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FRB
FONDATION POUR LA RECHERCHE SUR LA BIODIVERSITÉ

MINISTÈRE DE LA TRANSITION ÉCOLOGIQUE
Liberté
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OFB
OFFICE FRANÇAIS DE LA BIODIVERSITÉ

A call for projects: "IMPACTS ON TERRESTRIAL BIODIVERSITY IN THE ANTHROPOCENE" – Edition 2022

I/ CONTEXT, OBJECTIVES ET EXPECTED RESULTS

In the context of the national program of "monitoring terrestrial biodiversity" - set up by the Ministry of Ecological Transition (MTE) and assigned to the French Office of Biodiversity (OFB) - aiming notably to measure, identify and monitor the influence of human activities on biodiversity and promote the least impacting practices, the Foundation for Research on Biodiversity (FRB) is launching, for the second consecutive year, a call for research projects "Impacts on terrestrial biodiversity in the Anthropocene". This call for proposals focuses on the characterization of the impacts of pressures induced by human activities on terrestrial biodiversity.

Biodiversity is declining at an increasingly alarming rate. Human activities, directly and indirectly, in a synergistic or antagonistic way, are particularly responsible for this decline. On the other hand, some activities have started a transition towards practices that are less unfavourable, or even favourable, to biodiversity. One of the main challenges now is to bring together data, tools, indicators and methods in order to identify the various human activities affecting terrestrial biodiversity, and to quantify or predict their impacts.

However, precisely quantifying the impacts of human activities on biodiversity remains complex today because even if the factors of this decline are well-known and widely accepted within the scientific community, it remains challenging to measure the precise consequences as well as the interactions of their effects, in time and space. Currently, databases describing the impact of human activities and associated practices on the state of biodiversity are somewhat incomplete, heterogeneous, poorly referenced and difficult to access because they are dispersed between private actors, researchers, and public actors often with their own specific objectives. Moreover, biodiversity monitoring does not include, or includes very little, data to measure the influence of activities that promote biodiversity.

Beyond these challenges, the biodiversity monitoring systems in France, such as the Temporal Monitoring of Common Birds (STOC), the Global Database on Botanical Information and Ecological Networks (BIEN), or the European Butterfly Distribution Database (eBMS), etc., do not always allow for the easy development of national or global indicators on the state of terrestrial biodiversity and its evolution, representative of the national territory and all the components of biodiversity. Large-scale data to understand the factors explaining the variability of observations, particularly factors related to human activities, are also rare or non-existent. However, the European directives on habitats and fauna and flora stipulate obligations to monitor nature, which France must comply with. Thus, this call is intended to be a valuable source of information for the construction of the Biodiversity Information System (BIS) whose objectives are, in particular, to share and reuse data, as well as to promote the use of knowledge as a tool for transforming society in favour of biodiversity conservation and for maintaining its adaptative potential.

The results of the projects will allow for the development of indicators on monitoring human activities influencing the state, evolution, and dynamics of biodiversity. In addition, the production of information and recommendations useful for monitoring, action, and research on biodiversity. They will notably feed into the Terrestrial Biodiversity Monitoring Program, the National Biodiversity Observatory, the Biodiversity Information System, the National Biodiversity Data Cluster, and projects targeting data or knowledge gaps covering French mainland and overseas territories.

This call will ultimately allow for a national overview of the monitoring of human activities studied and their impacts. It will thus contribute to strengthening the actions of society as a whole to halt the decline of biodiversity and promote sustainable human development.

II/ FRAMEWORK OF THE CALL

Projects are expected to meet at least one of these three objectives and primarily one of the first two:

- **That they demonstrate the links between human pressures and impacts on biodiversity;**
- **That they characterize the coupling of such pressures to ecological impacts by highlighting parameters that explain these causal links and the underlying spatio-temporal evolutional factors (with the aim of using these parameters in the framework of operational monitoring). The projects will go as far as possible to propose indicators or protocols for monitoring these parameters;**
- **That they provide a response to the gaps in current monitoring of human pressures or their impacts (metrics, indicators, spatial distribution, temporal frequency, types of pressure, type of biodiversity).**

Wherever possible, projects should go so far as to identify practices to be avoided (or even promoted) to preserve biodiversity.

The framework that should be used to define pressures from human activities is the IPBES framework (see the Appendix). Indeed, the IPBES (2019) defines direct and indirect drivers of change, which we refer to for this call as "pressures," and demonstrates that direct drivers have had the most severe impacts globally; in descending order: land and sea use change, direct exploitation of organisms, climate change, pollution, and invasive alien species.

Projects may focus on one or more human activities with a potential direct or indirect effect on biodiversity, and consider one or more biodiversity compartments. Only human activities and pressures that have impacts on terrestrial biodiversity observable in a given geographical area will be considered. Concerning the pressure of climate change, it will only be considered if it is explored in interaction with another pressure defined by the Ipbes.

The framework that can be used to define the relationships between pressures and impacts is the "Driving Forces, Pressures, States, Impacts, Responses" (DFSIR) model, which takes into account the complexity of establishing links between human pressures and impacts on biodiversity. This model of interactions between socio-economic and ecological systems makes it possible to represent cause and effect relationships through pressure indicators and biodiversity state indicators.

The geographical framework of this call concerns terrestrial biodiversity, including (but not limited to) French mainland and overseas territories. Only pressures that have a significant impact on biodiversity present on French territories will be considered. The use of international data or relevant case studies located outside the national territory is encouraged if it allows to characterize the impacts of human activities on the state of biodiversity on the French territory (metropolitan and ultra-marine). Metrics and indicators produced in the framework of other monitoring systems (WFD, DCSMM) may also be studied.

Projects may address natural science and/or humanities and social science issues: the impact of human activities and induced pressures on the state and dynamics of biodiversity, including evolutionary impacts (in the Darwinian sense), the response of biodiversity to anthropogenic pressures, issues of financial market logic, law and governance of uses, biodiversity conservation, etc. (list of examples is not exhaustive)

Preference will be given to projects that i) use a multifactorial approach, ii) have the capacity to identify relevant indicators and metrics to describe cause and effect mechanisms, or iii) use predictive approaches. The co-construction of research projects with stakeholders is encouraged.

The scope of the research will be terrestrial biodiversity at all levels of organization (from genes to ecosystems).

Projects related to the following area will not be considered:

- Continental aquatic environments, largely covered by the Water Framework Directive;
- Underground aquatic environments;
- Urban environments;
- And marine environments.

Projects dedicated to the interfaces between aquatic environments and terrestrial ecosystems are eligible (i.e., mixed taxonomic groups such as amphibians, odonates, or interface spaces such as riverbanks, littoral zones, marshes, mangroves).

This call will provide funding for:

- **3 data SYNTHESIS projects**, for three years and a maximum amount of 200 K€ each,
- **4 to 6 SYNERGY projects**, for one year and a maximum amount of 50 K€ each,
- **1 to 2 SYSTEMATIC REVIEW projects,** for two years and a maximum amount of 100 K€ each.

Project leaders can apply for several types of projects from this call.

The **SYNTHESIS** and **SYNERGY** research projects should enable actors and decision-makers to know which practices to abandon and which to favour. Two types of approaches, characterization or comparison, could be considered:

- **Systemic and multi-faceted approaches** to biodiversity aimed at characterizing the impacts of human activities and their consequences on biodiversity. Systemic approaches crossing several impacts and practices will be encouraged.
- **Approaches based on the comparison** of practices associated with one or more human activities in order to highlight those that should be favoured to preserve biodiversity, its evolutionary potential and the functioning of terrestrial ecosystems**.**

In both approaches, the various facets of biodiversity can be included: genetic diversity, species diversity, ecosystem diversity, etc.

SYNTHESIS projects develop the syntheses of ideas, concepts and analyses of existing datasets to improve scientific knowledge on biodiversity to enable its protection. Participants share their scientific expertise, available data and modelling tools to answer a wide range of questions on biodiversity, at all scales, spatial and temporal, from the perspective of both natural sciences and humanities and social sciences.

SYNERGY projects allow for a more exploratory approach in order to deepen research work already underway: they provide complementary answers to a question emerging from a research project that is already funded. They allow the coordinator to reinforce his/her research action or to create a new dynamic through the financing of workshops, salaries, operating costs, missions, etc.

A **SYSTEMATIC REVIEW** is a rigorous scientific process consisting of several well-defined steps, including a systematic search of the literature, a quality assessment of each study considered and a synthesis, quantitative (i.e., meta-analysis) and/or qualitative (i.e., narrative), of the results obtained. A systematic review generally aims to answer a specific question in a precise and objective manner. A **meta-analysis** is a statistical approach - part of a systematic review - that combines data from all the primary studies retained leading to a statistically validated novel result.

III/ EVALUATION CRITERIA AND METHODS

This call is led by a joint committee composed of members of the Foundation for Research on Biodiversity (FRB), the Ministry of Ecological Transition (MTE), and the French Office for Biodiversity (OFB).
To scientifically evaluate eligible projects, the FRB has set up an *ad hoc* scientific committee for each type of project composed of members of its Scientific Council, members of the Cesab Scientific Committee and external experts.

Eligibility and evaluation criteria:

- the project coordinator must be a recognized scientist in a permanent position, affiliated to a French research organization.
- relevance to the objectives of the call.
- the scientific excellence and the original or innovative character of the project.
- the quality of the working group.
- the feasibility of the work program.
- the methods of dissemination and availability of knowledge and data.

Selection criteria:

- the capacity of the project to contribute to the terrestrial biodiversity monitoring program and, as far as possible, the proposal of indicators and protocols for monitoring parameters explaining the pressure-impact links and identifying practices to be avoided or favoured to preserve biodiversity;
- the quality of the deliverables planned for the stakeholders.

The deliverables, the submission procedure and the specificities of each type of project are detailed in the following Parts.

The final selection of projects will be made by the FRB-MTE-OFB Joint Steering Committee (CoPIL).

IV / SUBMISSION PROCEDURE AND CALENDAR

SYNTHESIS projects

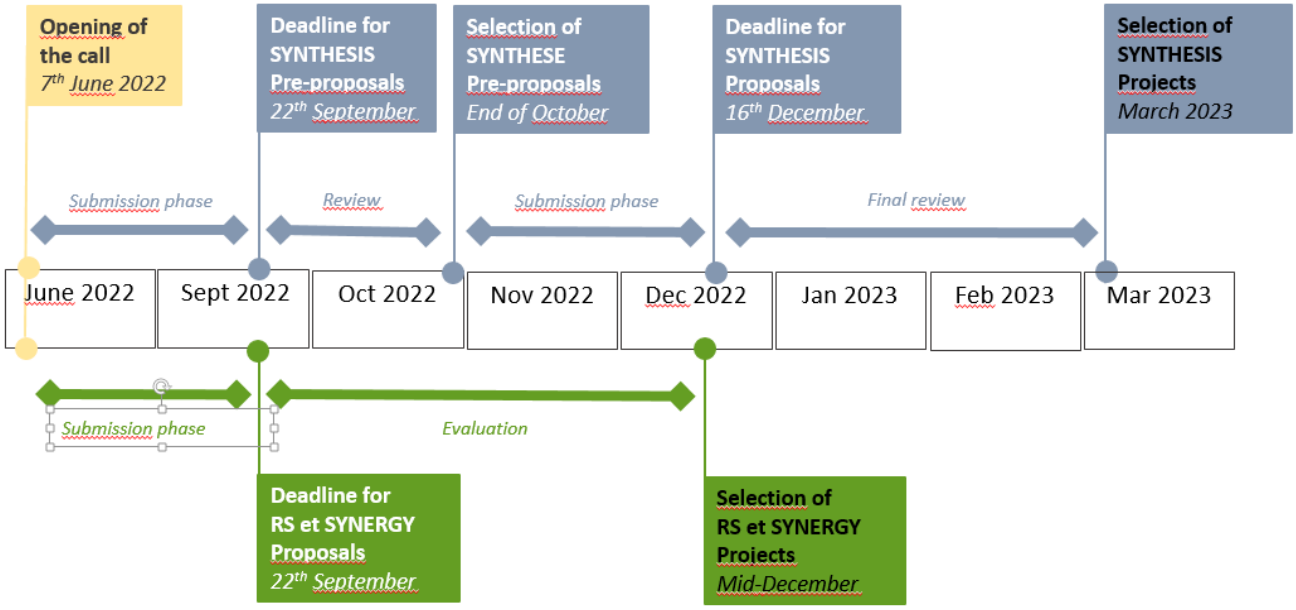
Procedure:	The selection will run through in two phases: only the coordinators whose pre-proposals have been selected at the end of the 1st phase will be invited to submit a full pre-proposal. Deadline for pre-proposals : **22nd Sept. 2022**. Deadline for full proposals: **16th Dec. 2022**. Results will be announced in **March 2023**.
Submission:	https://frbmteofb-**synth**.sciencescall.org
Contact:	cesab@fondationbiodiversite.fr

SYNERGY projects

Procedure:	Full proposals must be submitted by **22nd Sept. 2022**. Results will be announced in **December 2022**.
Dépôt:	https://frbmteofb-**syner**.sciencescall.org
Contact:	coline.leandre@fondationbiodiversite.fr

Projets REVUE SYSTEMATIQUE

Procédure :	Full proposals must be submitted by **22nd Sept. 2022**. Results will be announced in **December 2022**.
Dépôt :	https://frbmteofb-**revue.**sciencescall.org
Contact :	joseph.langridge@fondationbiodiversite.fr



V/ DESCRIPTION DES DIFFERENTS TYPES DE PROJETS FINANCES

V.1 SYNTHESIS PROJECTS

Context

Within the framework of the call for projects "Impacts on Terrestrial Biodiversity in the Anthropocene", the 3-year synthesis projects should focus on the factors affecting the state, evolution and dynamics of biodiversity. The research should make it possible to better understand, catalogue and quantify the effect of multiple human activities on biodiversity. As these are data synthesis projects, this call will not finance the collection and production of data. However, projects may be supported by a side project with ongoing relevant data production (if such new data are available in the first year of the project).

Special attention will be paid to knowledge transfer.

Eligibility and composition of the working group

The project coordinator must be a recognized scientist in a **permanent position**, affiliated to a French research organization. The group must also have a co-coordinator, from a different laboratory than the coordinator, not necessarily affiliated to a French organization.

The working group, made up of a maximum of **12 experts**, should be **international in scope, well-balanced in terms of gender, career stage, field of expertise, and country of origin**. Multidisciplinary groups or groups including non-academic stakeholders are encouraged.

The working groups will meet five times for one week over the three-year project, at the FRB's Center for Synthesis and Analysis of Biodiversity (CESAB) in Montpellier, France. An additional five-day virtual meeting is also expected, for which the Cesab team will provide logistical support if needed.

Each group will have the opportunity to recruit a **24-month postdoctoral fellow**. The recruitment will be conducted by the two PIs after the project has been selected. The postdoctoral fellow will act as a catalyst for the working group. He or she will be fully involved in the dynamics of the project and be a driving force behind the group's research. He or she will be preferably hosted at CESAB in Montpellier (depending on the CESAB's hosting capacity).

Dedicated budget

Three projects will be funded within this call. For each project, the financial support (max 200 K€) includes:

- the recruitment of a **post-doctoral fellow for 24 months**;
- **computer equipment** (if necessary and within the limit of 2000 euros) for the post-doctoral fellow;
- If applicable (should the post-docs be hosted at the CESAB): travel and accommodation for 30 days per year to ensure the connection between the PIs and the post-doctoral fellow;
- **meeting costs** (transportation, accommodation and food) for **5 workshops** of 5 days each at the CESAB in Montpellier. The groups are also expected to organize a one-week virtual **workshop** (support provided by CESAB staff);
- **publication costs** up to 6 000 euros;
- **carbon offsetting** of meetings up to 3000 euros.

Moreover, FRB commits to provide:

- Local logistical organization (planning of meetings, transportation, accommodation and catering);
- Workspaces at CESAB and communication tools;
- Support for data analysis;
- Support for communication and promotion of the project and its results;
- Support for financial and administrative management of the project.

Financial support for the operation of the project should not exceed three years. The set-up of the project is a commitment of the coordinator: any change in the list of participants, the number of meetings, the schedule, etc... must be approved by the CESAB executive.

The project coordinator will submit a mid-term progress report (18 months - this report, validated by the Cesab Scientific Committee, will allow the continuation of the funding) and a final report (36 months).

The budget will be handled by the FRB and does not need to be detailed in the response to the call.

Deliverables

The results of the research will be valued in the following expected deliverables:

- scientific publications ;
- publicly available databases;
- summaries for decision-makers intended for public or private stakeholders, listing the major conclusions of research and proposing courses of action, should be focused on the biodiversity of

French territories, both metropolitan and ultra-marine, to feed the national terrestrial biodiversity monitoring program.

Any other form of knowledge dissemination to scientists, decision makers, managers and users will be welcome. It could also take the form of open access analysis and modelling tools, websites, organization of international workshops, training, presentations at major conferences, etc.

In addition to publications and actions with stakeholders, the project leaders will have to present their results at a conference organized in 2026. Participation in these conferences will allow project leaders and stakeholders to propose measurement indicators, practices to avoid, etc.

V.2 SYNERGY PROJECTS

Context

These projects promote a synergy with already funded research, in order to further ongoing research. The initial projects that are the subject of a SYNERGY project must be in the process of being funded or completed within the last year (after September 2021). SYNERGY projects allow the coordinator to reinforce his/her research activities or to create a new dynamic through the financing of workshops, salaries, travels, operating costs, etc.

Within the framework of the call for projects "Impacts on terrestrial biodiversity in the Anthropocene", one-year SYNERGY projects will aim at deepening ongoing work on human activities and associated practices, their impacts and the links between human pressures and impacts on biodiversity.

Eligibility and composition of the working group

The SYNERGY project coordinators must be affiliated with a French research organization.

Projects are eligible if they are part of an initial project funded by a local, national or international public or private organization(s) -including synthesis projects from the Biodiversity Synthesis Centers- that are currently being funded or have been completed within the last year (after September 2021).

Dedicated budget

A 50 K€ grant will be paid to the laboratory of the coordinator of each selected project.
Four to six projects will be funded under this call. The budget must be detailed and attached to the proposal.

Workshops may be organized at CESAB. If applicable: travel, accommodation and catering expenses must be detailed in the budget; operating costs related to the organization of these meetings will not be charged to the selected projects.

Financial support may not exceed one year.

Deliverables

Are expected:

- scientific publications ;
- Summaries for decision-makers intended for public or private stakeholders, listing the major conclusions of the research and proposing courses of action, should be focused on the biodiversity of French territories, both metropolitan and ultra-marine, to feed the national terrestrial biodiversity monitoring program.

In addition to publications and actions with stakeholders, the project leaders will have to present their results at a symposium organized in 2024, and communicate on:

- indicators of pressures or relevant impacts to be followed (monitoring part)

- practices to be promoted or abandoned with regard to the links between pressures and the state of biodiversity;
- databases that can be used in projects dealing with pressures.

V.3 SYSTEMATIC REVIEW PROJECTS

Context

The objective of the systematic reviews will be to outline pressure-impact links and even to quantify them with the use of a meta-analyses, the statistical synthesis of the included studies. They should also present a narrative synthesis of the state of knowledge on the impacts considered.

Within the framework of this call, the project coordinator will thus carry out work on the pressure-impact links associated with human practices (for the type of pressure considered) in order to highlight whether or not impacts on biodiversity exist.
The types of pressure considered will be the direct and indirect factors of the IPBES (Figure 1). It is encouraged that the work employs precise and standardized methods based on the guidelines defined by the Collaboration for Environmental Evidence (CEE), to ensure objectivity, comprehensiveness, transparency, and replicability. Systematic reviews will be published in a dedicated scientific journal.

The selected teams will be provided with methodological support on systematic reviews, as specified below.

One to two 24-month systematic review/meta-analysis projects will be funded under this call.

Systematic review proposals may be submitted either by a researcher in a permanent position who has identified his or her group of collaborators and who will recruit the post-doctoral fellow once funding has been obtained, or by a young researcher (not in a permanent position) who has identified his or her group of collaborators.

Eligibility and composition of the working group

The project coordinator must be affiliated with a French research organization. He/she will have to identify a working group made up of five to ten researchers working on the chosen topic.
This group will provide expertise at key stages of the project: validation of the review protocol (a document that defines all the methods for implementing the review), including validation of the search string, validation of the eligibility criteria for excluding/including publications, and validation of the metadata extraction method.
In addition, the working group will provide expertise on the validation of the final publication and deliverables for decision-makers. These researchers will be associated as authors to the academic and non-academic publications resulting from the project.

Dedicated budget

Funding includes, for each projects:

- 24 months of post-doc salary
- the support (10% of a full-time position) of the FRB project manager specializing in the systematic review methods.
- travel expenses for meetings between the project leader, his/her post-doctoral fellow and the FRB team
- publication costs, up to 4,5 K€.

The project coordinator will commit to co-supervising the post-doctoral student, who will either be hosted in the FRB premises (in Paris or Montpellier), or hosted by his/her laboratory.

Deliverables

The expected outputs are:

- the evidence base, from which the narrative synthesis was produced;
- The systematic review on the pressure-impact links on biodiversity and associated human practices (for the type of pressure considered), as a scientific publication;
- A synthesis for managers and decision-makers based on the review (summary for decision-makers, i.e., a "policy brief"), which aims to present the state of knowledge on the impacts considered, the well-established links with human practices and activities (for the type of pressure considered), and the lack of data or literature. This synthesis should include recommendations such as "Implications for policy or management" and "Implications for research". It should also include the list of publications selected for the narrative synthesis or meta-analyses (if relevant), i.e., the most illustrative articles informing or supporting decision-making.

In addition to publications and actions with stakeholders, the project leaders will have to present their results at a conference organized in 2025, and propose indicators, practices to be avoided, etc.

VI/ DATA MANAGEMENT POLICY

As the data used may come from research or stakeholders, project coordinators are encouraged to access/retrieve relevant sources in the Pôle National des Données de la Biodiversité (PNDB) and the Biodiversity Information System metadata (SIB), and should commit to making the data used available through the PNDB and/or BIS whenever possible.

The FRB adheres to the open data approach. The datasets produced/assembled within the projects funded under this call must be made public and accessible to the widest possible scientific community. To achieve this goal, successful projects are required to:

- the datasets synthesized during the research project are described in a relevant way (using international metadata standards), and can be made publicly available within a reasonable timeframe;
- the raw data used to generate the derived scientific outputs are well documented;
- the intellectual property rights of all data holders are respected when their data are used in the working groups;
- Creative Commons BY 4.0 or Etalab open license standards are applied as much as possible to all deposited data.

Neither FRB, MTE nor OFB shall be considered as responsible for any abusive use of the submitted research data.

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ANNEXE

The **Ministry of Ecological Transition** (MTE) is, the French administration department in charge of preparing and implementing the Government's policy in the fields of sustainable development, the environment, in particular the protection and enhancement of nature and biodiversity, green technologies, energy transition and energy, climate, prevention of natural and technological risks, industrial safety, transport and its infrastructures, equipment and the sea.
Within this department, the Water and Biodiversity Directorate (DEB) is responsible for designing, evaluating and implementing policies concerning water, natural areas, and terrestrial and marine biodiversity. The meaning of its action - its raison d'être - consists in seeking a relevant territorialization, an increased transversality between the various components of ecological quality, the development of expertise to serve decision-making, the integration of environmental issues as early as possible in development or urbanization projects, and the reconciliation of daily actions of exploitation and anthropization of the territories with the objectives of protection of the environments and recovery of their biodiversity. In terms of research, the MTE is in charge of the ITTECOP program [www.ittecop.fr], in coordination with the OFB, the Ademe, the FRB and infrastructure operators. With six calls for research proposals, ITTECOP contributes to a strong reflection on the environmental pressures exerted by infrastructures. Since 2019, the MTE has also been leading the BAUM program http://www.urbanisme-puca.gouv.fr/biodiversite-amenagement-urbain-et-morphologie-r146.html, which seeks to reconcile the densification of buildings with the deployment, within the built matrix of the city, of a network of natural spaces conducive to hosting the richest possible biodiversity.

The **Foundation for Research on Biodiversity (FRB)** was created in 2008 and brings together public research organizations, environmental protection associations, managers of biological spaces and resources, and companies. Its mission is to support and act with research to increase and transfer knowledge on biodiversity and its preservation. It constitutes a point of convergence between science and society, around the challenges that biodiversity research must face today. The **Center for Synthesis and Analysis of Biodiversity (CESAB)** was created in 2010 by the FRB to promote high-level research activities dedicated to the synthesis of ideas and data analysis in the field of biodiversity. Located in Montpellier, CESAB offers a place and time for international experts, to collaborate and synthesize existing data to answer key questions posed at all spatial or temporal scales in the general thematic field of biodiversity. Cesab offers scientists a unique opportunity to use its skills and advice in data synthesis and analysis and provides links to organizations that facilitate the deposit of data in open archives.

The French Office of Biodiversity (OFB) carries out knowledge and expertise work on all components of nature. It contributes to the exercise of administrative and judicial policies relating to water, natural areas, wild flora and fauna, hunting and fishing. The OFB accompanies and supports public actors in the design, implementation and evaluation of their policies, and socio-economic actors in their activities in favor of biodiversity. It also manages and restores protected areas, marine areas and terrestrial protected areas.

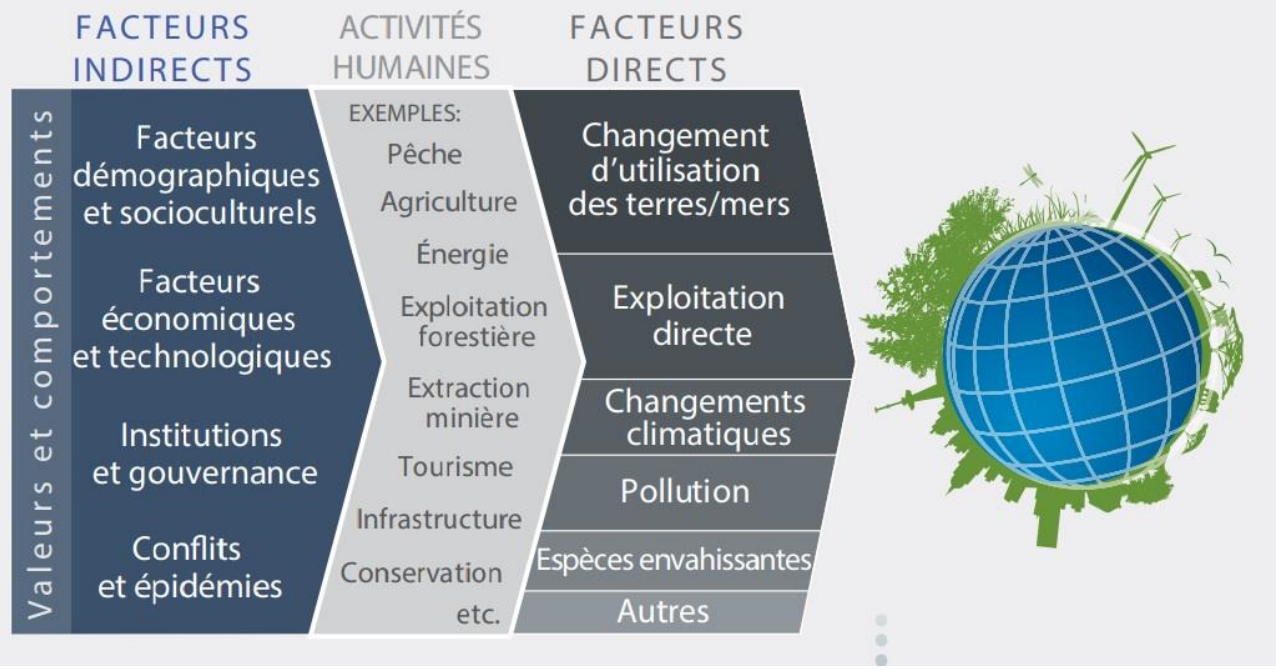

Figure 1 : Liens entre les facteurs directs et indirects (i.e. les pressions) et les activités humaines (Ipbes 2019)