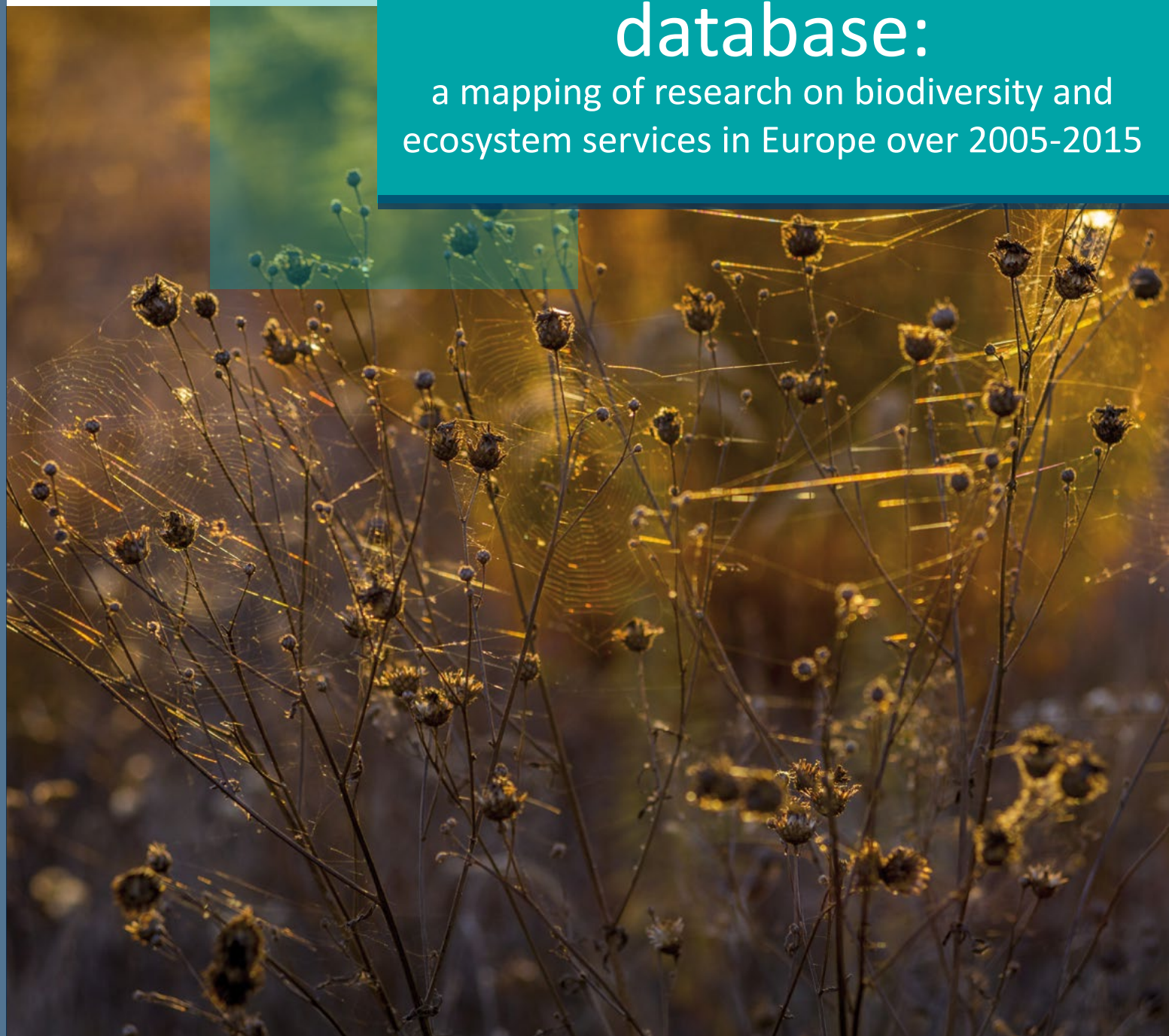


The BiodivERsA database:

a mapping of research on biodiversity and
ecosystem services in Europe over 2005-2015



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3. Belgian Science Policy Office (BelSPO), Belgium
4. The Fund for Scientific Research (F.R.S.-FNRS), Wallonia-Brussels Federation, Belgium
5. Research Foundation - Flanders (FWO), Belgium
6. Bulgarian National Science Fund (BNSF), Bulgaria
7. Ministry of Environment and Food (MFVM), Denmark
8. Innovation Fund of Denmark (IFD), Denmark
9. The Ministry of Environment (MZP), Czech Republic
10. Estonian Research Council (ETAg), Estonia
11. Academy of Finland (AKA), Finland
12. French National Research Agency (ANR), France
13. Ministry of Ecology, Sustainable Development and Energy (MEDDE), France
14. Ministry of Higher Education, Research and Innovation (MESRI), France
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28. Portuguese national funding agency for science, research and technology (FCT), Portugal
29. Regional Fund for Science and Technology (FRCT), Azores, Portugal
30. Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania
31. Slovak Academy of Sciences (SAS), Slovakia
32. Ministry of Economy, Industry, and Competitiveness – State Agency for Research (MEIC-AEI), Spain
33. Regional Government of the Canary Islands (GOBCAN), Spain
34. Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas), Sweden
35. Swedish Environmental Protection Agency (SEPA), Sweden
36. Swiss National Science Foundation (SNSF), Switzerland
37. The Netherlands Organisation for Scientific Research (NWO), The Netherlands
38. Ministry of Agriculture and Forestry/General Directorate of Agricultural Research and Policies (TAGEM), Turkey
39. Joint Nature Conservation Committee (JNCC), United Kingdom



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ABBREVIATIONS OF FUNDING SOURCES FOR BIODIVERSITY RESEARCH

ACIISI

Regional Government of the Canary Islands (SP)

ADECAL

Economic Development Agency of New Caledonia (FR)

AKA

Academy of Finland

ANR

French National Research Agency

BelSPO

Belgian Science Policy Office

BMBF

German Federal Ministry of Education and Research

BNSF

Bulgarian National Science Fund

DEFRA

UK Department for Environment Food & Rural Affairs

DFG

German Research Foundation

EC

European Commission

ETAg

Estonian Research Council

EWI

Department of Economy, Science and Innovation of Flemish public administration

FCT

Portuguese national funding agency for science, research and technology

FM

Ministry of Agriculture of Hungary

Formas

Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning

FRB

French Foundation for Research on Biodiversity

FRCT

Regional Fund for Science and Technology of the Azores (PT)

FWF

Austrian Science Fund

FWO

Research Foundation Flanders

GUA-REG

Guadeloupe Region (FR)

GUY-REG

French Guiana Region

JNCC

Joint Nature Conservation Committee (UK)

MEDDE

French Ministry of Ecology, Sustainable Development and Energy

MFAL

Ministry of Food, Agriculture and Livestock of Turkey

MINECO

Spanish Ministry of Economy, Industry, and Competitiveness – State Agency for Research (now MEIC-AIE)

NCN

National Science Centre of Poland

NERC

UK Natural Environment Research Council

NKTH

National Office for Research and Technology (HU)

NWO

The Netherlands Organisation for Scientific Research

OTKA

Hungarian Scientific Research Fund

PT-DLR

German aeronautics and space research centre

RCL

Research Council of Lithuania

RCN

Research Council of Norway

REU-REG

Reunion Region (FR)

SAS

Slovak Academy of Sciences

SEPA

Swedish Environmental Protection Agency

SNSF

Swiss National Science Foundation

TÜBİTAK

Turkish Scientific and Technological Research Council

UEFISCDI

Executive Agency for Higher Education, Research, Development and Innovation Funding of Romania

VARAM

Ministry of Environmental Protection and Regional Development of Latvia

1. INTRODUCTION





1. INTRODUCTION

Biodiversity is commonly referred to as the variety of life forms, including: the diversity within species, the diversity of species, and the diversity of ecosystems and habitats (see [Box #1](#)).

BOX #1

DEFINITION OF THE TERM 'BIODIVERSITY'

According to the widely accepted definition from the Convention on Biological Diversity (1992), biological diversity or biodiversity means *“the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems”*¹.

The diversity of life is threatened by environmental and anthropogenic factors (habitat destruction and alteration, pollution, overexploitation of natural resources, climate change, invasive species etc.) and the extinction rate of species has dramatically increased in the past decades². There is thus a pressing need to better understand the drivers of biodiversity dynamics and of changes in ecosystem services, and how the conservation and sustainable management and use of biodiversity may help us to tackle many current and forthcoming environmental and social problems. As many biodiversity issues cross borders, this requires reinforcing transnational research through adequate research programmes.

It is in this context that BiodivERsA, a partnership of 36 national and local ministries and agencies that program and fund research on biodiversity, ecosystem services and Nature-based

solutions, has conducted its activities since 2005. The BiodivERsA partners promote and support pan-European research from multidisciplinary teams through annual calls for projects. To ensure the relevance and the impact of its activities, the consortium also strives to identify shared priorities among its members and to define a common [strategic research and innovation agenda](#)³, to provide a comprehensive map of the biodiversity research landscape in Europe, and to promote stakeholder engagement throughout the whole research process along with knowledge brokerage and transfer. An overview of BiodivERsA activities and achievements over 2008-2018 has been published in 2018⁴.

The [online BiodivERsA database](#)⁵ is part of the mapping activities of the BiodivERsA partnership. Its objective is to gather updated information on funding programmes, projects, organisations, and experts that are central to the biodiversity research area. It is not only useful as a repository or search engine for scientists and policymakers, but it also allows several types of analyses of the current state of the European biodiversity research landscape to be conducted (i.e. funding patterns, evolution of topics addressed, detection of emerging issues and knowledge gaps etc.). The BiodivERsA database is also a valuable tool for stakeholders to identify scientific expertise in a given domain, or for scientists to search for collaborations.

The main goals of the present brochure are to:

- » Give an overview of the methodology used to collect data, and present the content of the database;

1. CBD (1992). *Convention on Biological Diversity*. Secretariat of the Convention on Biological Diversity, Montreal, Canada. <https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>

2. Ceballos G., Ehrlich P.R., Dirzo R. (2017). *Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines*. PNAS 114 (30), E6089-E6096.

3. Le Roux X., Eggermont H., Lange H. & BiodivERsA partners (2016). *The BiodivERsA strategic research and innovation agenda (2017-2020) - Biodiversity: a natural heritage to conserve, and a fundamental asset for ecosystem services and Nature-based Solutions tackling pressing societal challenges*. BiodivERsA, 86 pp. <https://www.biodiversa.org/1226>

4. Blery C., Lemaître F. & Le Roux X. (2018). BiodivERsA main achievements for research on biodiversity, ecosystem services and Nature-based Solutions over 2008-2018. BiodivERsA report, 52pp. <https://www.biodiversa.org/1557>

5. Available at: <http://www.biodiversa.org/database>

- » Analyse the level of funding for biodiversity research, which encompasses a multitude of funding schemes, the temporal funding trends over the 2005-2015 period, and the level of funding by the national/local agencies versus by the Framework Programmes at the European scale;
- » Test the existence of any coherent temporal trends (over 2005-2015) in the type of research funded in this domain when aggregating information from many national funding agencies across Europe; and analyse the changes in the type of biodiversity research funded, identifying the main research topics that are decreasingly and increasingly supported since 2005-2015 period;
- » Compare the type of biodiversity research funded between different national agencies that program and fund research in European countries.



A full-page background image showing a field of blue cornflowers and golden wheat. The cornflowers are scattered throughout the field, with some in sharp focus in the foreground and others blurred in the background. The wheat stalks are tall and golden, creating a textured background. The overall scene is bright and sunny, with a clear sky visible in the upper portion of the image.

2. METHODOLOGY



DATA COLLECTION

A first version of the online database, designed according to a simplified version of the [CERIF 2008](#) standard, was developed by BiodivERsA during the 2005-2010 period. It was followed by a first update of the data in 2013, which resulted in the publication of two brochures^{6,7}. The second update of the database was performed in 2016-2017, leading to the updated analyses presented here.

Since 2013, the number of partners in BiodivERsA has increased from 21 to 36 ministries and agencies and the number of countries covered from 15 to 23. Furthermore, in 2015, several overseas partners (from the previous NetBiome network⁸) joined BiodivERsA. Thus, the database contains not only updated data, but also data from new partners. Note that two UK agencies (Defra - Department for Environment Food & Rural Affairs, and NERC

- Natural Environment Research Council) are no longer part of the consortium. However, NERC kindly accepted to update its data for inclusion in the BiodivERsA database.

The main sources of information were the agencies and ministries themselves. We asked them directly to update their data for the 2011-2016 period and, when required, to fill the gaps for the 2005-2011 period.

When needed, we also extracted the information directly from online datasets. The projects funded by the European Commission were retrieved from CORDIS⁹. The NetBiome data were provided to us and served as basis to reference the projects for the overseas regions. We also supplied all the information related to the BiodivERsA-funded projects.

DATA QUALITY ASSESSMENT

To ensure that the database contains biodiversity collaborative research projects in the strict sense, we have performed a first screening to remove projects that are not collaborative research projects (e.g. implementation projects for nature conservation and restoration, projects mainly supporting research infrastructures, trainings, supports to conferences, etc.).

Next, the database was screened digitally on projects' titles and abstracts using a set of English keywords (Appendix I) to verify it only retained projects dealing (at least partly) with biodiversity. We randomly sampled 100 to 200 projects per agency and reviewed them manually to verify the quality of the data filtering. For each agency, a maximum of 5% of non-biodiversity projects retrieved was

considered as acceptable. For most agencies, this threshold value was respected. However, for some agencies, the fraction of non-biodiversity projects was higher than 5%, likely because a rougher initial filter was used at agency level to retrieve the original data or because English was not the language commonly used for the project titles and abstracts. For the agencies for which the fraction of non-biodiversity projects was too high (in particular for NERC or NWO), a manual check was performed based on all project titles (and when needed abstracts) to only retain projects dealing with biodiversity. For agencies for which the fraction of non-English information was high (for example, the French funding agencies, UEFISCDI (Romania) and DFG (Germany)), a manual screening of all the projects initially retrieved was

6. Eggermont H., Le Roux X., Heughebaert A., Balian E. & BiodivERsA partners (2013). *The BiodivERsA database: analysis of the competitive funding landscape for research on biodiversity and ecosystem services in Europe*. BiodivERsA report, 33 pp. <http://www.biodiversa.org/database/documents/download?name=booklet>

7. Gambette P., Eggermont H. & Le Roux X. (2014). *Temporal and geographical trends in the type of biodiversity research funded on a competitive basis in European countries*. BiodivERsA report. 33 pp. www.biodiversa.org/700/download

8. NetBiome was a EU-funded ERA-Net (2007-2011) and CSA project (2013-2013) of regional overseas agencies that financed and/or managed biodiversity research activities in OCTs-ORs regions. www.netbiome.org

9. CORDIS is the European Commission's portal on EU-funded research projects. www.cordis.europa.eu

also performed to retain only the projects specifically dealing with biodiversity.

Finally, we asked all BiodivERsA partners to check the graphs and data concerning them, and took into account their comments.

METHODOLOGY FOR ANALYSING COMPETITIVE FUNDING OF BIODIVERSITY RESEARCH

The analysis of the temporal trends in competitive funding amounts for biodiversity research in Europe was restricted to data from 18 agencies/ministries¹⁰ (from 15 countries) whose data were complete enough to run such type of analysis. For the same reason, we also restricted the analyses to the 2005-2015 period.

To assess the estimated annual allocation of funding per agency to biodiversity research, we used two non-exclusive methods, depending on the type of information available: 1/ funding amounts for biodiversity-specific programmes per year provided by the agencies, and 2/ sum of the budgets allocated to individual biodiversity projects per year. The latter is often needed since most projects are not funded through biodiversity-specific programmes. For this report, the reference year of funding is the start year of the project¹¹.

It has to be noted that agencies do not always include the same items to calculate the projects budgets. For example, the French agencies and MFAL do not include permanent personnel costs, which means that the total amounts are underestimated compared to other agencies. However, based on declaration of total costs per applicants, it has been estimated by these agencies that the total funding amount for the projects including permanent salaries are ca. twofold higher than the actual funding amount registered, and this conversion factor has been used when comparing the data for

these agencies to funding amounts by other organisations (this is then indicated).

We analysed:

- i. the temporal trends in the total funding amounts devoted to biodiversity research through competitive programmes, distinguishing the different funders, including the European Commission, and when relevant distinguishing the European sub-regions the funders belong to;
- ii. the temporal variations in the percentage of the total EU framework programme budget allocated to biodiversity;
- iii. the correlations between the annual funding amount allocated to biodiversity research projects and the total annual funding allocation to research for agencies for which the information was available; and
- iv. the correlation between the allocation to biodiversity research projects and the mean gross domestic product, GDP, averaged for each country over the 2005-2015 period or for each year across all countries.

The data for the OCTs-ORs¹² have been treated separately, as they pertain to biodiversity research projects conducted (at least partly) within the OCTs-ORs, whether funded by overseas agencies or national, mainland agencies.

10. FWF, BelSPO, FWO, BNSF, ETAg, FRB, ANR, MEDDE, NWO, RCN, NCN, FCT, UEFISCDI, MINECO, Formas, SNSF, MFAL, NERC.

11. All amounts have been converted to EUR using an average conversion rate for the period concerned.

12. For a list of the OCTs-ORs, see Appendix II.

METHODOLOGY FOR ANALYSING THE TYPE OF BIODIVERSITY RESEARCH FUNDED IN EUROPE

For this analysis, we also focused on the 2005-2015 period, as compared to 2004-2011 for the previous analyses¹³. We used the content of the project titles rather than abstracts as (i) we assumed that titles provided the essence of the projects' topics¹⁴, (ii) we observed that the formats of titles are more homogeneous than the format of abstracts among funding agencies, and (iii) this allowed to include data from countries like France and Romania for which only the titles, but not the abstracts, were translated into English. Therefore, compared with the 2014 analysis, this analysis focuses on a larger time period, on more projects (6,650 as compared to 4,159), and on a more concise textual corpus.

In order to avoid biases induced by the lack of information for some agencies in some years within the database, we restricted our analyses to 6,650 projects (their titles corresponding to a total of 89,838 words), whose distribution per year and per funding agency is given below (see Figure 15).

APPROACH TO ANALYSE TEMPORAL TRENDS AND IDENTIFY OVER- OR UNDER-REPRESENTED VOCABULARY

Each project title was linked to an identifier, the project's starting year, and the agency funding the project. The whole corpus was converted to lower-case in order to normalize the words, especially those at the beginning of the title, as well as those appearing entirely written in uppercase. Lexico 3.6¹⁵ was used to generate factor analyses of the corpus, using the starting year for each project to analyse the temporal trends of the type of biodiversity research that is funded. Lexico 3 was also used to compute the under- or over-represented vocabulary

in a sub-corpus (e.g., a year or a period) compared to the whole corpus. The software provides a specificity score indicating whether or not the over-/under-representation is statistically significant^{16,17}. This computation was applied to single words or coherent groups of words.

More precisely, our method to identify temporal trends proceeds as follows. First, after confirming that the corpus was showing a strong signal of temporal evolution of the vocabulary used in the titles (see Figure 16), we computed the specificity scores of words for the 2005-2007 sub-corpus and the 2012-2015 sub-corpus, in order to identify the over- and under-represented words in these periods.

Among these (groups of) words, we then kept only those for which the specificity score showed a statistically significant long-term upward or downward trend tested by regression. We computed the percentage of projects containing these words as well as grammatical variations of them (i.e. singular/plural, or adjective or noun form of the words) in order to visualize global semantic trends.

For the analysis of the specificities of the types of biodiversity research projects supported by different funding agencies, we disregarded the words clearly associated with one country or two countries (e.g. Norwegian, Iberic) but kept words corresponding to biogeographical regions which may cover more countries (e.g., Baltic, Alpin).

TREE CLOUD VISUALIZATIONS

We generated trees of words with the software TreeCloud¹⁸. This program displays the most frequent words of a text by arranging them according

13. Gambette P., Eggermont H. & Le Roux X., 2014. Id.

14. For instance, the term 'climate change' found in a project abstract can refer to the context of the research without being directly addressed by scientists; if the term is used in the title, then it is likely at the heart of the foreseen research.

15. Salem A., Lamaille C., Martinez W., Fleury S. (2003). *Manuel Lexico 3*. version 3.41. <http://www.tal.univ-paris3.fr/lexico/manuels.htm>

16. Lafon, P. (1981) *Sur la variabilité de la fréquence des formes dans un corpus*, Mots 1:127-165.

17. Lebart L., Salem A. & Berry L. (1998) *Exploring Textual Data*, Springer, 247TP.

18. Gambette P. & Véronis J. (2009) Visualising a Text with a Tree Cloud, *Proceedings of the International Federation of Classification Societies 2009 Conference (IFCS'09)*, *Studies in Classification, Data Analysis, and Knowledge Organization* 40:561-570.

to a co-occurrence principle: two words appear close to each other in the tree if they frequently appear together in a 10-words window (right or left) in the same project title. TreeCloud was used with the Liddell co-occurrence distance¹⁹, ignoring the words in a customized stoplist specially built for this study. The latter contains the words from the default stoplist provided by TreeCloud for the English language, plus some frequent words that carry no useful information about the research topics, like 'investigate', 'determine', 'project', etc. Starting from the co-occurrence distances between the words, the tree was built with the Neighbor-Joining algorithm²⁰ and displayed by SplitsTree 4²¹. Tree clouds were constructed for the 100 most frequent words used: for visualisation, the sizes of the words in each tree cloud logarithmically increase with their frequency. Tree clouds were also constructed

for words having the highest specificity scores: in this case, the sizes of the words in each tree cloud are proportional to their specificity scores. Branch lengths were set to unit values to improve the readability of each tree. Hence, only the topology of the tree and the word size are significant (interpretable) in the visualisation, not the distance between the words.

We compared the tree clouds obtained for the first, second, and third sub-periods of 2005-2015, i.e.:

- » 1,829 projects for 2005-2007, with a total of 25,308 words
- » 2,552 projects for 2008-2011, with a total of 34,986 words
- » 2,269 projects for 2012-2015 with a total of 29,544 words



19. Gambette P. (2010). *User manual for TreeCloud*. <http://manual.treecloud.org>

20. Saitou N. & Nei M. (1987) The neighbor-joining method: a new method for reconstructing phylogenetic trees, *Mol. Biol. Evol.* 4(4):406-425.

21. Huson D.H. & Bryant D. (2006) Application of Phylogenetic Networks in Evolutionary Studies, *Mol. Biol. Evol.* 23(2):254-267.



3. OVERVIEW OF THE CONTENT OF THE UPDATED BIODIVERSA DATABASE



INFORMATION REFERENCED IN THE DATABASE

The BiodivERsA database used for the analysis includes in total 11,337 biodiversity research projects, corresponding to 1,231 calls for research proposals within 813 different competitive funding programmes (whether open calls or biodiversity-specific calls) from 67 funding organisations. The database also references 3,002 research

organisations and 12,724 persons (project leaders, researchers, data providers). The overall data set spans the 1996-2017 time period, but is most complete for the 2005-2015 period. [Table 1](#) presents the current content of the BiodivERsA database (June 2018).

Table 1. Content of the BiodivERsA database in June 2018. Information is presented per agency, and the total numbers are provided at the bottom of the table.

COUNTRY / REGION	MAIN FUNDING AGENCY	FUNDING PROGRAMMES	PROJECTS	ORGANISATIONS	PERSONS	TIME PERIOD	COMMENT ON THE UPDATE
Europe	BiodivERsA	6	73	204	182	2009-2016	Data updated
Europe	EC - European Commission	5	877	216	0	2000-2016	Data updated
OCTs-ORs	ADECAL - New Caledonian Economic Development Agency; GUA-REG - Guadeloupe Region Research & Innovation office; GUY-REG - French Guyana Region; REU-REG - Reunion Region; ACIISI - Regional Government of the Canary Islands; FRCT - Regional Fund for Science and Technology of the Azores	56	211	279	126	2000-2016	New data
Austria	FWF - Austrian Science Fund	69	186	113	135	2000-2016	Data updated
Belgium	BelSPO - Belgian Science Policy Office	36	189	49	326	2000-2015	Data updated
	FWO - Research Foundation Flanders	14	106	13	50	2004-2015	New data
Bulgaria	BNSF - National Science Fund Bulgaria	20	86	42	86	2008-2016	Data updated
Estonia	ETAg - Estonian Research Council	20	234	42	477	2004-2016	Data updated
Finland	AKA - Academy of Finland	8	11	7	18	2012-2017	New data
France	ANR - French National Research Agency	26	425	355	59	2005-2017	Data updated
	FRB - Foundation for Research on Biodiversity	7	103	175	151	2007-2015	Data updated
	MEDDE - Ministry of Ecology, Sustainable Development and Energy	5	117	135	125	2000-2014	Data updated
Germany	BMBF - Federal Ministry of Education & Research	4	116	38	0	2001-2009	Not updated
	DFG - German Research Foundation	23	1,546	1	297	1996-2016	Data updated
Hungary	FM - Ministry of Agriculture	14	175	90	498	2002-2011	Not updated
	NKTH - National Office for Research and Technology						
	OTKA - Hungarian Scientific Research Fund						
Latvia	VARAM - Ministry of Environmental Protection & Regional Development	5	17	15	11	2009-2014	New data

Lithuania	RCL - Research Council of Lithuania	3	52	12	14	2010-2015	Data updated
Netherlands	NWO - Netherlands Organisation for Scientific Research	14	378	101	286	1999-2016	Data updated
Norway	RCN - Research Council of Norway	13	318	79	232	2000-2015	Data updated
Poland	NCN - National Science Centre	34	89	36	85	2011-2017	New data
Portugal	FCT - National Funding Agency for science, research & technology	9	252	55	208	2002-2016	Data updated
Romania	UEFISCDI - Executive Agency for Higher Education, Research, Development & Innovation Funding	16	227	155	3,058	2011-2014	Data updated
Spain	MINECO - Ministry of Economy & Competitiveness (now MEIC-AIE)	83	1,874	83	3,401	2004-2017	Data updated
Sweden	Formas - Swedish Research Council for Environment, Agricultural Sciences & Spatial Planning	25	655	277	606	2000-2016	Data updated
Switzerland	SNSF - Swiss National Science Foundation	1	339	21	215	2005-2016	New data
Turkey	MFAL - Ministry of Food, Agriculture and Livestock	4	179	65	0	2005-2016	Data updated
	TÜBİTAK - Scientific and Technological Research Council of Turkey						Not updated
United Kingdom	NERC - Natural Environment Research Council	178	2,111	161	2,074	2000-2016	Data updated
	Defra - Department for Environment, Food & Rural Affairs	15	662	183	4	2006-2011	Not updated
TOTAL		813	11,337	3,002	12,724		

NB: BiodivERsA projects are also included in the counting per agency, but they are only counted once in the overall total.

The data were provided by 30 national or regional ministries and agencies²² which are from 20 European countries: Austria, Belgium, Bulgaria, Estonia, Finland, France, Germany, Hungary, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. The database also includes European projects funded through the BiodivERsA calls and the European Commission, as well as projects from the OCT-ORs (the Azores, the

Canary Islands, French Guiana, Guadeloupe, New Caledonia, Réunion Island, etc.).

Data from JNCC and SEPA were not included because these organisations often do not fund research through competitive programmes. The data from the agencies that recently joined BiodivERsA (SAS, EPA, FNRS, MoEP) and that cover additional countries (Slovakia, Ireland and Israel) will be added in a later phase.

22. Some agencies are no longer member of BiodivERsA (NERC, Defra), some have never been in the consortium (TÜBİTAK).

Compared to the previous version of the database (Table 2), the number of funding programmes, research projects, and persons has increased substantially.

Table 2. Comparison of the overall content of the BiodivERsA database between 2013 and 2018.

	2013	2018	Increase
Funding programmes	216	813	276%
Annual calls	605	1,231	103%
Research organisations	2,860	2,935	3%
Research projects	6,546	11,337	73%
Persons	5,871	12,724	117%

The number of projects referenced grew substantially for most agencies, on average by 73% (Table 3). The current dataset is also much more complete with regard to projects funded by the European Commission, now covering the last four Framework Programmes (FP5, FP6, FP7, H2020), as well as partly European Research Council Grants (ERC).

Table 3. Comparison of the number of projects in the database between 2013-2018, per funding source.

AGENDA	COUNTRY/REGION	2013	2018	% INCREASE
BiodivERsA	Europe	28	73	161%
European Commission	Europe	82	877	970%
OCTs-ORs	Overseas	0	211	NEW
FWF	Austria	81	186	130%
BeISPO	Belgium	119	189	59%
FWO	Belgium	0	106	NEW
ENSF	Bulgaria	54	86	59%
ETAg	Estonia	223	234	5%
AKA	Finland	0	11	NEW
FRB	France	757	103	-15%
ANR	France		425	
MEDDE	France		117	
EMEF	Germany	6	116	1,833%
DFG	Germany		1,546	NEW
FM / OTKA / NKTH	Hungary	178	175	-2%
VARAM	Latvia	0	17	NEW
RCL	Lithuania	14	52	271%
NWO	Netherlands	206	378	83%
RCN	Norway	232	318	37%
NCN	Poland	0	89	NEW
FCT	Portugal	215	252	17%
UEFISCDI	Romania	0	227	NEW
MINECO	Spain	1,076	1,872	74%
Formas	Sweden	622	655	5%
SNSF	Switzerland	0	339	NEW
MFAL / TUBITAK	Turkey	85	179	111%
Defra	United Kingdom	622	662	6%
NERC	United Kingdom	1,610	2,111	31%
TOTAL		6,546	11,337	73%

NB: BiodivERsA projects are also included in the counting per agency, but they are only counted once in the grand total.

When considering the total number of projects per year, and considering that the database is quite complete over the 2005-2015 period, this number

increases from 2005 to 2010 (with a drop in 2008) and decreases slowly afterwards (see [Figure 1](#)).

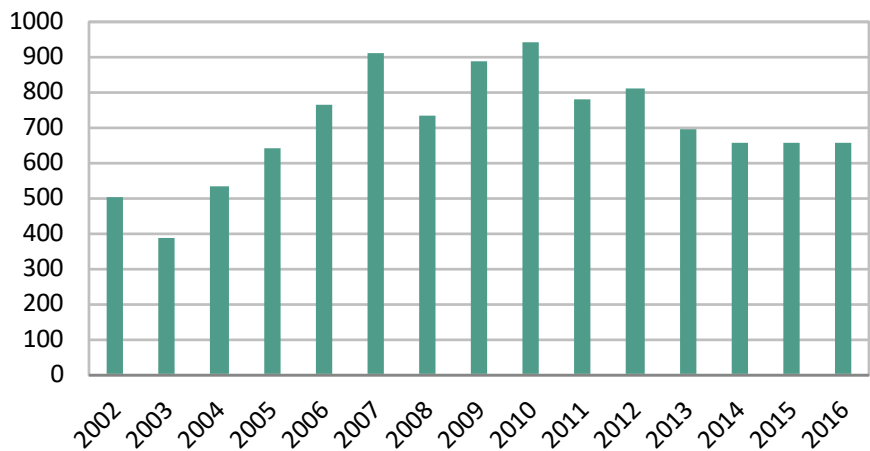


Figure 1. Temporal distribution of the number of referenced projects (funded by ministries and agencies from 20 countries and by the EC) according to their start year.

NERC, MINECO and DFG together account for 47% of the total number of projects, followed by the European Commission, Defra and Formas together representing 20% of the total ([Figure 2](#)). Although the chart gives an idea of the contribution of each agency to the database in terms of number

of projects, this presentation does not necessarily reflect the agency’s overall contribution to biodiversity research funding. Indeed, the average projects’ budgets can vary significantly amongst the agencies. This information is provided in the next section.

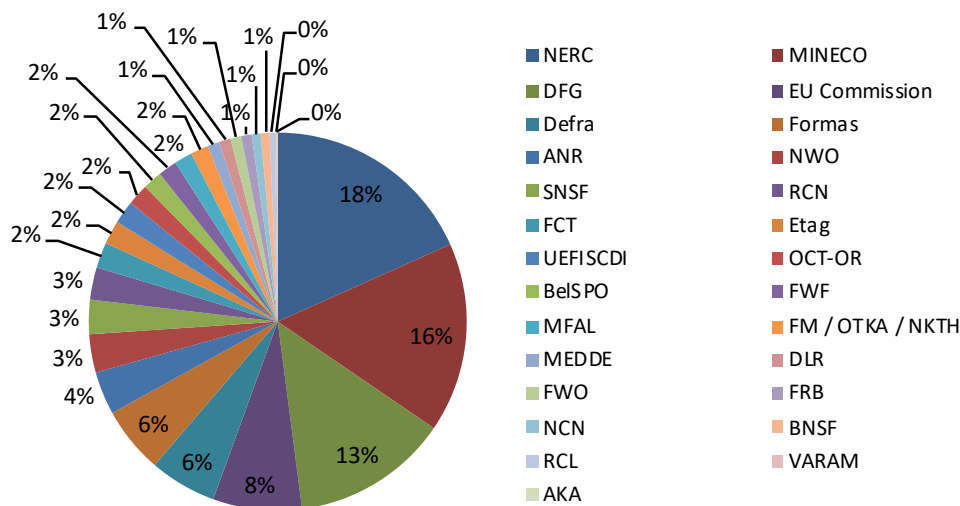


Figure 2. Distribution of the 11,337 projects listed in the BiodivERsA database per funding agency.

COMPLETENESS OF THE DATA FOR FUNDING AMOUNTS AND DATES

Agencies have also provided information on funding amounts at the level of annual calls (i.e. each encompassing several funded projects). The information on annual funding amounts is generally quite complete:

the allocated budget is known for 74% of the calls and the (start) date for 89% of them, with important discrepancies between agencies (Figure 3).

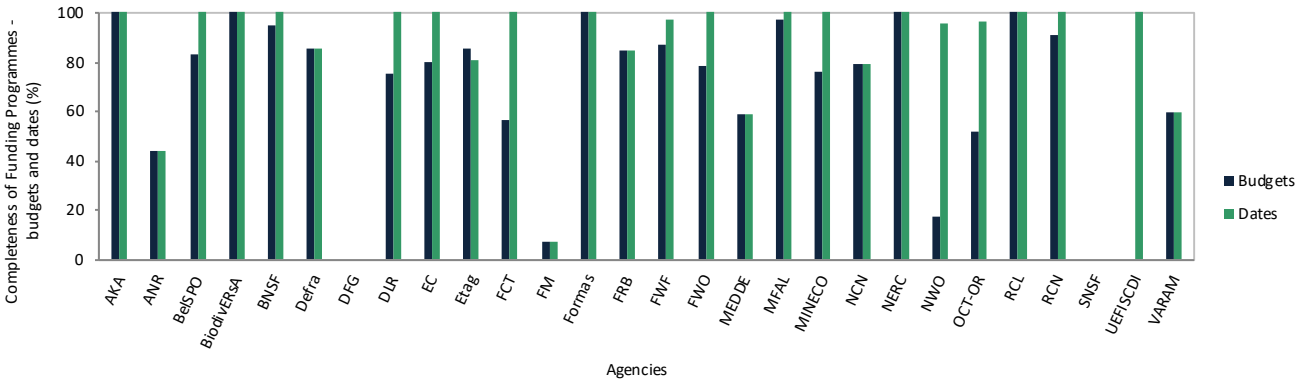


Figure 3. Percentage of funding calls that have associated budgets (dark blue) and dates (green), per funding agency.




In terms of information associated to individual projects (budget and start date of the project), the current database is also fairly complete: 72% of the individual projects referenced have associated budgets, and 97% of the individual projects have associated (start) dates.

Five sources do not have budget numbers available for more than half of the individual projects (BNSF, FRB, MEDDE, DFG, MFAL/TÜBITAK) (Table 4). However, this does not prevent assessment of annual funding amounts as budgets per annual calls are often available.

Table 4. Percentage of the total number of individual projects with financial and temporal data, per funding agency.

AGENCY	COUNTRY / REGION	% BUDGETS	% DATES
BiovERsA	Europe	100%	100%
European Commission	Europe	97%	100%
OCTs-ORs	Overseas	100%	75%
FWF	Austria	58%	100%
BelSPO	Belgium	64%	100%
FWO	Belgium	100%	100%
BNSF	Bulgaria	41%	80%
ETAg	Estonia	100%	100%
AKA	Finland	100%	100%
FRB	France	23%	100%
ANR	France	100%	92%
MEDDE	France	20%	100%
BMBF	Germany	100%	100%
DFG	Germany	0%	96%
FM /OTKA / NKTH	Hungary	86%	100%
VARAM	Latvia	100%	100%
RCL	Lithuania	100%	100%
NWO	Netherlands	83%	99%
RCN	Norway	100%	100%
NCN	Poland	100%	100%
FCT	Portugal	97%	53%
UEFISCDI	Romania	98%	19%
MINECO	Spain	98%	100%
Formas	Sweden	99%	100%
SNSF	Switzerland	99%	100%
MFAL / TUBITAK	Turkey	34%	100%
Defra	United Kingdom	100%	100%
NERC	United Kingdom	98%	98%
TOTAL		81%	96%



4. TEMPORAL AND GEOGRAPHICAL TRENDS OF COMPETITIVE FUNDING AMOUNTS FOR BIODIVERSITY RESEARCH



FUNDING AMOUNTS PER FUNDING ORGANISATION

Over the 2005-2015 period, the in-cash funding amounts to biodiversity research through competitive calls derived from the European Commission and from national and local agencies represented

29%, and 71% of the total, respectively (Figure 4). Note that the data from national/local agencies are still far from completed (funding amounts for countries like Germany are not included here).

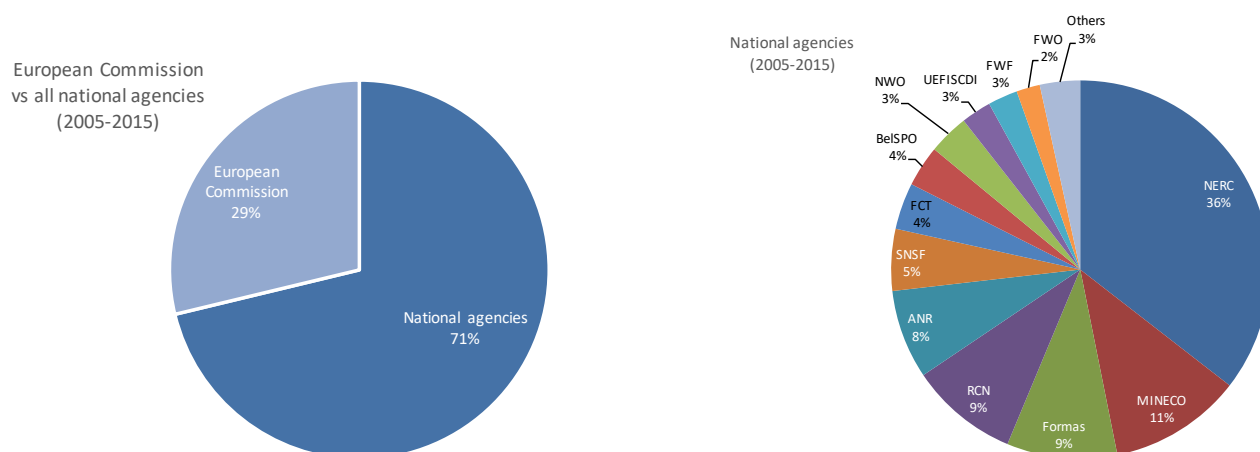


Figure 4. Relative importance of the financial in-cash contributions to biodiversity research funding through competitive calls (left) by the European Commission and the national and local agencies considered in the BiodivERsA database (i.e. from 15 countries at this stage), and (right) among national/local agencies from the different countries (agencies accounting for less than 1% are in the category “Others”). Note that ANR and MFAL values used here represent around half of the actual total projects’ costs.

Using the information currently available in the database, NERC represents over a third of the budget allocation from agencies. It is followed by the MINECO, Formas, RCN, and ANR (Figure 4). However, these figures do not take into account

the fraction of the national support provided to projects beyond direct in-cash support (e.g., when salaries for permanent positions are paid by countries through other channels), which varies between countries.

TEMPORAL TRENDS OF FUNDING AMOUNTS

When assessing the temporal funding trends per agency (see details in Appendix III), three groups were identified: GROUP 1/ agencies with budgets for biodiversity research increasing over 2005-2015, GROUP 2/ agencies with rather constant levels of funding over 2009-2015, sometimes after a period of increase in funding from 2005 to 2008, and GROUP 3/ agencies with decreasing levels of funding in particular over 2008-2015 (Figure 5).

In the first group (NWO, FWO, NERC, FWF, SNSF, MFAL), an increase in funding is observed over time. For some agencies like NWO, the trend is steady and increases quite a lot in the last years, which may be attributed to major talent grants (VICI programme) awarded these years and to a thematic

call for the Dutch Caribbean that has funded several biodiversity projects in 2015. For other agencies, the trend goes with ups and downs, like Formas (the 2009 peak being due to their Strong Research Environments programme; the 2013 peak to a strategic call on Bio-based economy; and the 2015 peak to a higher number of projects with higher budgets).

In the second group (ANR, BelSPO, ETAg, Formas, FRB, MEDDE, MINECO, NCN, RCN), annual funding amount is rather constant over 2009-2015. A peak is observed in 2007 for the French agencies, 2009 for MINECO, and 2010-11 for ETAg and RCN. For ETAg, the peak in 2010-13 is marked by the launch of a Mobilias Programme where money from structural funds was used. For the French agencies in

2007, this is the result of the simultaneous calls 'Liteau3' of the Ministry of Ecology, 'Indian Ocean'

of FRB-IFB, and ANR programmes including a biodiversity-specific call.

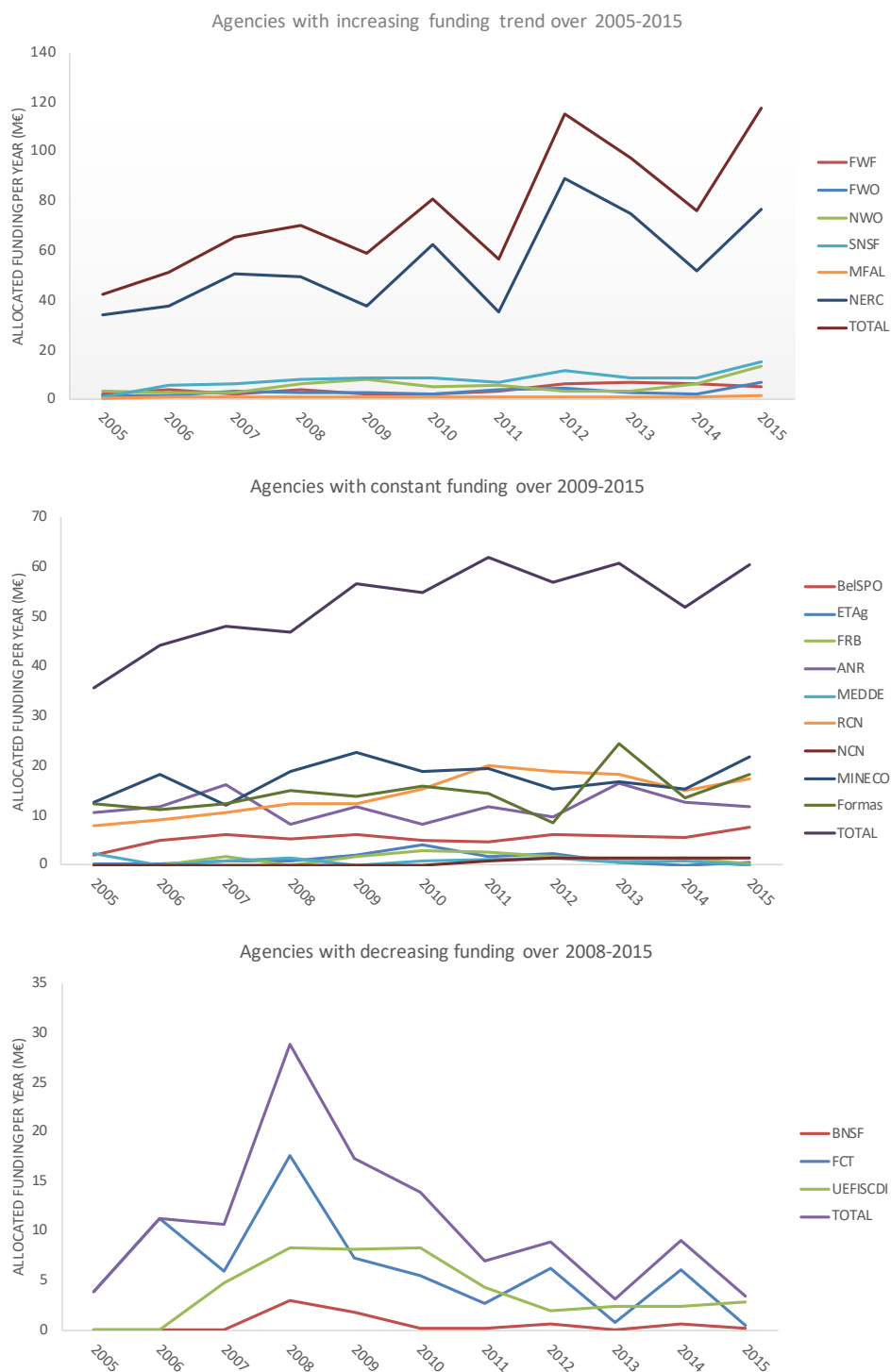


Figure 5. Temporal trends of biodiversity research funding for each of the three groups of agencies. The thin lines correspond to individual agencies belonging to a given group, and the bold line to the total funding across these agencies.

The third group (BNSF, FCT, UEFISCDI) is characterised by a decrease in funding over 2008-2015.

For biodiversity research funding by the European Commission, following a 2005-2007 period of stable

funding, an increase is observed from 2007 to 2012, followed by a decrease in funding of similar amplitude after 2012 (Figure 6).

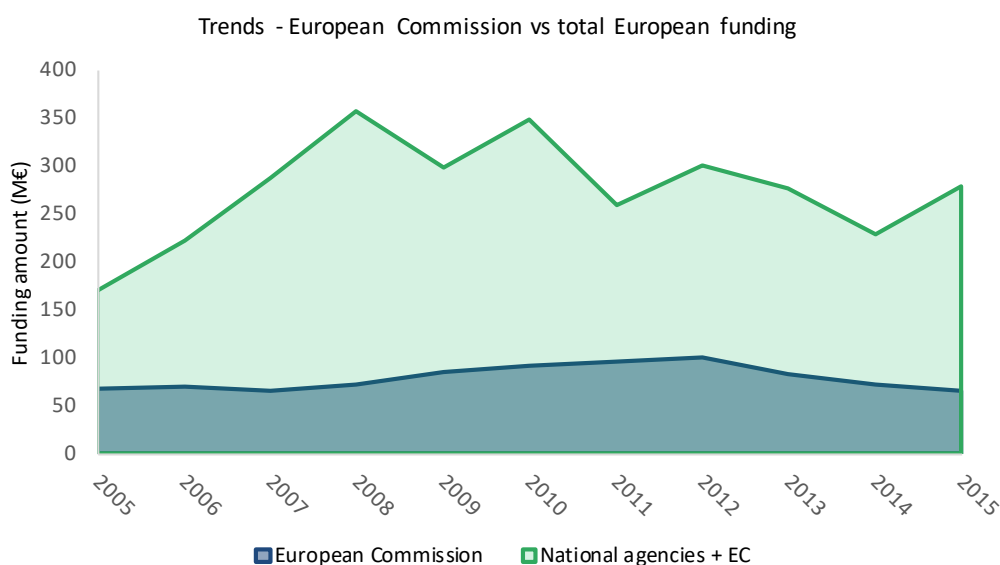


Figure 6. Temporal changes in the annual funding amount (in cash) allocated to biodiversity research by the European Commission and by the agencies from the 15 countries for which information is available in the BiodivERsA database.

This occurred despite an important increase in the EC funding to research through its framework programmes. Actually, the percentage of biodiversity funding by the EC compared to its total

expenditures to research has been steadily declining since 2007 (Figure 7). This negative trend had been early identified in a study on biodiversity funding within the “Environment” theme of FP7²³.

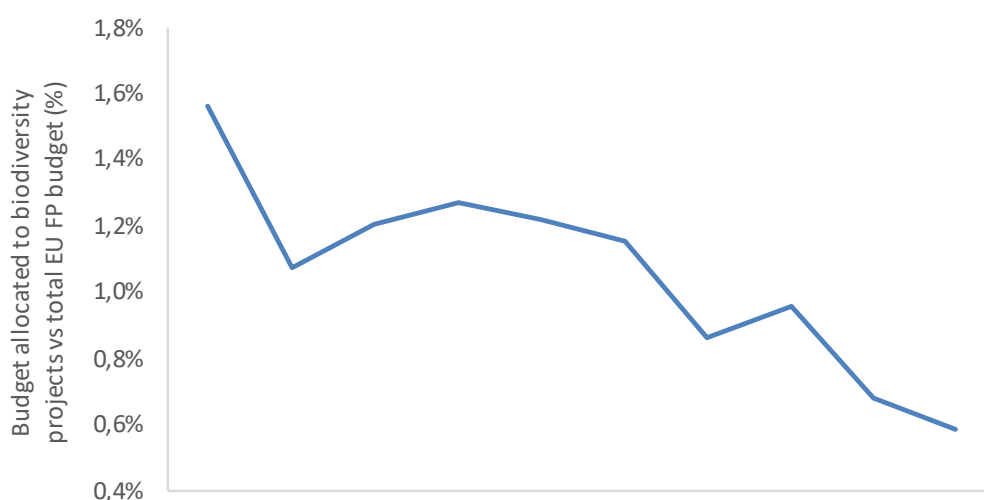


Figure 7. Temporal changes in the percentage of the total funding amount available through the European Commission’s Framework Programmes that was allocated to biodiversity research projects over the last 10 years (2007-2016).

23. Matei S., Henckel L., Gauthier C.A. & Le Roux X. (2011). Biodiversity within the “Environment” theme of the 7th Framework Programme (2007-2010): funding amounts, success rates, temporal trends and comparisons between countries. FRB report, 2011, 32 pp.

TEMPORAL TRENDS IN RESEARCH FUNDING ACCORDING TO SUB-REGIONS

To assess possible geographical differences in Europe, we roughly identified four sub-regions and combined the data of the corresponding agencies (Figure 8), i.e.:

- » **Northern / North-Western Europe** (Norway, Sweden, UK): in this sub-region, an increase in funding is observed (on average, +109% over 2005-2015);
- » **Central / Central Western Europe** (Austria, Belgium, France, Netherlands, Switzerland) is

also characterized by an increase in funding over 2005-2015;

- » **Eastern Europe** (Bulgaria, Estonia, Poland, Romania), where the funding amount was maximal over 2008-2010;
- » **Southern Europe** (Spain, Portugal, Turkey), where biodiversity research funding reached a maximum in 2006-2009, but tended to decrease since 2008/2009.

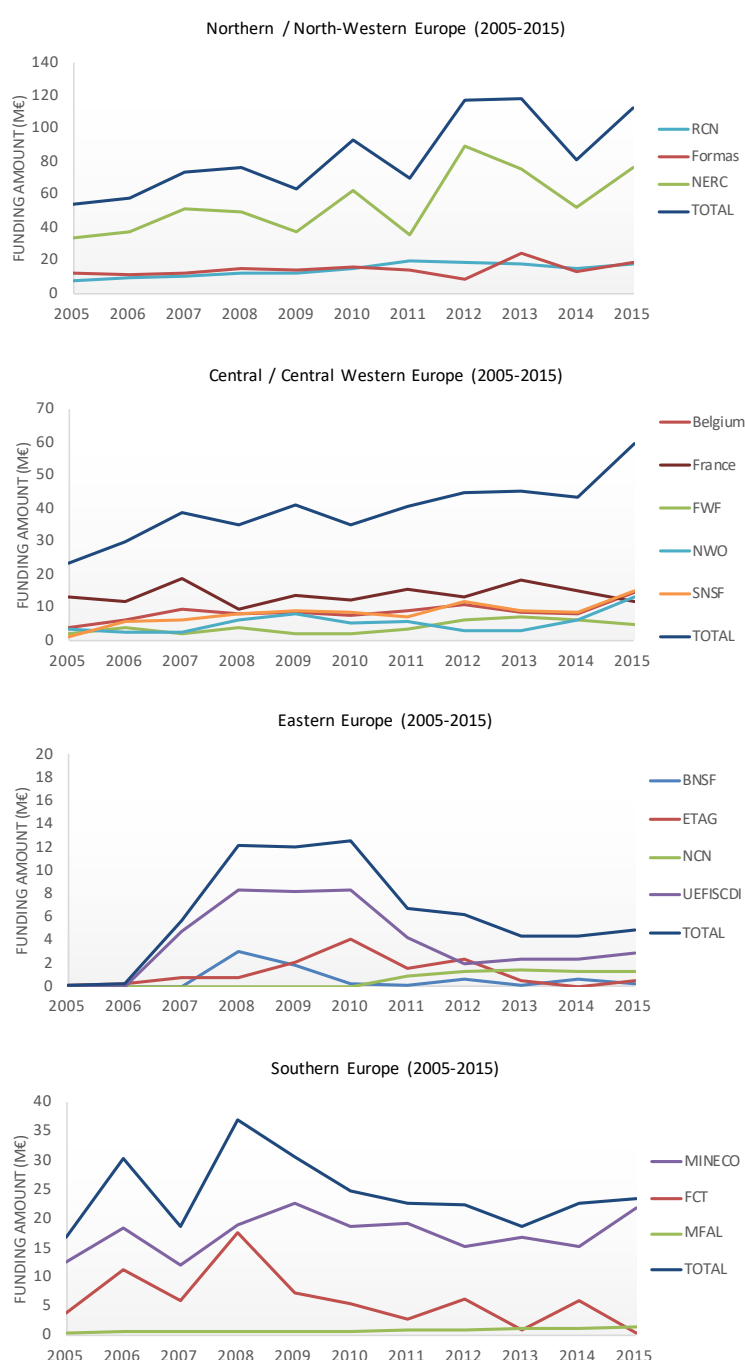


Figure 8. Temporal trends in the annual funding allocated to biodiversity research for agencies from different sub-regions of Europe.

DIFFERENCES IN FUNDING AMOUNT BETWEEN COUNTRIES IN RELATION WITH THEIR GDP

The different funding amounts allocated to biodiversity research (through competitive programmes) between countries²⁴ are largely explained by different economic capacities, assessed here through their

GDP (Figure 9). Poland and the Netherlands tended to support biodiversity research less than expected from their GDP, whereas Norway, Sweden, and the UK supported it more than expected (Figure 9).

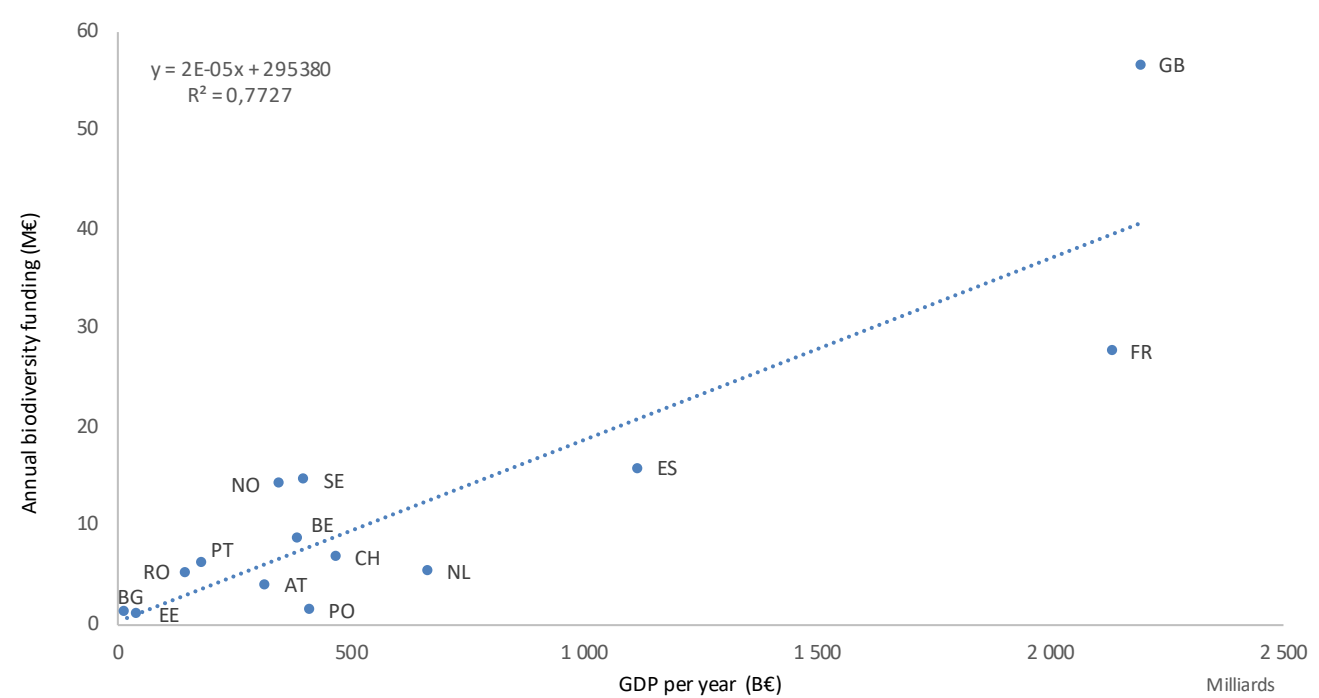


Figure 9. Correlation between the allocation to biodiversity research projects and the mean GDP averaged for each country over the 2005-2015 period. Note that Turkey was excluded from this graph as values for the main funding agency, TÜBİTAK, were not available.



24. In this section, we used a conversion factor for the French agencies (biodiversity funding x 2) to account for the fact that the permanent position salaries attached to research projects are paid by the French government through other channels.

RELATIONSHIP BETWEEN TEMPORAL CHANGES IN BIODIVERSITY RESEARCH FUNDING AND TOTAL RESEARCH FUNDING OR GDP

We assessed whether the variations of the budget allocated to biodiversity research was correlated with the fluctuations of the general budget allocated to research for some agencies. We accessed information on total funding for two agencies (NERC,

UK; and RCN, Norway). For each of these agencies, the temporal variation of the funding of biodiversity research was well correlated to the variation of the total research funding ([Figure 10](#)).

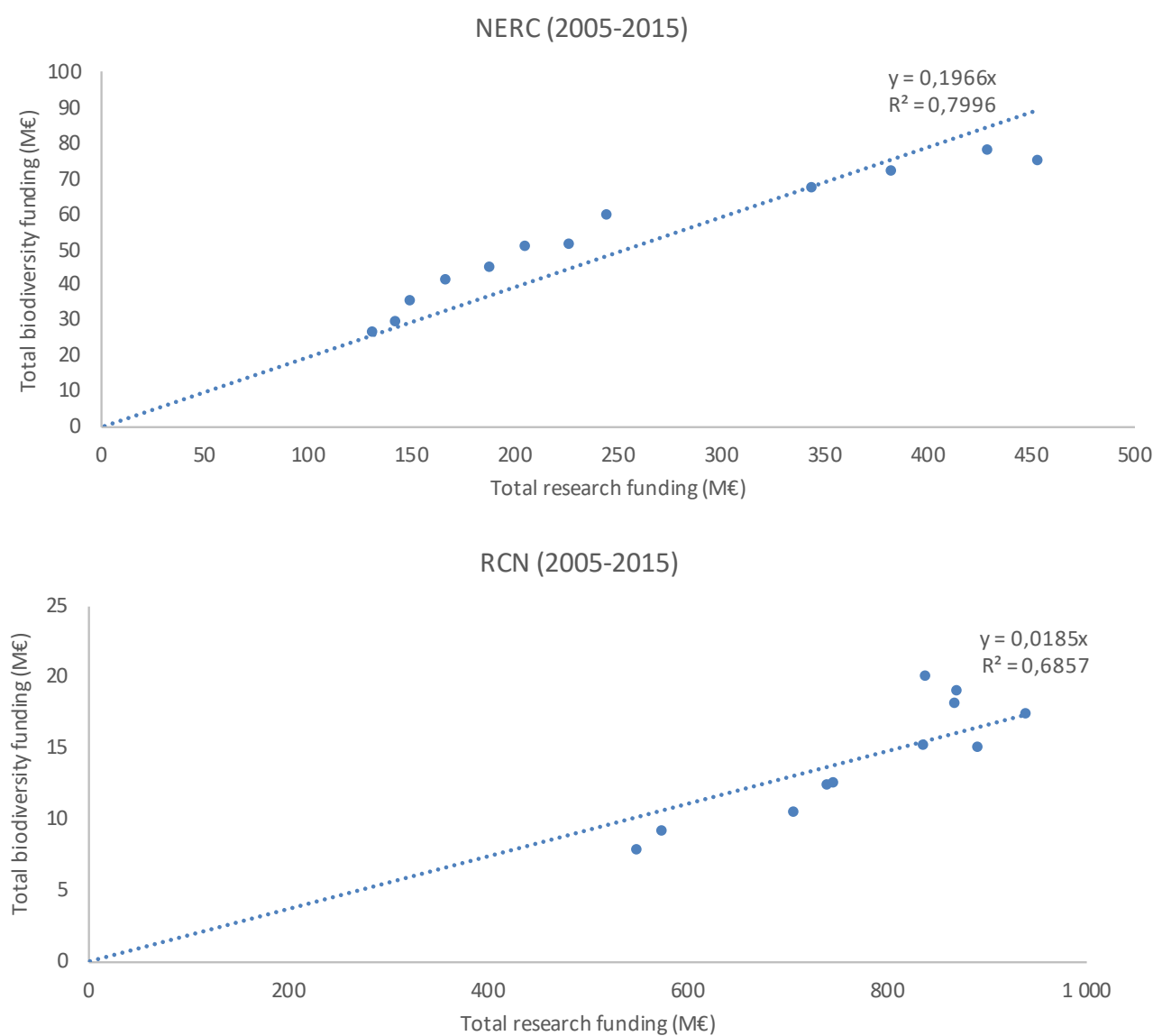


Figure 10. Correlation between the annual funding amount allocated to biodiversity research projects and the total annual funding allocation to research over the 2005-2015 period, for (top) RCN, Norway, and (bottom) NERC, UK. Each point corresponds to one year.

More generally, we tested for a possible correlation between the temporal changes in the annual amount of funding allocated to biodiversity research by funders and in their national GDP. When considering

the data aggregated for all the countries for which information is available, the temporal changes in GDP were a good predictor of the changes in biodiversity research funding ([Figure 11](#)).

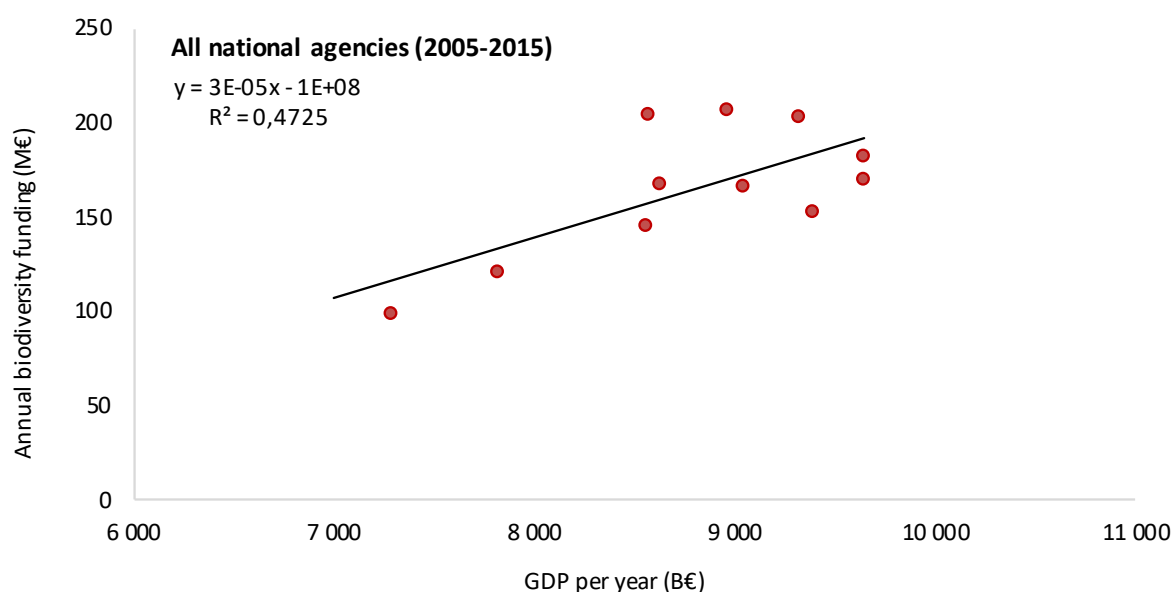


Figure 11. Correlation between the annual funding amount allocated to biodiversity research projects aggregated for all agencies and the annual GDP summed across all the corresponding countries over 2005-2015. Each point corresponds to a year.

For individual funders from some countries, significant correlations were also observed between the temporal variations in annual funding to biodiversity research and variations in the national GDP,

in particular for Norway, Switzerland, and Turkey (Appendix IV). In contrast, no correlation significant correlation was observed for the other countries (Appendix IV).

THE CASE OF BIODIVERSITY RESEARCH IN ORs AND OCTs

Among the 456 projects funded by and/or performed in the outermost regions, countries and territories, ORs-OCTs, for which we have the information, 74% of them focus on a single overseas country or territory (the most represented being the Canary Islands, the Azores, and New Caledonia), and 26% of them

focus on a larger geographical region or multiple regions or territories (mainly Macaronesia and the Caribbean) (Figure 12). The overseas regions and territories most covered by the research projects are actually part of or linked to Portugal, Spain, and France.

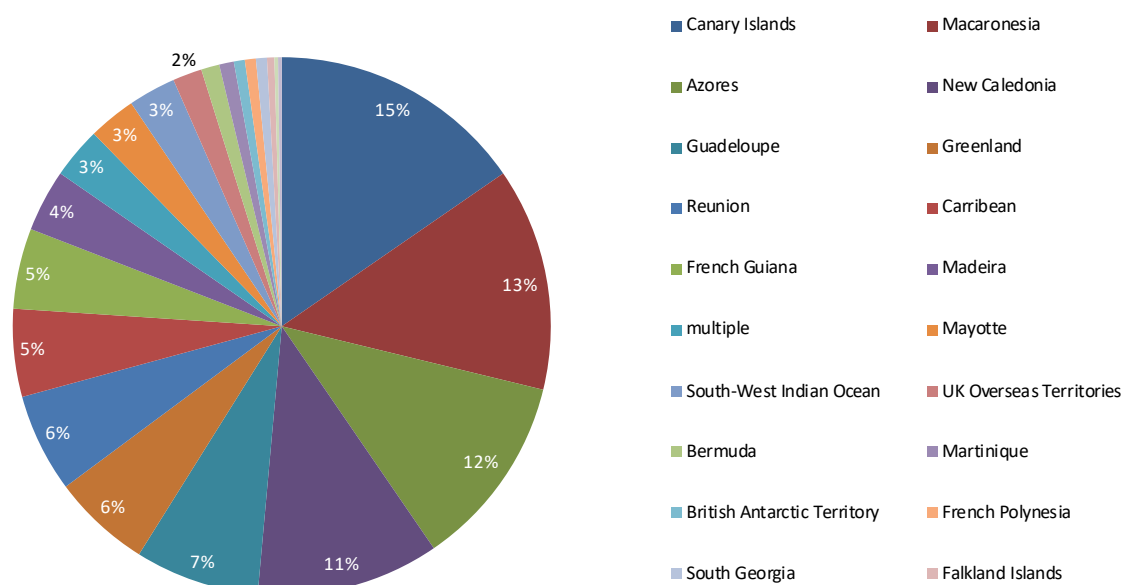


Figure 12. Geographical focus of the study in biodiversity research projects in OCTs and ORs.

Although part of the research projects on biodiversity in ORs-OCTs are funded by regional agencies from these regions and territories (14% of the total project number), most of them are actually funded by

national continental agencies (65%), and others by European funds (11%) (Figure 13). In addition, 10% of the projects are funded by programmes mixing different types of funding sources, like ERA-nets.

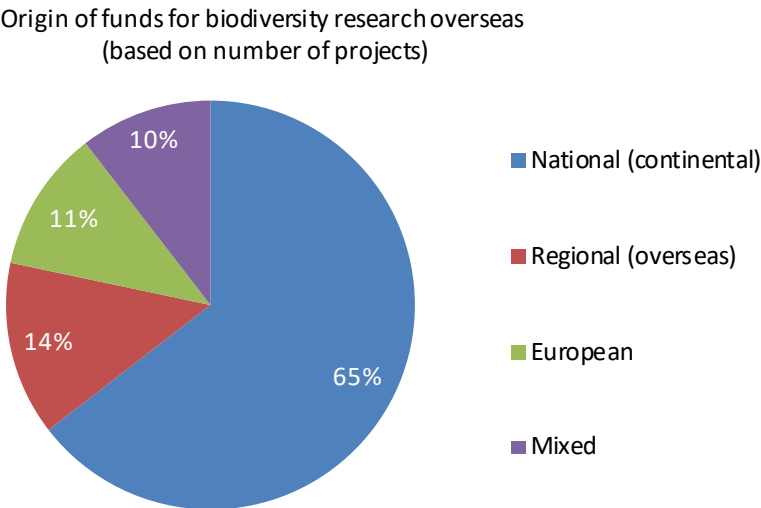


Figure 13. Percentage of the research projects focusing on biodiversity in ORs-OCTs per type of funding sources.

The temporal evolution of funding of biodiversity research in OCTs-ORs shows, similarly to the trends

of some mainland agencies, an increase up to 2012, and then a decrease (Figure 14).

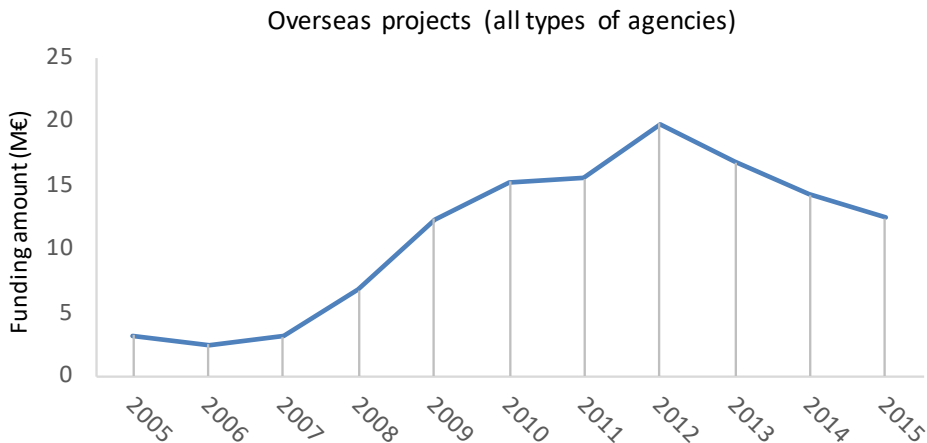



Figure 14. Temporal variation in the annual funding amount allocated to research projects on biodiversity focusing on the ORs-OCTs.



5. TEMPORAL AND GEOGRAPHICAL TRENDS IN THE TYPE OF BIODIVERSITY RESEARCH FUNDED



CORPUS USED FOR KEYWORD ANALYSIS

As explained in the methodology section, by selecting projects with titles available in English and focusing on years and agencies for which the database is complete enough (2005-2015; 15 agencies), we obtained a corpus of 6,650 projects. Their distribution per start year and funding agency is shown in Figure 15, and this set covers 78% of the projects

available in the database for this period. Note that the highest annual variations, that is the absence of MINECO projects in 2008 or the high number of UEFISCDI projects in 2007 and 2008, do not correspond to biased or missing data but reflect some specificities of the funding programs of these agencies for these years.

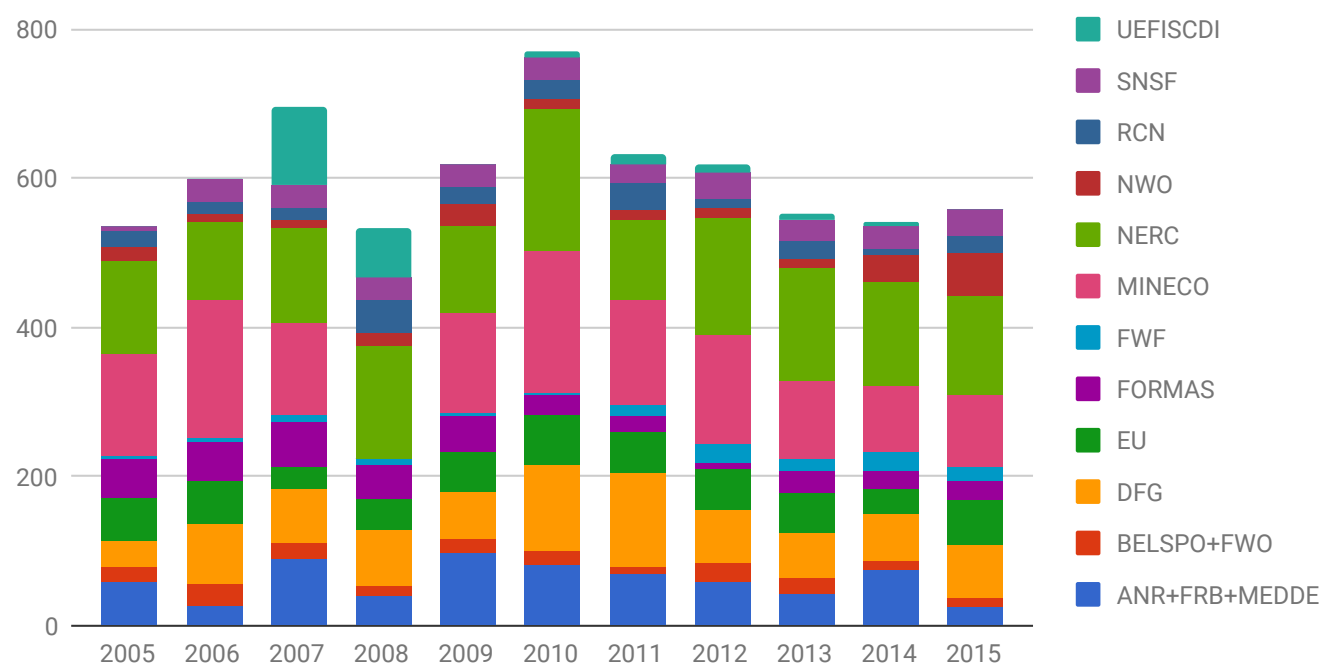


Figure 15. Distribution of the 6,650 projects considered for the semantic analysis, by start year and funding agency

The semantic analysis has thus been undertaken for projects funded by the European Commission, two Nordic countries (Sweden and Norway), UK, three Central Western Europe countries (The Netherlands,

Germany, Belgium), two Central European countries (Switzerland and Austria), two Mediterranean countries (Spain, France) and one Eastern European country (Romania).

OVERALL TEMPORAL VARIATION OF ANNUAL SUB-CORPUSES OF WORDS USED IN PROJECT TITLES

Figure 16 shows the factor analysis that compares the 11 annual sub-corpus of words used in project titles during the 2005-2015 period. A temporal trajectory can be observed, with sub-corpus of words progressively shifting from right to left along the main (horizontal) axis during the 2005-2015

period. This demonstrates an overall evolution in the vocabulary used in the project titles through time, with particularly fast changes since 2011. More specifically, one can distinguish three groups of years: {2005, 2006, 2007, 2008}, then {2008, 2009, 2010, 2011} and finally {2012, 2013, 2014, 2015}.

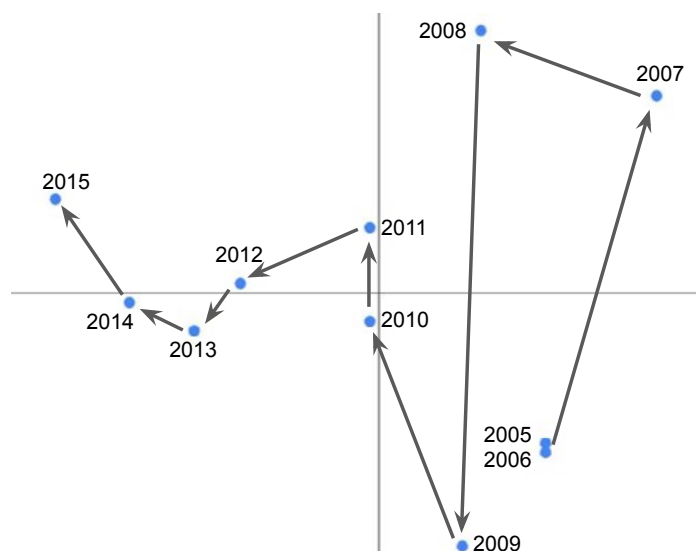


Figure 16. Factor analysis of the annual sub-corpus of words used in project titles over the 2005-2015 period. The closer two points, in particular along the first axis, the more similar the funded research for these two years.

The profile of funded research between the three periods can be investigated further using the tree clouds based on the most frequent words for each period (Figure 17).

Some clusters are present in the tree clouds with a similar content whatever the period, for example the orange ones corresponding to research studying global/climate change and its effects or consequences. Other clusters remain relatively stable with only slight changes, like the purple ones about evolutionary and ecological processes including speciation; and the red ones about plant and microbial communities and associated functions.

In contrast, the tree cloud analysis revealed important re-arrangement of clusters of words. In particular, during the first period, a cluster (in grey) gathered the words 'biodiversity', 'ecosystem' and 'functioning', but also most terms referring to ecosystem types ('forest, marine, aquatic, coastal, agricultural'). For the tree clouds of the second and

third periods, two major features were observed. First, a cluster – in black – gathered the terms 'biodiversity' and 'ecosystem' but this time with the terms 'services', 'conservation', 'sustainable', and 'management'. Second, the terms 'marine' and 'aquatic' progressively formed a well identified cluster – in blue; and the same was observed for the term 'forest' and 'tree' – brown cluster.

This noticeable trend is likely linked to the increasing importance of the notions of ecosystem services and valuation of biodiversity, and its accounting for in management, development and policy actions. This suggests that biodiversity research increasingly focuses on socio-ecosystems and on the relationships between biodiversity and ecosystem services. This is also consistent with the appearance in the 2012-2015 period of a small cluster – in dark red colour – grouping the terms 'human' together with 'adaptation', 'impacts' and 'local'.

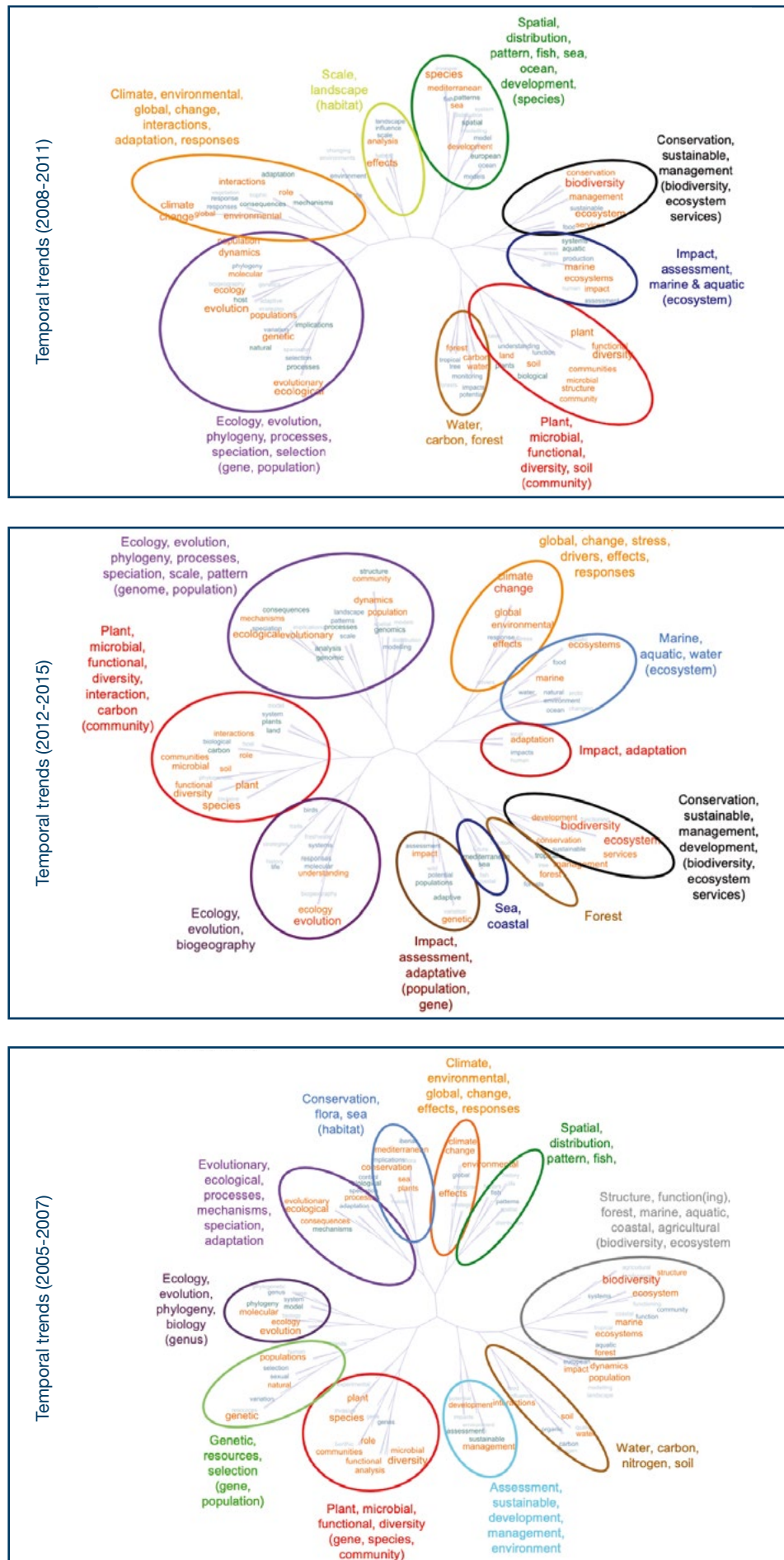


Figure 17. Tree cloud of the 100 most frequent words in project titles of all the funded projects analysed, revealing coherent clusters of words used by researchers during (top) the 2005-2007 period, (middle) the 2008-2011 period, and (bottom) the 2012-2015 period. The size of a word is logarithmically proportional to the frequency of its use.

Moreover, several clusters of words disappeared with time from the tree clouds that are based on the 100 most present words: in the 2005-2007 period, one cluster (light green) corresponded to research on genetic resources and selection; and a second cluster (in dark green) corresponded to research on spatial distribution and patterns. This clearly highlights that this type of research is less funded in biodiversity projects.

In addition, we analysed the specific words or groups of words mostly explaining the temporal trend shown in Figure 16, focusing on words which

are significantly over- or under-expressed at the beginning or at the end of the 2005-2015 period. Words were selected when the percentage of projects containing those words showed an overall increasing or decreasing trend for the whole corpus over 2005-2015. Some changes in the vocabulary used in biodiversity project titles are particularly striking: they clearly show that biodiversity projects decreasingly focused on conservation and on population and gene levels, whereas they increasingly address the topic ‘ecosystem services’ and the ecosystem and genome level (Figure 18).

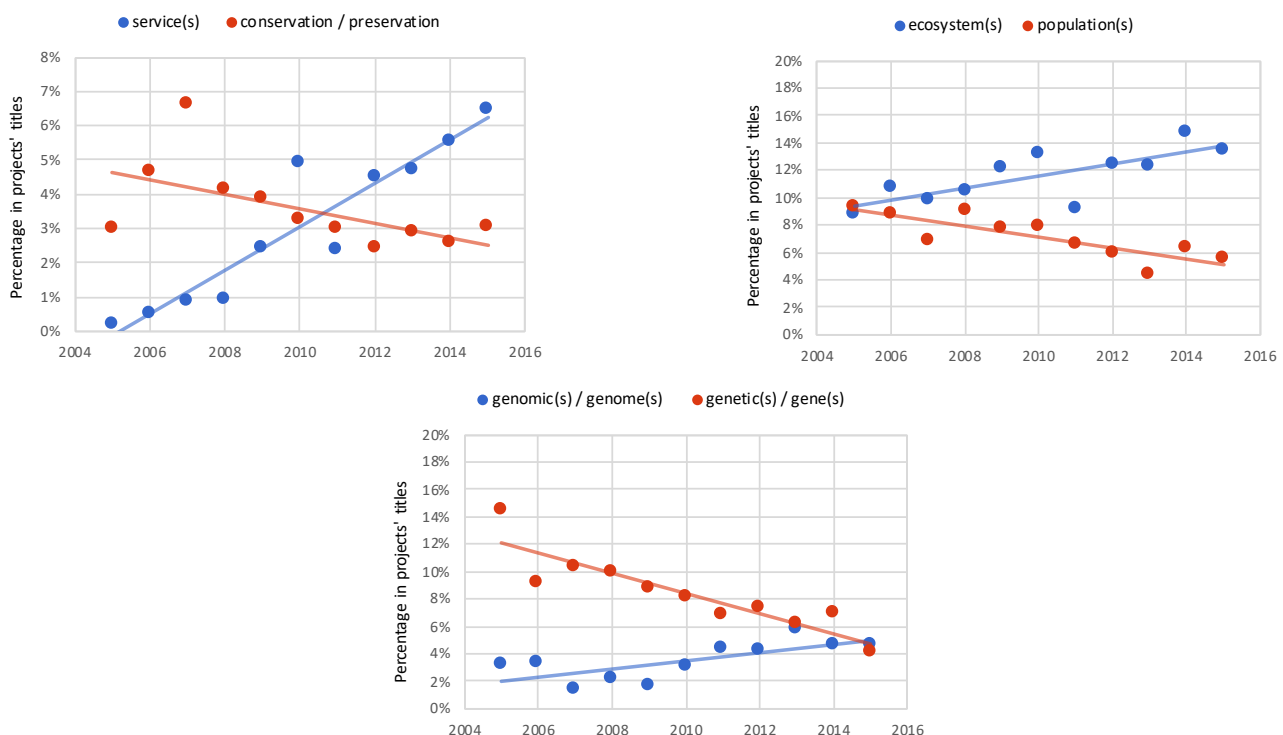


Figure 18. Temporal changes in the percentage of project titles containing specific words over 2005-2015, highlighting (left) a moderate decrease in conservation and preservation issues and a huge increase in the topic ‘ecosystem services’; (right) a decrease and increase in projects referring to the population level and ecosystem level, respectively; and (bottom) a decrease and increase in projects referring to genetics and genomics, respectively.

Considering all the words for which a decreasing trend is observed (Figure 18 and Figure 19, top-left), there was a decreasing trend for research corresponding to:

- “low organisation levels” of biodiversity, from genes to populations;
- the classification of living forms through taxonomy and phylogeny;
- biodiversity conservation/preservation;
- the biology of organisms, in particular their

reproduction. We noticed that the word “reproduction” was used in 77% of project titles in association with a species name or a set of species (e.g. “cooperative mammals”, “endangered ungulates”).

In contrast, there was an increasing trend for research focusing on:

- “higher organisation levels” of biodiversity, in particular (meta)genomes as well as communities and ecosystems;

- ii. Global and climate change (the use of the term ‘global’ doubled from 2005 to 2015, reflecting an increasing interest for larger and more complex phenomena or models: among the titles including the word “global”, 44.5% refer to global change and 10.5% to global warming);
- iii. The resilience and stability of biodiversity and (socio-)ecosystems;
- iv. Functional diversity analysis through functional traits and niches studies;
- v. Biodiversity and health, including pathogens;
- vi. Innovations and transitions;
- vii. Policies, and policy making;
- viii. Urban biodiversity; and the role of infrastructures.

These trends do not necessarily mean that the ‘decreasingly supported’ type of research is not funded anymore. For instance, research on

biodiversity conservation is still supported but at a lower level. Yet, some types of research seem to be funded at a very low level in the recent period, e.g. taxonomy and phylogeny.

Actually, our results show that during the 2005–2015 period, a new balance has emerged between studies on ‘low’ and ‘higher’ organisation levels of biodiversity, as well as between studies on intangible values of biodiversity or conservation and studies using an utilitarian point of view on biodiversity (e.g. research on ecosystem services). In addition, our results show an increase in research characterizing the various impacts of global and climate change on biodiversity and ecosystem services.

This reflects a tendency in biodiversity research that can be visible at the level of individual national agencies. For instance, at NWO (Dutch agency), biodiversity research is shifting from the general ecological perspective to a more specific focus on socio-ecosystems, in particular agriculture.

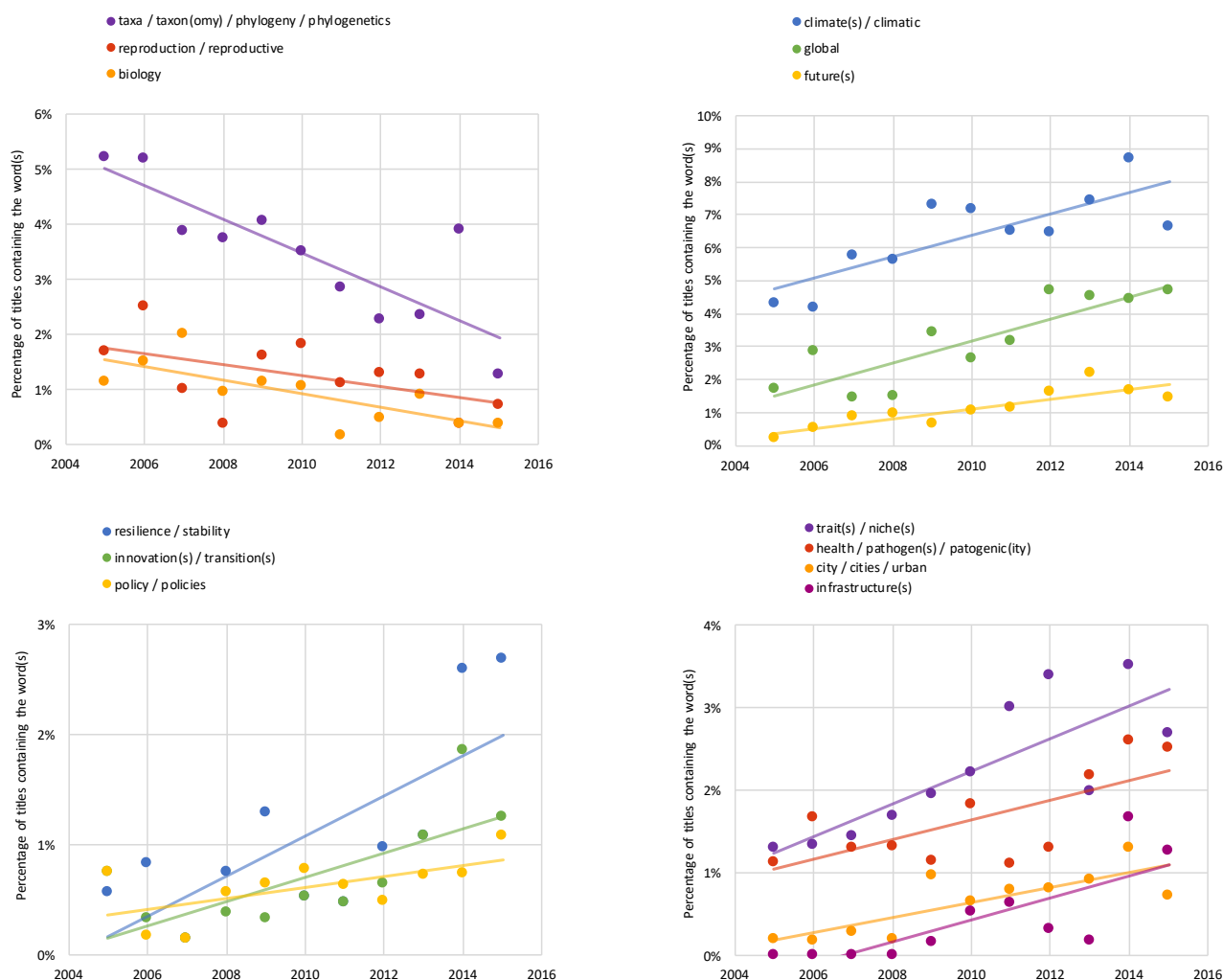


Figure 19. Temporal changes in the percentage of project titles containing words or consistent groups of words identified as increasing or decreasing during the 2005–2015 period.

COMPARISON OF THE TYPE OF FUNDED BIODIVERSITY RESEARCH BETWEEN AGENCIES

Using the same corpus, we compared the profile of the type of biodiversity research funded in the 11 countries considered and by the EC. The

correspondence analysis clearly shows that the vocabulary used in project titles varies between funding sources.

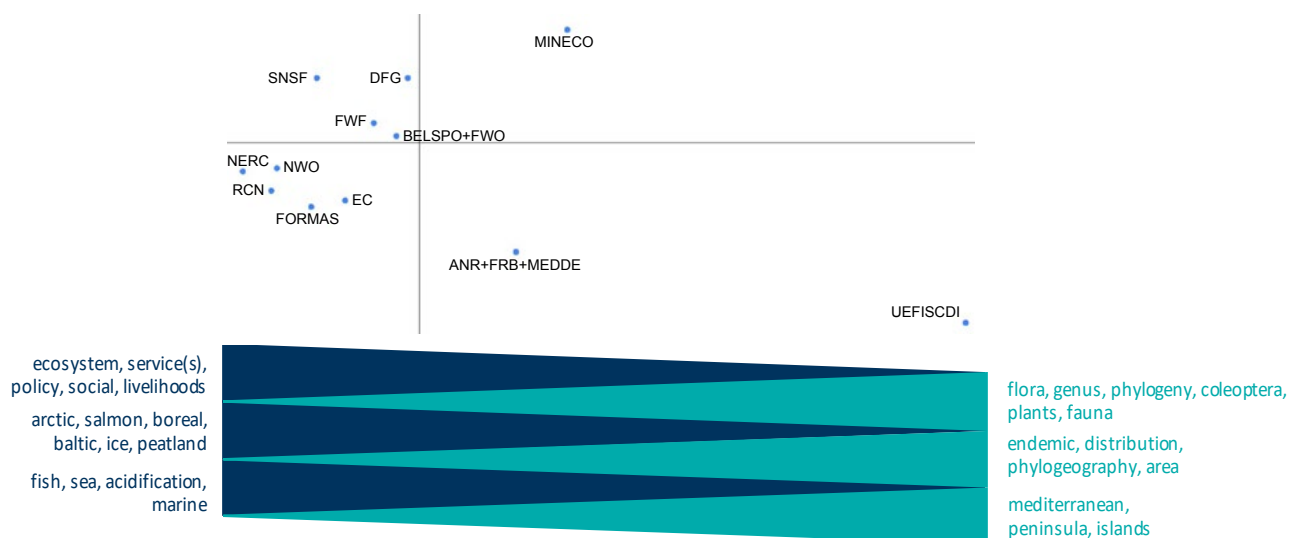


Figure 20. Result of the correspondence analysis resulting obtained from the semantic analysis of the titles of the projects funded by the main agencies/ministries from 11 countries as well as of the projects directly funded by the European Commission ('EC') (data for the 2005-2015 period). Below are indicated the vocabulary over-represented for agencies located on the right or on the left part along the horizontal axis.

When considering the vocabulary over-represented for agencies located on the right or on the left part along the horizontal axis (and considering words with a specificity score ≥ 5), the meaning of this axis becomes clear (Figure 20). The left part corresponds to agencies like NERC, RCN, NWO and Formas which fund more than the average research on (socio-)ecosystems and services, including

social and policy aspects; on cold ecosystems; and on marine systems. In contrast, the right part corresponds to agencies like UEFISCDI in particular and to a lesser extent MINECO, which on average fund more research on species and phylogeny, on biodiversity spatial distribution, and on Mediterranean and islands systems.



6. CONCLUSIONS



The BiodivERsA database now contains an extensive amount of information on the research that has been funded through competitive schemes and undertaken in mainland Europe and ORs-OCTs, for projects focused (at least partly) on biodiversity, for the last 10-15 years. To a large extent, this information can be considered as representative of the biodiversity research landscape in Europe, although it is still not comprehensive and will need additional completion, in particular for countries or agencies that have not been included yet.

The methods used to ensure the consistency and comparability of the data (e.g., use of a search based on a same keyword profile), along with the careful quality check of the information included, have allowed a substantial improvement of the database in terms of consistency and comparability of the data. The inclusion of ORs-OCTs projects is also an enhancement of the database, although this aspect of the database still requires to be further completed.

The funding trends revealed through the analyses of the database are based now on more complete and precise information. Strikingly, they indicate a continuous decrease in the share of the framework programme funding amount that the EC has allocated to biodiversity research, from 1.6% to 0.6% over the past 11 years. Concurrently, the budget allocation to biodiversity projects by countries has tended to increase despite fluctuations that largely correlated with temporal variations in their GDPs. The fact that, over the 2005-2015 period, the budget allocated by BiodivERsA partners to biodiversity research is nearly 2.5 times that by the European Commission is a further indication that biodiversity research funding in Europe.

The trends in the type of biodiversity research funded were revealed by semantic analyses applied to the titles of projects. This shows that over 2005-2015, a new balance has emerged between studies on 'low' and 'higher' organisation levels of biodiversity (e.g. more research on ecosystems and genomes; less on populations and genes), as well as between studies on intangible values of biodiversity

or conservation and studies using an utilitarian point of view on biodiversity (e.g. more research on ecosystem services; less on conservation). This shows how quickly biodiversity research evolves, likely due to 'internal' forces within the research community and through the orientations given by research programmers and funders.

The regular mapping of the biodiversity research landscape is of most interest to the BiodivERsA partners who will use the database to better characterize and understand national priorities and opportunities for future cooperation. Specifically, given the temporal changes in the type of biodiversity research funded observed over 2005-2015, national and European research programmers and funders will have to clearly define the balance they aim at between the different aspects of biodiversity research, and will have to regularly assess this balance, so that biodiversity research programming and funding is based on an explicit, long-term and strategic approach. The information contained in the BiodivERsA database is well suited to allow such regular assessment.



Reading this brochure you will...

... discover that BiodivERsA has referenced projects, programmes and funding amounts for biodiversity research in a single database.

... have quantitative information about the temporal trends of funding amounts allocated to biodiversity research by countries and the European commission since 2005.

... learn that the BiodivERsA database now references over 11,300 biodiversity research projects funded through competitive programmes in Europe over 2000-2016.



... explore the BiodivERsA database as a useful tool to identify potential resources and network opportunities.

... realize that the type of research funded is progressively changing over time.

... get an overview of the European agencies funding biodiversity research.

...and much more!



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