**: for regional/global network of long term recording/monitoring sites (LTER / ILTER)
- Recommendations for integrated **national / regional biodiversity recording/monitoring schemes and information infrastructures** (BIFS / BONS), including business plan – at least for Europe
- Blueprint for a **global biodiversity monitoring scheme / infrastructure (GEO BON)**

EU BON workflow and organization



Work package 5

EU BON testing and validation of concepts, tools and services



EU BON test sites

Additional sites

- Mercantour National Park (France)
- Alpi Marittime Park (Italy)
- HaMAARAG (Israel's National Assessment Program)



Doñana

Sierra Nevada



SENCKENBERG
world of biodiversity

Rhine-Main Observatory



Amvrakikos





WP5 (testing sites) objectives

- **Data mobilisation and integration in real settings**
- **Testing EU BON analytical tools and modelling**
- **Testing EU BON concepts and services for thematic, national and regional levels**
- Establish and operate a network of EU BON sites
- Expanding EU BON services to other areas and sites in Europe and around the world is planned for the near future

⇒ **Aim:** Workflow from data mobilisation (at site level) to practice (management, administration, etc)

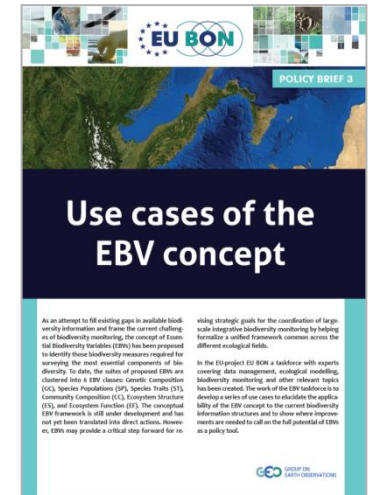
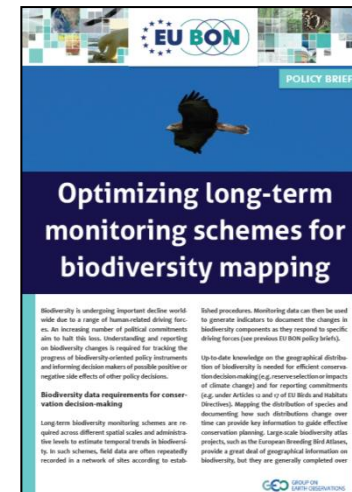
Information on EU BON: www.eubon.eu

- **Webpage:** Project Reports, Policy Briefs, Deliverables, EU BON Publications, Press Releases and Interviews. News and Tweets.

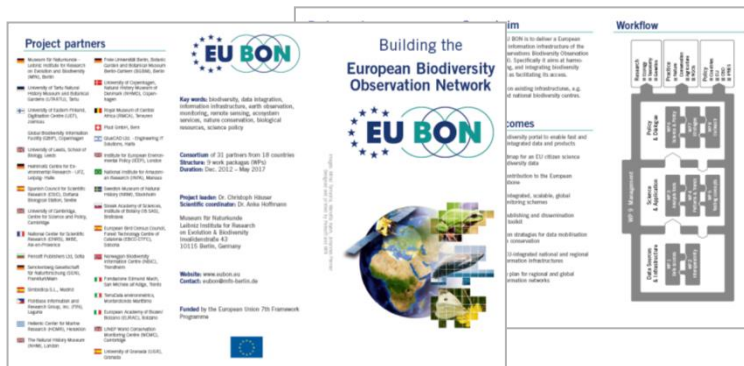
- **Newsletter**



- **Policy briefs**



- **Flyer**



www.eubon.eu



Thanks for your interest and contributions to EU BON!

www.eubon.eu





Further slides





Main WP5 products

- Guidelines for establishing Biodiversity Observation Networks (BON's)
- 'Certificate/label' for biodiversity observation sites
- Recommendations and strategies for building and sustaining a network of EU BON sites
- Evaluation of EU BON information services and the potential to support decision makers



EU BON consortium partners

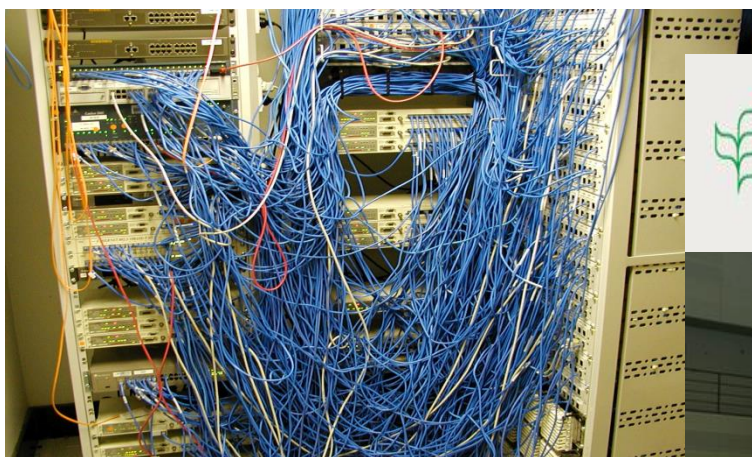
- **Museum für Naturkunde, Berlin (MfN) – Germany**
- **University of Tartu (UTARTU) – Estonia**
- **University of Eastern Finland (UEF) – Finland**
- **Global Biodiversity Information Facility Secretariat, Copenhagen (GBIF) – Denmark**
- **University of Leeds (UnivLeeds) – UK**
- **Helmholtz Centre for Environmental Research, Leipzig / Halle (UFZ) - Germany**
- **The Spanish National Research Council: MNCN, Madrid (CSIC) – Spain**
- **University of Cambridge (UCAM) – UK**
- **Centre National de la Recherche Scientifique (CNRS: IMBE) – France**
- **Pensoft Publishers, Sofia – Bulgaria**
- **Senckenberg Research Institute and Natural History Museum, Frankfurt (SGN) - Germany**
- **Simbiotica S.L., Madrid – Spain**
- **FishBase Information and Research Group (FIN), Los Banos – Philippines**
- **Hellenic Centre for Marine Research, Iraklion (HCMR) – Greece**
- **The Natural History Museum, London (NHML) – UK**
- **Freie Universität Berlin (FUB: BGBM) – Germany**
- **University of Copenhagen (UCPH) – Denmark**
- **Royal Museum for Central Africa, Tervuren (MRAC) – Belgium**
- **Plazi, Bern – Switzerland**
- **GlueCAD Ltd. , Haifa – Israel**
- **Institute for European Environmental Policy (IEEP) – UK**
- **Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus – Brazil**
- **Swedish Museum of Natural History (NRM), Stockholm – Sweden**
- **Institute of Botany, Slovak Academy of Sciences (IBSAS), Bratislava - Slovak Republic**
- **European Bird Census Council (EBCC) – Spain**
- **Norwegian Biodiversity Information Centre (NBIC) – Norway**
- **Edmund Mach Foundation (FEM)– Italy**
- **TerraData environmetrics – Italy**
- **European Academy of Bolzano (EURAC) – Italy**
- **UNEP World Conservation Monitoring Centre (WCMC), Cambridge – UK**
- **University of Granada (UGR), Granada - Spain**



The GEO (EU) BON challenge: “right” products - from data to well / better informed decisions



Images: Mihai Tamsila, Wanetta Ayers, Johannes Penner



EU BON Organization



WP1: Data sources: requirements, data mobilization (incl. citizen science), gap analysis, data papers, taxonomic backbone (Fauna Europaea)
[Urmas Kõljalg, Uni Tartu & Florian Wetzel, MfN]



WP2: Data integration & **interoperability**, blueprint on information architecture (linked with other projects), harmonised metadata, training
[Hannu Saarenmaa, Uni Eastern Finland - Digitalium]



WP3: Improving **tools** and methods for data analysis & interface (e.g. RS, up- & downscaling, ENMs, data mining)
[William Kunin, Uni Leeds; Duccio Rocchini, FEM & Donat Agosti, PLAZI]



WP4: Link environment to biodiversity: **analyses** of patterns, processes & trends (also for populations), quantify uncertainties, optimise monitoring efforts
[Klaus Henle & Ingolf Kühn, UFZ]



WP5: EU BON **testing** and validation of concepts, tools, and services, link to on ground (in situ) data, network of sites
[Juan Jose Negro & Carlos Rodriguez, CSIC]

EU BON Organization



WP6: Stakeholder engagement & science-policy dialogue, policy requirements, visualisation of data, decision support tools

[Corinne Martin & Lauren Weatherdon, UNEP-WCMC]



WP7: Implementation of GEO BON: **strategies** & solutions at European (& global, e.g. CBD & IPBES) levels, policy briefs, business plan

[Wolfgang Cramer & Ilse Geijzenborffer, CNRS-IMBE]



WP8: Dissemination and outreach: communication strategies, produce materials, promote open access, facilitate publishing, ICP

[Lyubomir Penev & Pavel Stoev, Pensoft]



WP9: Consortium **management** & organization: finances, controlling, reporting, advisory board, internal meetings

[Christoph Häuser & Anke Hoffmann, MfN]

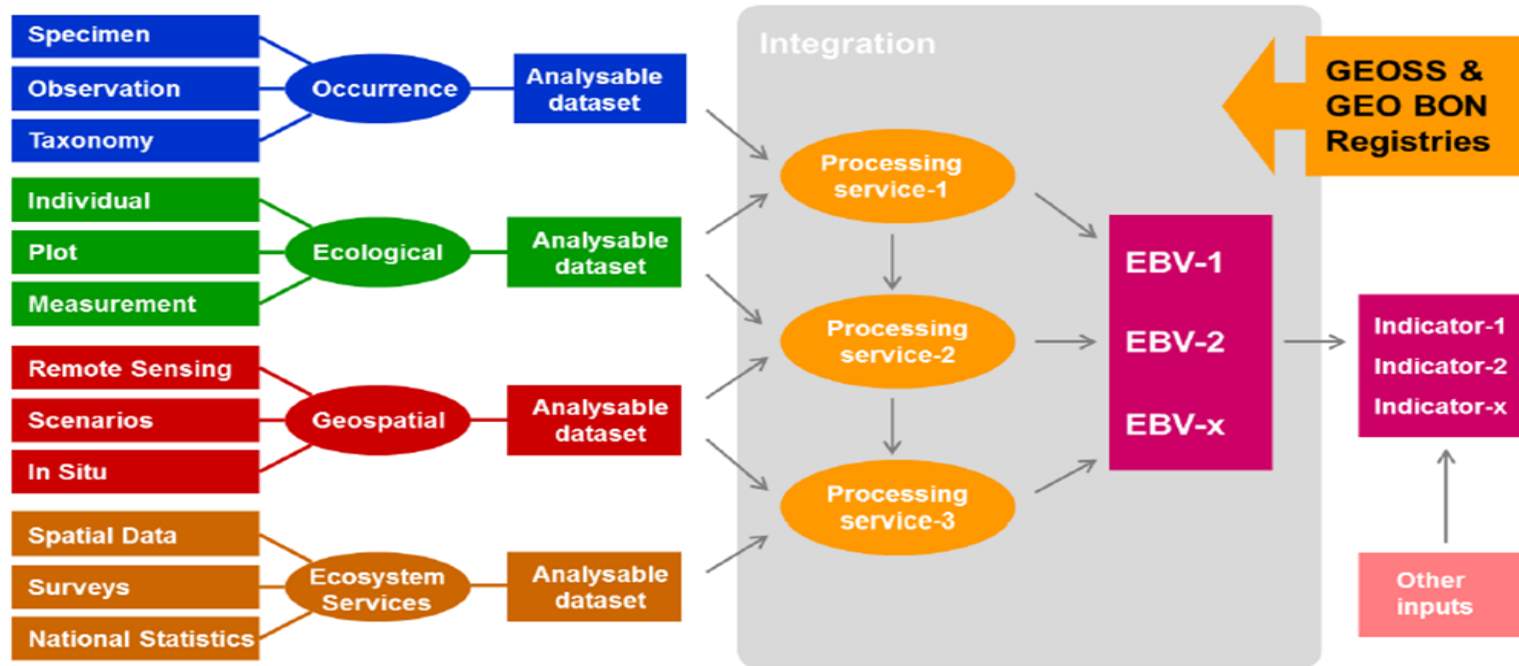


Overall goals of EU BON

- Enabling greater **interoperability of data layers & systems**
- Advancing **data integration**
- Increasing **data mobilization** (from science and society)
- Harmonizing and mainstreaming **biodiversity recording and monitoring schemes**
- Improving **analytical tools and services**
- Linking **integrated information to relevant stakeholders**
- Strengthening **European capacities and infrastructures for environmental information management**

„The new, integrative EU BON approach will facilitate (political) decisions in different sectors concerned with biodiversity for human well-being at different levels, ranging from local park management to national governments, and IPBES.“

EU BON – Implementing the GEO BON vision



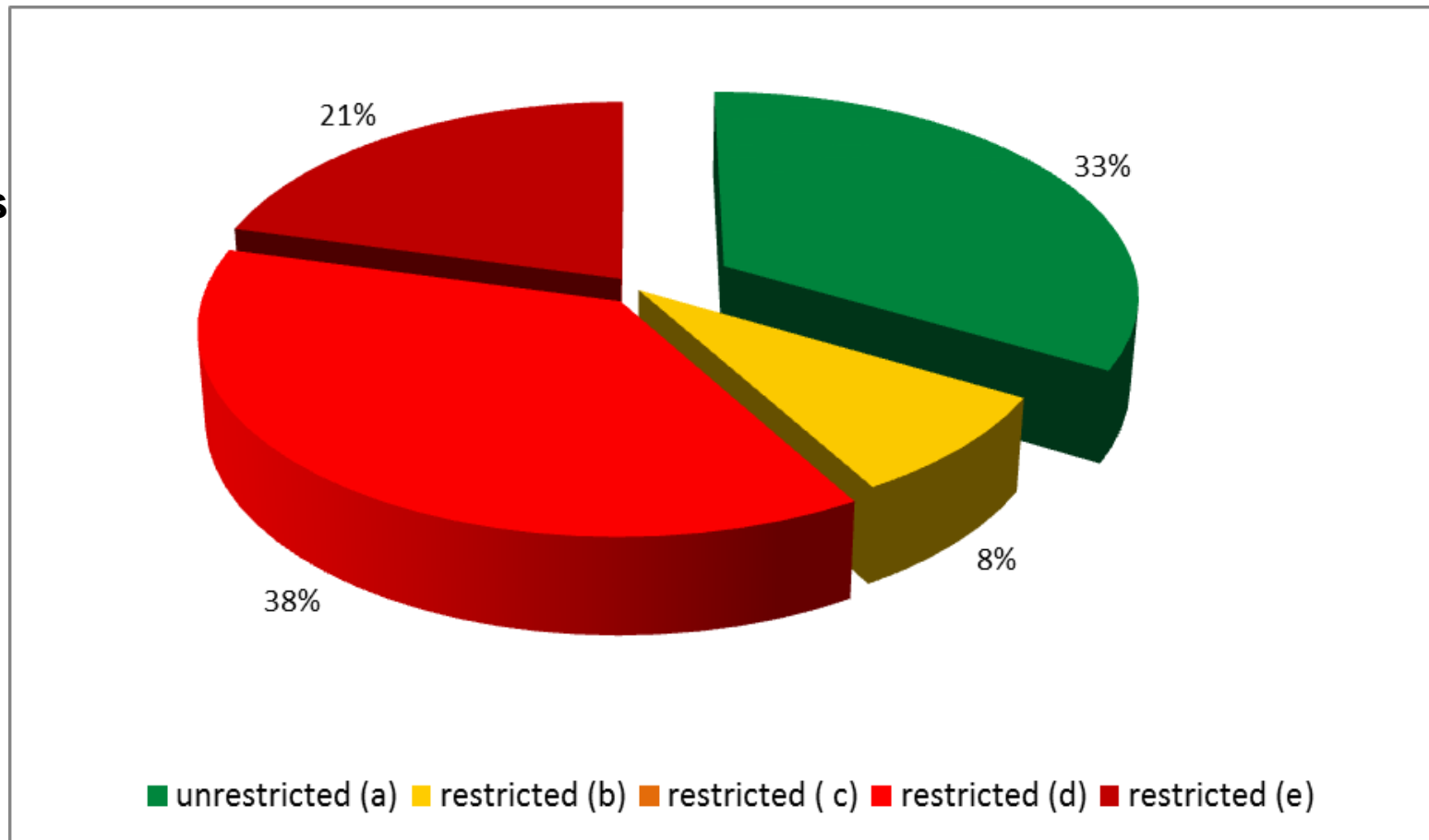
EU BON will be implementing the GEO BON vision:

- automated, streamlined data flow, from observations via EBVs, to indicators,
- using a plug-and-play service-oriented approach,
- coordinated through the GEO BON registry system,
- linked to the GEOSS Common Infrastructure, and transparent to users through portals (e.g. regarding processing of the EBVs, underlying data used)



Data availability – EU BON Gap Analysis

20 main
biodiversity
online data
provider/sources





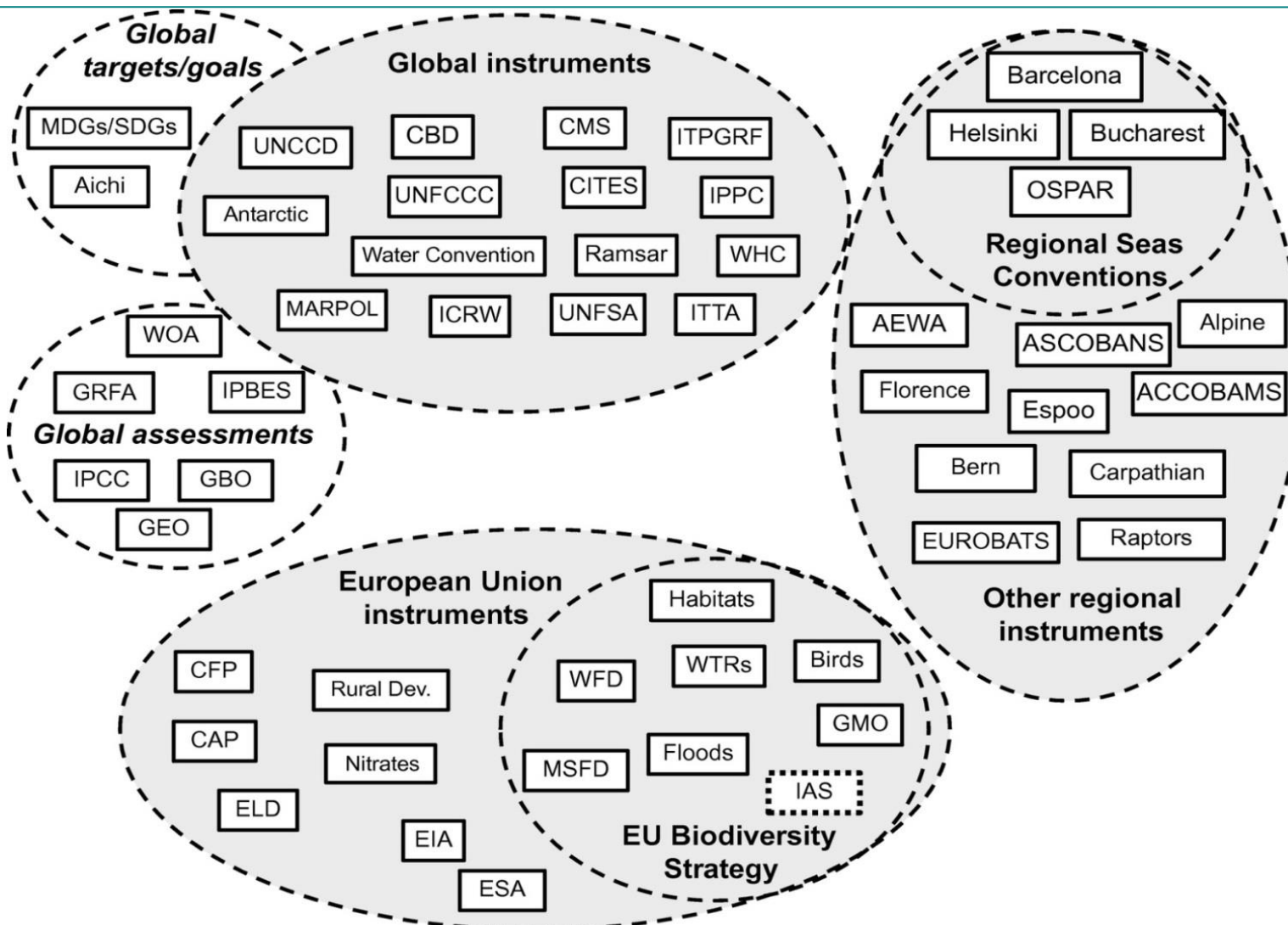
Biodiversity data urgently needed for CBD Aichi target reporting

Aichi targets Biodiversity information		Data requirements					EU biodiversity targets Biodiversity information	
		biodiv data			other data			
		GD	SD	ED	PSD	EOD		
Aichi Targets	5						agriculture, forestry, biodiversity & measures, genetic diversity	3
	6						fisheries, fish populations, marine protected areas	4
	7						agriculture, forestry, biodiversity & measures, genetic diversity, fisheries, fish populations, marine protected areas	3, 4
	9						invasive alien species and pathways	5
	10						ecosystem and services	2, 4
	11						Birds and Habitats Directive	1
	12						Birds and Habitats Directive	1
	13						agriculture, forestry, biodiversity & measures, genetic diversity	3
	14						ecosystem and services	2
	15						ecosystem and services	2
19						building on the biodiversity knowledge base	H	
							EU Targets	

Horizontal issue

Hi: Horizontal issue

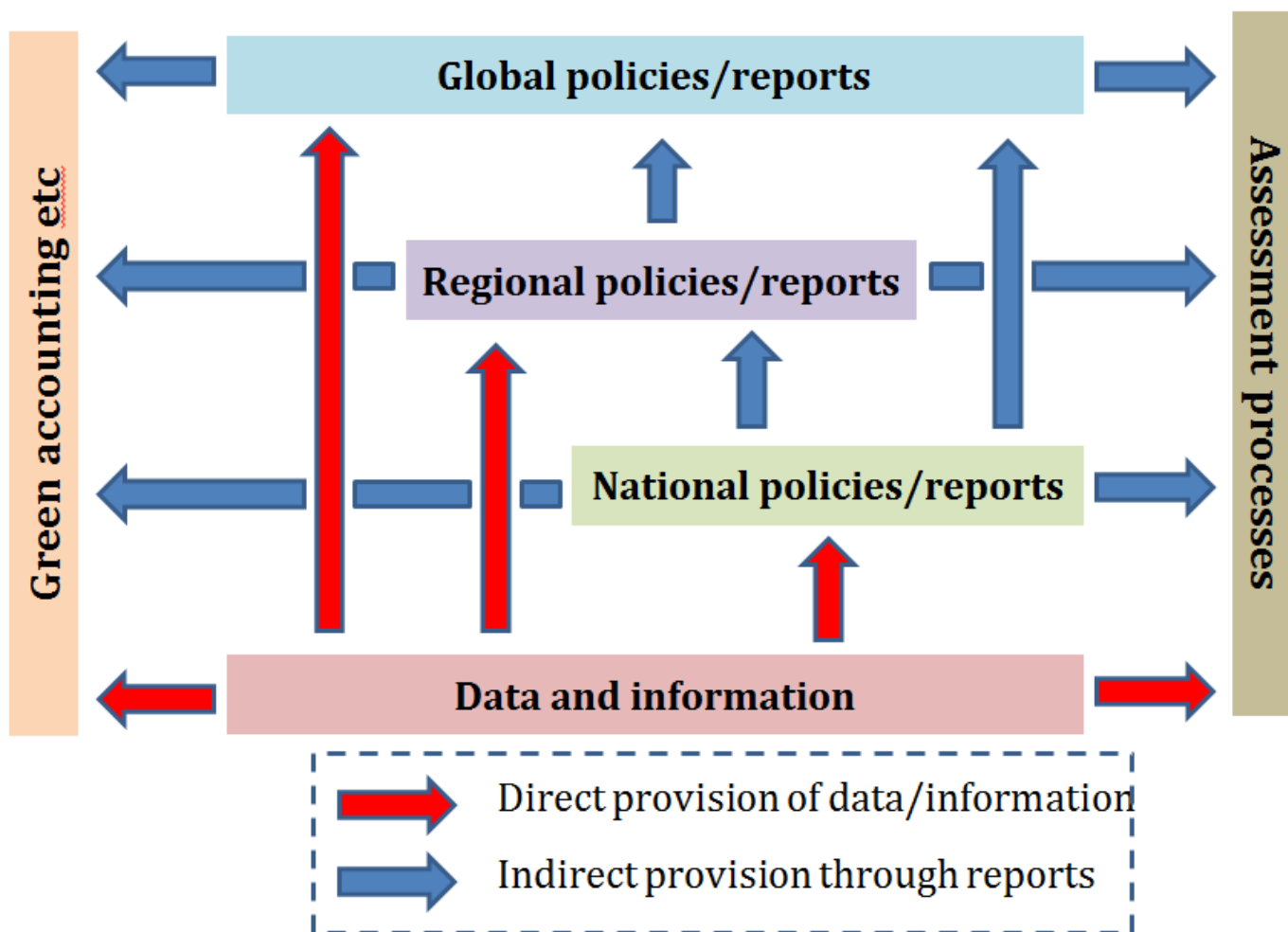
The complex biodiversity policy landscape in Europe



In:

Wetzel, F.T., H. Saarenmaa, E. Regan, C.S. Martin, P. Mergen, L. Smirnova, É. Ó Tuama, F.A. García Camacho, A. Hoffmann, K. Vohland & CL. Häuser. 2015. The roles and contributions of Biodiversity Observation Networks (BONs) in better tracking progress to 2020 biodiversity targets: a European case study. *Biodiversity*. doi: 10.1080/14888386.2015.1075902.

Addressing policy needs: Data for reporting





Some conclusions

- **Open data access** + data sharing remains a critical challenge / bottleneck – even in Europe / EU!
- More support for implementation of - global – **data standards** and, especially, dedicated(!) **information infrastructures** – for biodiversity
- Currently great opportunities for **EBVs** to significantly advance with data standardization, data sharing and standardized analysis – through specific demands from international political frameworks!



EU BON output and products

- Gap analysis for available data layers
- Strategies for targeted data mobilization
- Data standards for advancing interoperability
- Tools for improved recording/mapping of habitats, species distributions and patterns
- Improved models for impacts of different drivers on abundance & distribution
- Results & lessons learnt from EU BON test sites
- Review of policy & (other) stakeholder requirements for use of integrated biodiversity data
- European Biodiversity Portal
- Recommendations for future integrated national/regional biodiversity information infrastructures
- Blueprint for a global biodiversity monitoring scheme / infrastructure
- Contribution to IPBES (information) needs at European and national levels

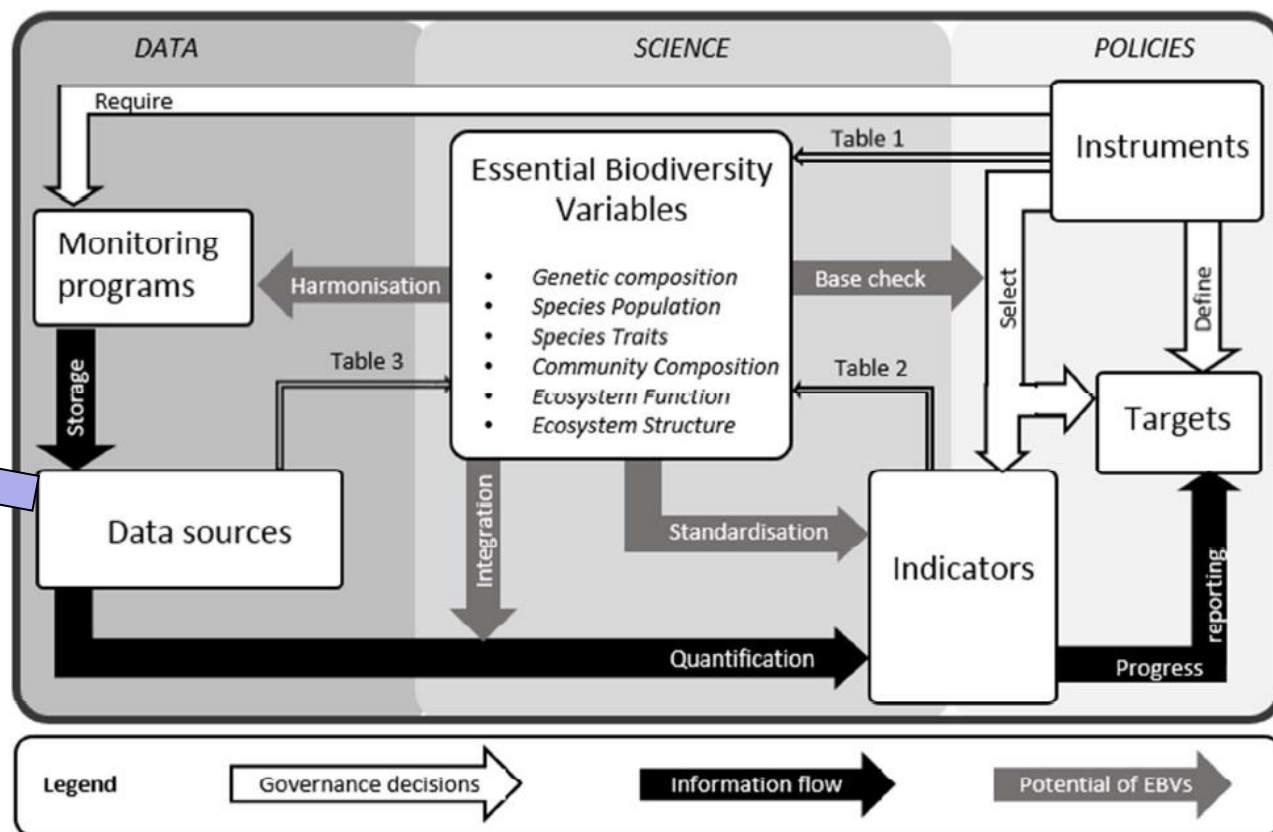


EU BON task forces addressing GEO BON needs

- **Informatics Task Force:**
advises the EU BON project on connecting with GEOSS Common Infrastructure (GCI), other cyber-infrastructures, and relevant ICT standards
- **Remote Sensing Task Force:**
service provider for all EU BON questions related to remote sensing and integration point between the local level (test sites) and the European level
- **Essential Biodiversity Variable (EBV) Task Force:**
focuses on how EU BON can contribute to the development of the EBVs

EU BON Task Forces and Policy Links

Data source	Scale	Realm	Access	GC	SP	ST	CC	EF	ES
GBIF	Global	M/T/F	U	0	1	0	0	0	0
GenBank	Global	M/T/F	U	1	0	0	0	0	0
IUCN Knowledge Products - Red list's spatial data	Global	M/T/F	U	0	1	1	0	0	1
Biofresh	Global	F	P	0	1	0	0	0	0
Pangaea	Global	M/T/F	P	0	1	0	0	1	1
Fishbase	Global	M/F	U	0	1	1	0	0	0
Trait databases (Polytraits, Try, YouTHERIA ...)	Global	M/T/F	P	0	1	1	1	0	1
Movebank	Global	M/T/F	P	0	1	1	0	1	0
Landsat	Global	M/T/F	U	0	0	0	1	1	1
ENVISAT	Global	M/F/T	U	0	0	0	1	1	1
LTER	Regional*	M/T/F	P	1	1	0	1	1	1
ICES (Datras)	North East Atlantic	M	U	0	1	1	1	1	0
Delivering Alien Invasive Species Inventories for Europe (DAISIE)	Europe	M/T/F	P	0	1	1	0	0	0
Pan-European Species directories Infrastructure (PESI)	Europe	M/T/F	P	0	1	0	1	0	0
European Red deer genetic monitoring program	Europe	T	P	1	1	0	0	0	0





The biodiversity – challenges:

- ongoing **biodiversity loss** – continued / increased extinction rates / habitat loss
- missing **baseline data** – lack of basic knowledge
- **fragmentation** of available information – problems accessing existing data
- targeted and effective **information delivery**
 - limited impact of scientific data (& publications) on policy and individual behaviour

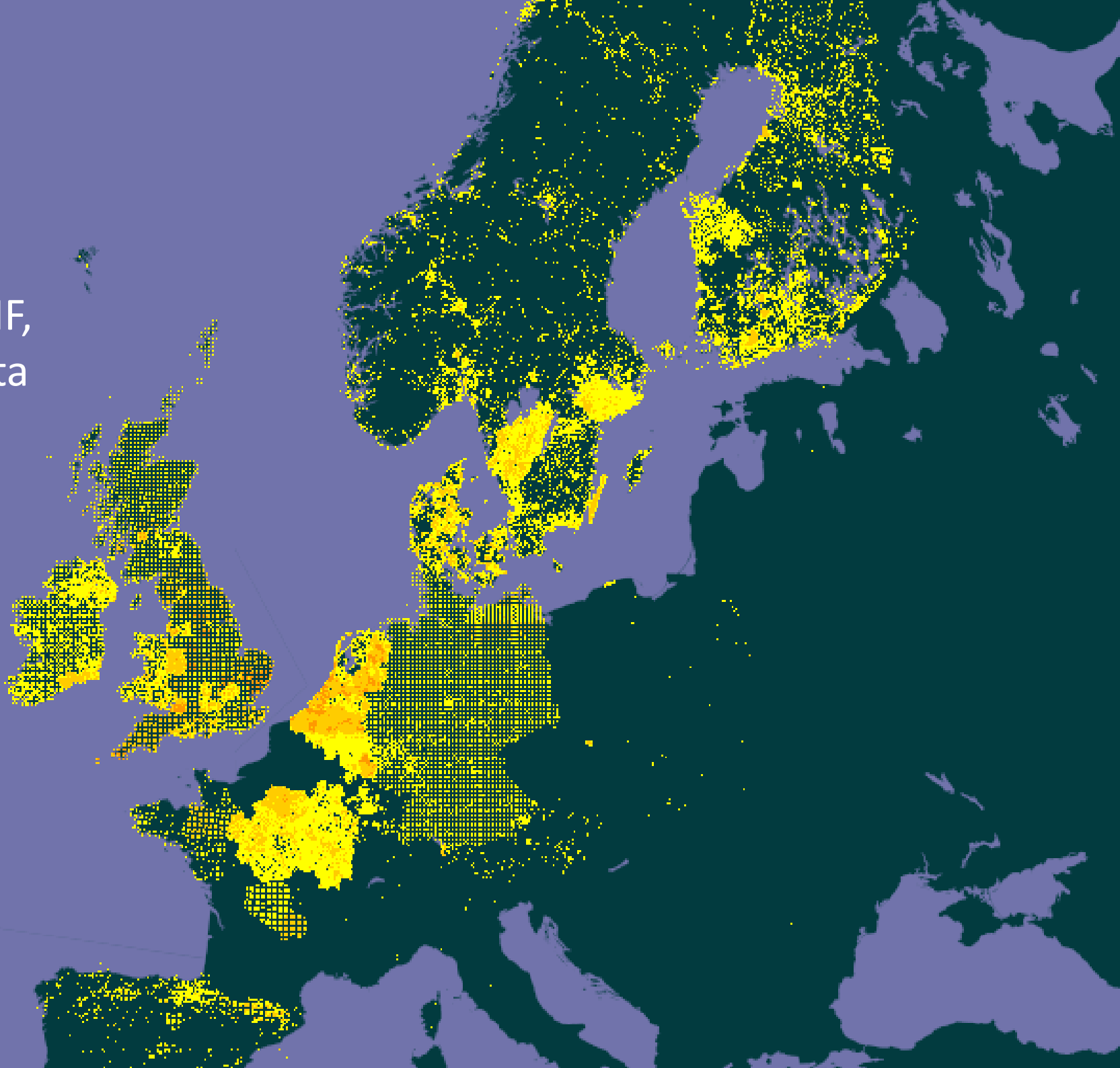


Fragmented
data from GBIF,
visualising data
gaps,
+ needs for
common data
recording
standards



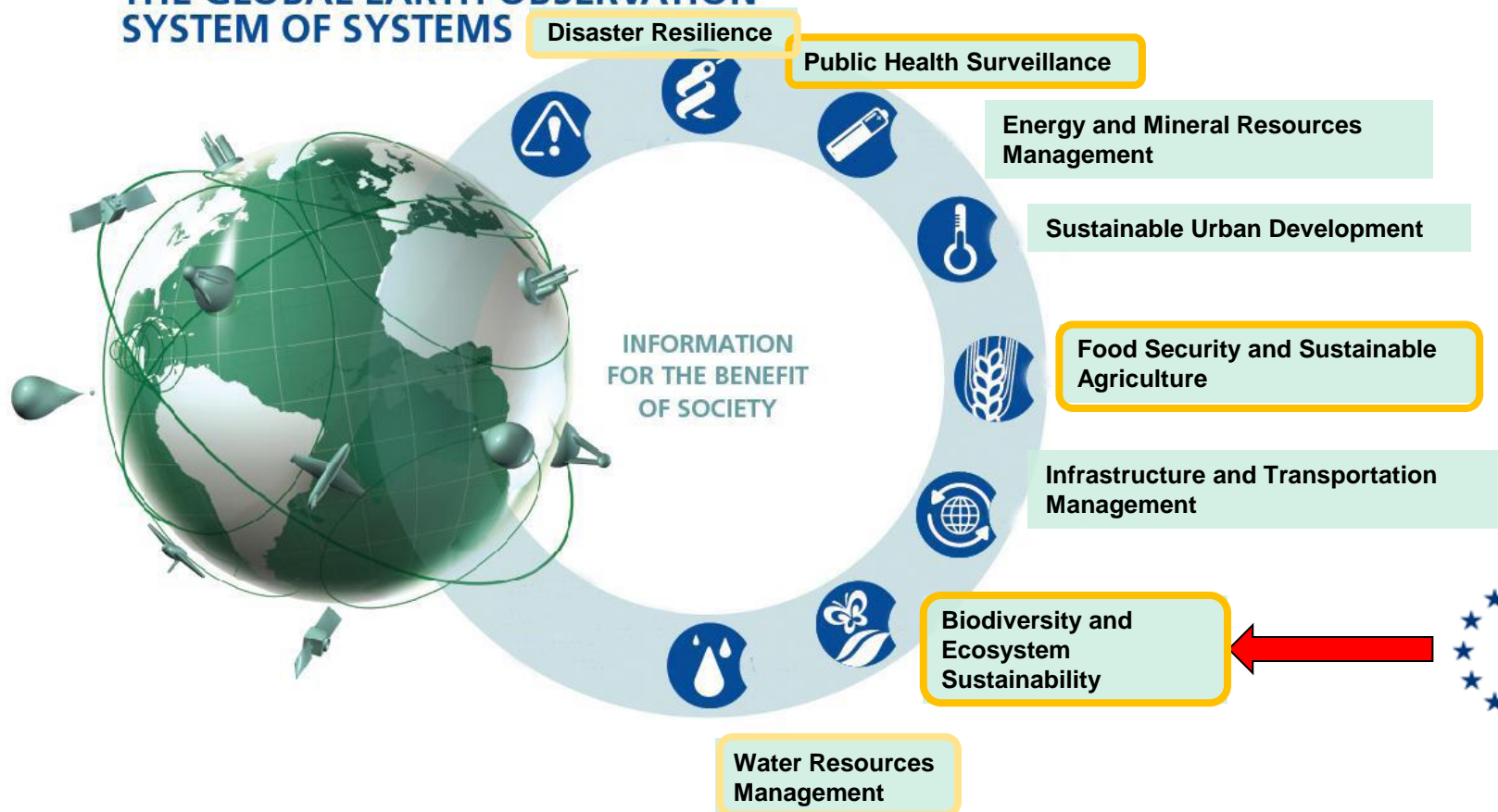
Picture © Ondřej Zicha, via EoL

Achillea millefolium



EU BON – GEOSS Societal Benefit Areas (SBAs)

THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS





EU BON contributions to GEO BON implementation plan:



WG1 [Genetics]:

WG2 [Terrestrial species monitoring]:

WG3 [Terrestrial ecosystem change]:

WG4 [Freshwater ecosystem change]:

WG5 [Marine ecosystem change]:

WG6 [Ecosystem services]:

WG7 [In-situ / remote-sensing integration]:

WG8 [Data integration and interoperability]:



EU BON WPs 1, 3, 4 & 5

EU BON WPs 1, 4, 5 & 7

EU BON WPs 1, 3, 4 & 5

EU BON WPs 1 & 5

EU BON WPs 1, 3 & 5

EU BON WPs 4, 5, 7

EU BON WPs 1, 2, 5 & 7

EU BON WP2 + WPs 1, 5, 8

