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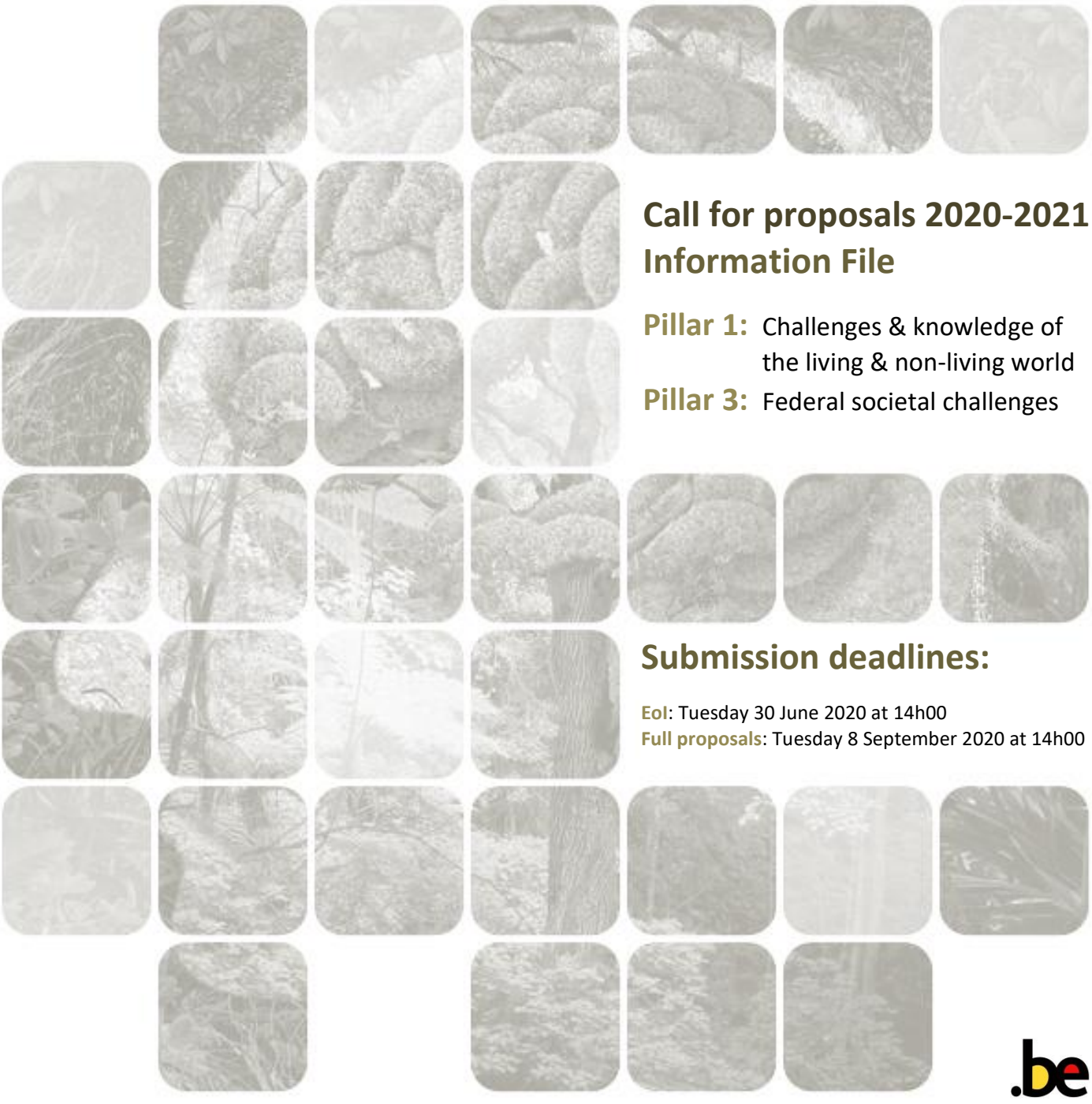
BRAIN-be 2.0

BELGIAN RESEARCH ACTION THROUGH INTERDISCIPLINARY NETWORKS
PHASE 2 - 2018-2023



Call for proposals 2020-2021
Information File

Pillar 1: Challenges & knowledge of the living & non-living world

Pillar 3: Federal societal challenges

Submission deadlines:

EoI: Tuesday 30 June 2020 at 14h00
Full proposals: Tuesday 8 September 2020 at 14h00

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PART I: GENERAL INFORMATION ON THE PROGRAMME

1. MULTI-YEAR FRAMEWORK PROGRAMME FOR RESEARCH - BRAIN-BE 2.0

For more information on the programme, please visit https://www.belspo.be/brain-be.

1.1. GENERAL

On 7 September 2018, the Council of Ministers approved the implementation of the second phase of the BRAIN-be (Belgian Research Action through Interdisciplinary Networks) research programme, to be carried out under the responsibility of the Federal Science Policy (BELSPO).

Through the funding of research projects based on scientific excellence and European and international anchorage, this framework programme allows supporting the scientific potential of the Federal Scientific Institutions[1] (FSIs - see **Annex 1**) and meeting the scientific knowledge needs of the FSIs and Federal Departments' (list Federal Departments see **Annex 2**).

The general objectives of the programme are the following:

- Support and strengthen scientific excellence in the FSIs;
- Promote access to the scientific potential, infrastructures and collections available in the FSIs;
- Align the research potential with societal needs;
- Provide the scientific knowledge necessary for the preparation, implementation and evaluation of federal policies/federal strategies, in particular those on transversal themes in multiple departments;
- Provide the scientific support needed to formulate a Belgian position in the various international policy development fora;
- Develop and realise a critical research mass on themes considered to be a priority in order to strengthen the impact of federal research;
- Encourage the participation of highly qualified Belgian scientists in relevant European or transnational and international research activities;
- Promote systemic, multidisciplinary/interdisciplinary and integrative approaches;
- Create added value by strengthening complementarity and synergies between activities of BELSPO (including contributions to international infrastructures and organisations);
- Contribute to strengthening the research identified as a priority for the implementation of the International commitments subscribed by Belgium;
- Strengthen transdisciplinary research in order to enable potential users to make better use of the research achievements
- Promote equality between men and women in research.

BRAIN-be 2.0 is open to the whole Belgian scientific community: universities, colleges of higher education, public scientific institutions and non-profit research centres.

[1] The acronym FSI covers the institutions as defined in the Royal Decree of 30 October 1996 and their possible legal successors, such as Sciensano.

1.2. ORGANISATION

For its operationalisation BELSPO is assisted by three Advisory Committees and three Strategic Committees (one per Pillar).

The Advisory Committees are multidisciplinary and independent panels established for the duration of the programme.

The Strategic Committees are composed of members from the federal departments and/or FSIs for the duration of the programme.

The composition of these committees is available on the BRAIN-be 2.0 website:

- https://www.belspo.be/belspo/brain2-be/program_en.stm
- https://www.belspo.be/belspo/brain2-be/program_fr.stm
- https://www.belspo.be/belspo/brain2-be/program_nl.stm

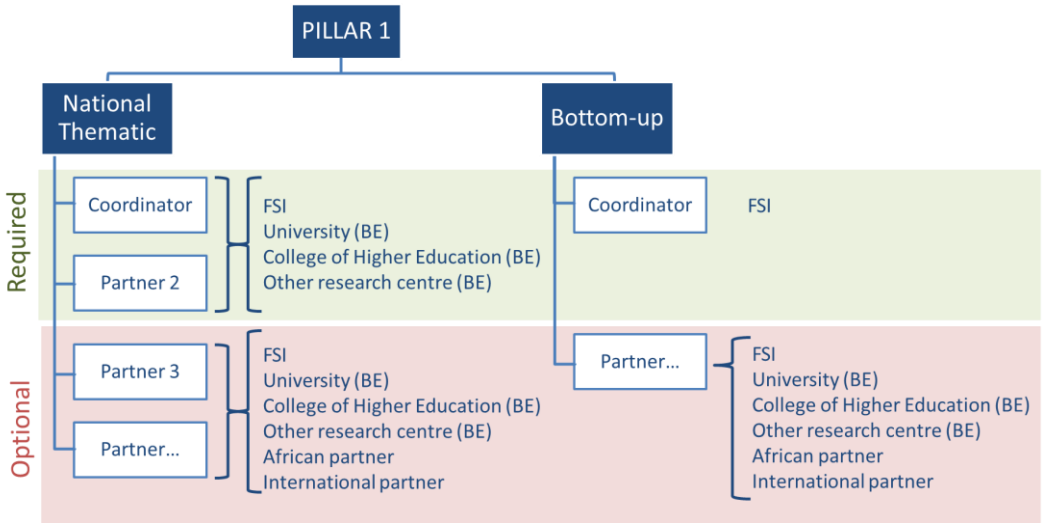
1.3. STRUCTURE

The framework programme is structured around **3 Pillars**:

- Pillar 1: Challenges and knowledge of the living and non-living world
- Pillar 2: Heritage science
- Pillar 3: Federal societal challenges

1.3.1. PILLAR 1: CHALLENGES AND KNOWLEDGE OF THE LIVING AND NON-LIVING WORLD

The implementation of this pillar is done both via **thematic and bottom-up projects**.



PILLAR 1 A: THEMATIC PART

Pillar 1A contributes to the development of the necessary knowledge to support the decisions to be taken by the federal government in the short, medium and long term in order to cope with global change. The aim of pillar 1A is to respond to the research priorities identified at the European and international level such as H2020, Belmont Forum, IPCC, IPBES, EMB, SCAR, the strategic agendas of the JPIs in which BELSPO participates... These research challenges are guided by the international commitments that Belgium has endorsed (CBD, SDG-2030, the climate convention and the Paris agreement, the Antarctic Treaty, OSPAR).

They cover, inter alia, the research in support of mitigation and adaptation to climate change, the protection of biodiversity and ecosystem services, the protection of the natural environment, natural risks, and the sustainable exploitation of resources.

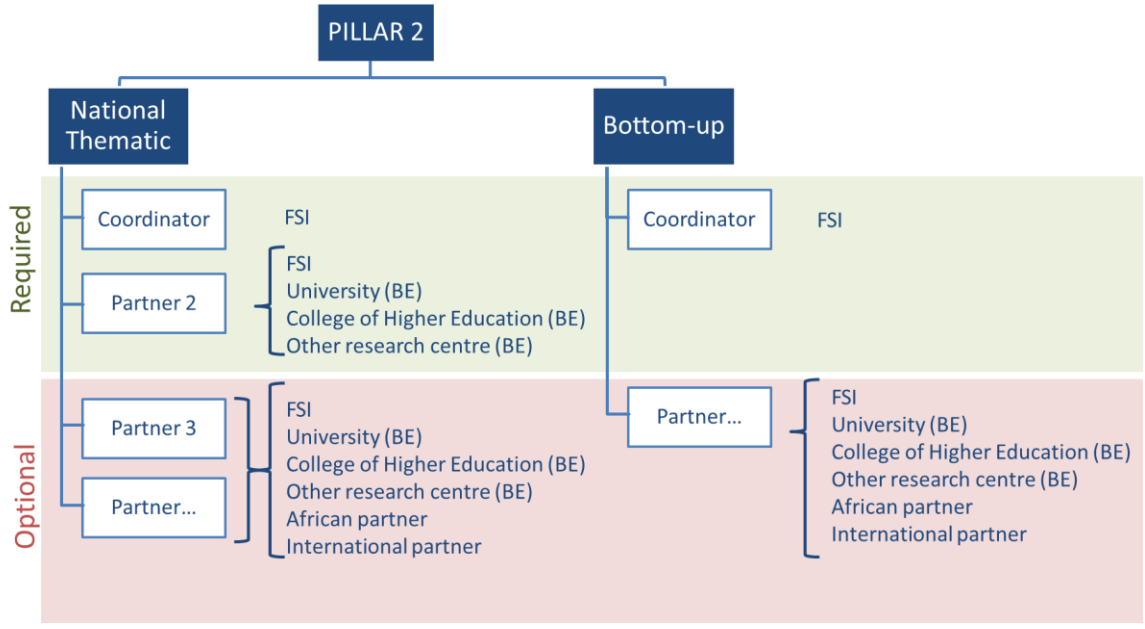
PILLAR 1B: BOTTOM-UP PART
The contribution of the FSIs to the knowledge of the Earth and Universe system

Pillar 1B contributes to the strengthening of knowledge about the living (e.g. evolution) and non-living world (e.g. components of the Earth and Universe system). This part of pillar 1 is built around specific and innovative expertise that is specific to the FSIs and is in line with their strategic research challenges.

1.3.2. PILLAR 2: HERITAGE SCIENCE

The implementation of this pillar is done both via **thematic and bottom-up projects**.

All research projects - thematic and bottom-up - must be **coordinated by an FSI**, possibly in collaboration with universities and other research institutions. As such, the projects have as a challenge to fit into the global strategic priorities of the FSIs, in terms of their scientific expertise and / or their missions with regard to public service.



PILLAR 2 “HERITAGE SCIENCE”

Pillar 2 "Heritage science" is dedicated to scientific research in support of the federal - cultural, scientific and historical - heritage and in particular the heritage in Belgian federal scientific institutions (FSIs : see annex 1) as well as the heritage on which the FSIs deploy their expertise. The potentially involved heritage is of a diverse nature: material / tangible and intangible / digital, of national or international origin.

The aim of the pillar 2 is to mobilise and develop the scientific expertise on "Heritage science", namely scientific research to support conservation, access (including new ICT tools), interpretation and management of heritage, especially with a view to scientific exploitation and social valorisation. This approach, often interdisciplinary, is at the crossroads of a wide range of knowledge and expertise, from fundamental sciences to human and art sciences.

The research aims to support:

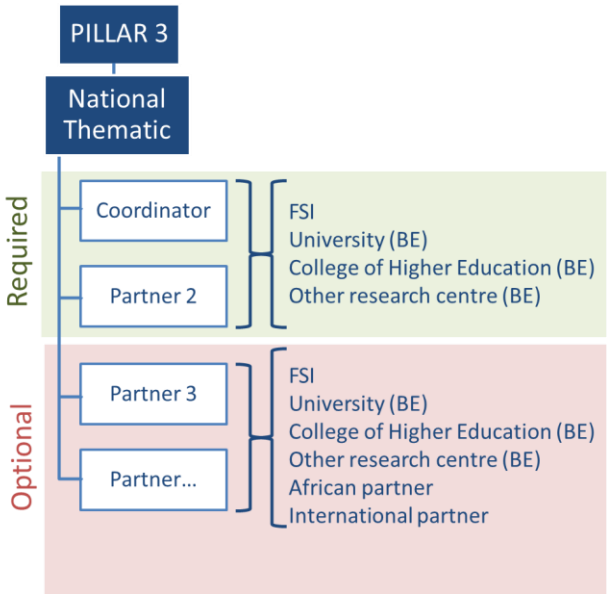
- The conservation, preservation and management of heritage and collections, with a view to exploitation, mainly scientifically, through the development and / or testing of best practices of techniques and methods, of sampling, of digitisation or other management and preservation methods, documentation, classification, identification and access to the information and / or access to material from the collections;

and /or

- Its placement in social, artistic, historical, geographical, environmental, health, scientific, technical, political, archaeological, linguistic, literary, musical, economic or cultural context, in a synchronic or diachronic perspective.

1.3.3. PILLAR 3: FEDERAL SOCIETAL CHALLENGES

The implementation of this pillar is done **only via thematic projects**.



PILLAR 3 “FEDERAL SOCIETAL CHALLENGES”

This pillar supports research that addresses current societal challenges (not covered by the other pillars). The topics funded in this pillar are selected in function of those challenges (e.g. health, security, ageing, economy...) that are considered a priority by the federal authority (as stated for example in Governmental Agreements, federal and interfederal plans...) and that align with international and European research agendas.

The ultimate goal is to develop a solid scientific expertise to support the competencies, strategic orientations and policies of the federal state. Such expertise will clearly enhance the knowledge base around these challenges, reveal opportunities and possible caveats and provide useful recommendations for the federal level.

The topics of this pillar will encourage research that mobilises a large spectrum of disciplines, that are embedded in the international and European context and that will strengthen the participation of a wide range of stakeholders.

1.4. PROJECT TYPES

The BRAIN-be 2.0 programme finances **3 types of research projects**:

- National thematic interdisciplinary projects
- International thematic interdisciplinary projects
- Bottom-up projects

1.4.1. NATIONAL THEMATIC INTERDISCIPLINARY PROJECTS

For the **3 Pillars**

SCOPE / PHILOSPHY

National thematic interdisciplinary projects are of a strategic nature. They must meet the specific research priorities of a call and must be interdisciplinary in their content.

PARTNERSHIP

National thematic interdisciplinary projects are submitted by a **network**, composed of at least two partners from different eligible Belgian scientific institutions and from different scientific disciplines.

Networks jointly share obligations and responsibilities during the implementation of the project. The project should be fairly balanced (see budget rules), even if different partners may have different tasks and subsequently different budgets.

The participation of **Federal Scientific Institutions** and the cooperation between research partners of **different Communities or Regions** is encouraged. At equal scientific quality between the proposals submitted, priority will be given to networks in which one or more FSIs are involved. In addition,

preference will be given to proposals composed of partners from different communities and/or that cover the Belgian territory.

A **coordinator** (belonging to a Belgian research institute) must be appointed in each proposal. The coordinator shall:

- Coordinate all activities to be carried out in the framework of the project;
- Coordinate the internal meetings between the network members;
- Coordinate the meetings with the Follow-up Committee and write the reports of these meetings;
- Coordinate the production of the interim and final project reports intended for BELSPO;
- Inform BELSPO of any problems that might hinder the implementation of the project;
- Coordinate the synthesis and translation of the research results, with a view to applications and support for decision-making;
- Coordinate the publication and dissemination of the research results;
- Organise meetings related to the project's progress between the network and BELSPO.

The project may require specific or punctual expertise, which can be delivered in the form of **subcontracting**.

The programme allows for cooperation with international research partners:

- **African research partners of Least Developed Countries**[2] can benefit from financing of maximum 20% of the total project budget. Note: in the project phase (one of) the Belgian project partner(s) will be responsible for the follow-up of the tasks carried out by the African partner(s) and will also be responsible for the flow of information to and from the African partner(s). The budget allocated for the African partner will contractually be added to the budget of this Belgian partner.
- Other international research partners can officially participate to the proposal, albeit with their own funding.

It is the responsibility of the Belgian partner(s) to check the eligibility of the African research partner(s) and/or the International research partner(s).

The programme promotes **equality between men and women in research**. The projects should therefore seek for a balanced network composition.

DURATION

National thematic interdisciplinary projects will have a duration of 2 or 4 years.

BUDGET

There is no maximum project budget set for this type of projects. However networks should take into consideration the total available budget within the Pillars (see 1.5) for each call and the fact that one of the objectives of the programme is to build up a critical mass on the research themes in the different calls. The objective is to develop a project with the most efficient use of public resources.

[2] https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

1.4.2. INTERNATIONAL THEMATIC INTERDISCIPLINARY PROJECTS

The programme enables participation in transnational programmes and international thematic interdisciplinary projects, via participation in calls organised by relevant European, international or transnational research consortia such as ERA-NETs and Joint Programming Initiatives (JPI).

The introduction of this type of projects is subject to separate calls following the international call calendars and procedures.

1.4.3. BOTTOM-UP PROJECTS

Only for **Pillars 1 and 2**. Only **FSIs** can submit a bottom-up project.

SCOPE / PHILOSPHY

Bottom-up projects must meet the scope of the respective Pillar and must comply with the following:

- Strengthen the scientific potential or expertise of FSIs;
- Target and/or enable research on a specific circumscribed topic;
- Fit the strategic priorities of the FSIs in support of their specific areas of expertise or public service missions.

Bottom-up projects differ from thematic projects in the sense that they do not have to fit within the research priorities of a given thematic call, do not require multidisciplinary research, and therefore must not necessarily be carried out in a network.

PARTNERSHIP

Given their scope and philosophy, Bottom-up projects can only be submitted by an **FSI** and are restricted in terms of number of partners. They can be carried out by a single FSI (acting as coordinator) who, whenever required, may seek to have other research partners - including other FSIs and/or other Belgian research institutions, African research Partners from Least Developed Countries, and/or other (non-BELSPO funded) international research partners - in order to answer the scientific questions posed.

Funded partners will jointly share the obligations and responsibilities during the implementation of the project.

The project may require specific or punctual expertise, which can be delivered in the form of **subcontracting**.

DURATION

Bottom-up projects will have a duration of 2 or 4 years.

BUDGET

Bottom-up projects are small sized. The **maximum project budget** amounts up to **500 000 €.**

Each FSI may submit different bottom-up projects, for a total maximum amount **as coordinator** up to:

- Pillar 1: 1 500.000 €
- Pillar 2: 700 000 €

African research partners from Least Developed Countries[3] can benefit from financing that amounts to a maximum of 20% of the total project budget. Other international research partners can officially participate to the proposal, albeit without BELSPO funding.

1.5. CALENDAR AND BUDGETS OF THE CALLS FOR PROPOSALS

The calendar and the indicative budgets for the calls for proposals are as follows (budgets in K€):

Available budget in K€	call 2018-2019	call 2020-2021	call 2022-2023	TOTAL
Pillar 1: Challenges and knowledge of the living and non-living world	11 407	11 407	11 407	**34 221**
Pillar 2: Heritage science	8 703	8 703	8 703	**26 109**
Pillar 3: Federal societal challenges	9 290	9 290	9 290	**27 870**

2. CONTRACTUAL OBLIGATIONS FOR SELECTED PROJECTS

2.1. CONTRACTS

For the selected proposals, a contract is concluded between BELSPO and the funded team(s).

For this purpose, the submitters of the selected proposal will be asked at the end of the evaluation and selection procedure to concisely formulate the specifications on the basis of which the contract is to be drawn up. This **Technical Annex** to the contract will be drawn up in consultation with BELSPO and will take into account the recommendations formulated by the foreign evaluators and the Advisory Committees.

Adaptations to the original proposal may relate, among other things, to the content of the research, the composition of the project partnership or Follow-up Committee, the budget, the proposals for valorising the research.

BELSPO grants the selected projects the **funds** required for their implementation. BELSPO shall reimburse at most, and up to the amount specified in the granted budget, the actual costs proven by the partners providing these costs are directly related to the implementation of the project.

3 https://unctad.org/en/Pages/ALDC/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx

2.2. REPORTS AND PROGRESS MEETINGS

The contract foresees the following reports to be submitted to BELSPO:

- Initial report: to be submitted within three months after the start of the project;
- Activity reports: to be submitted annually;
- Final report: to be submitted at the end of the project;
- If deemed useful by BELSPO, an activity report may be requested for an external evaluation of the project;
- BELSPO can ask for a report or other input at any time during the course of the project in order to provide scientific support to valorisation and service actions related to the programme.

These reports are to be included in the project work plan and the cost of preparing them (including possible translations) must be covered by the project budget.

Meetings on the project's progress must be organised - minimum once a year - between the project partner(s), BELSPO and the user committee. The organisation of these meetings must be included in the project work plan and the project budget.

2.3. DATA, RESULTS, INTELLECTUAL OWNERSHIP AND OPEN ACCESS

Foreground - the results (including information) produced by the project - shall be the property of the institution carrying out the work generating this foreground, as mentioned in article 11 of the General Conditions (Annex II of the contract). As regards existing information and data, ownership remains the same.

Each institution shall ensure that the foreground of which it has ownership, is disseminated as fast as possible and free of charge.

In accordance with the relevant BELSPO Open Research Data Mandate, each Institution undertakes to make the foreground and background relating to research data, available as soon as possible and free of charge in an approved data repository (Open Research Data Repository). This concerns data that supports the research results, with its metadata and other contextualised (curated) and/or raw data mentioned in the Data Management Plan (DMP) submitted by the grant applicant. The data must comply with the FAIR principle (Findable, Accessible, Interoperable and Reusable) and must be accessible according to the principle "As open as possible, as closed as necessary".

For research areas concerning the marine environment, the Antarctic and biodiversity, researchers must transfer a copy of the analysis and measurement data and/or metadata to specific databases such as:

- BMDC (the Belgian Marine Data Centre). The Belgian Marine Data Centre, our federal NODC (National Oceanographic Data Centre), (bmdc@naturalsciences.be), can be contacted for assistance in the development of a DMP for marine applications and/or in choosing the right repository.

- AMD (Antarctic Master Directory). The Belgian representative of SCADM (the SCAR Standing Committee for Antarctic Data Management) (avandeputte@naturalsciences.be) can be contacted for assistance in the development of DMP for Antarctica related applications and/or in choosing the right repository.

- GBIF (Global Biodiversity Information Facility). The Belgian Biodiversity Platform can be contacted for assistance in the development of DMP for biodiversity related applications and/or in choosing the right repository. See also the guidance document.

- For social and Humanities data, a copy of the data and/or metadata must be transferred to SODA (Social Sciences Data Archive).

- The promoters of projects that include tasks in which biological materials are used, must ensure the preservation of this biological material by depositing it in a culture collection (Biological Resource Centre), and preferably one in Belgium. This does not apply to material that promoters can prove has already been deposited in a culture collection or for which existing agreements (Material Transfer Agreement) do not allow it to be deposited. Biological material includes cultivable organisms such as microorganisms, viruses, plant, animal and human cells as well as the replicable parts of these organisms, such as non-modified and recombinant plasmids (including those with DNAc inserts).

2.4. RESEARCH ETHICS

The first code of ethics for scientific research in Belgium was drawn up in 2009 (see http://www.belspo.be/belspo/organisation/publ/pub_ostc/Eth_code/ethcode_en.pdf).

The "Code of Ethics for Scientific Research in Belgium" is a joint initiative of the Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, the Académie Royale de Médecine de Belgique, the Koninklijke Vlaamse Academie van België voor Wetenschappen en Kunsten and the Koninklijke Academie voor Geneeskunde van België, with the support of BELSPO.

All projects must take this code of ethics into account in their research. If necessary the Ethical Board of the institutions concerned by a project must be consulted before submitting a proposal.

2.5. GENDER

BELSPO strongly encourages projects to take into account the equality between women and men and to ensure gender mainstreaming in the implementation of the project. The project should include this both in the choice of the researchers and, where relevant, by integrating the gender dimension into their research. All statistics produced, collected and commissioned are, where appropriate, disaggregated by sex and gender indicators are established where relevant.

PART II: CALL INFORMATION

3. DOCUMENTATION RELATED TO THIS CALL

The following documents are available on the BRAIN-be website (https://www.belspo.be/belspo/brain2-be/call_open_en.stm):

- Information file: general information on the programme and the call (the present document)
  - Pillar 2
  - **Pillars 1 and 3**
- Evaluators eligibility: eligibility rules of proposed experts for the evaluation of the proposal
- Submission and evaluation guidelines: overview proposal content and corresponding evaluation criteria for the promoters and foreign evaluators
- Evaluation matrix: overview of the evaluation ratings
- Gender checklist
- Budget rules: overview of the budgetary rules to be applied
- Platform Submission guidelines: information on the use of the submission platform
- Institution Request Form
- Platform Evaluation guidelines: information on the use of the evaluation platform
- Strategic Committee members: Pillars 1, 2 and 3
- FAQ

4. PILLAR 1 - SCOPE AND RESEARCH PRIORITIES OF THIS CALL

4.1. RESEARCH FRAMEWORK

The implementation of this pillar is done both via **thematic and bottom-up projects**. Bottom-up projects will be **coordinated by an FSI**, possibly in collaboration with universities and other research institutions. As such, the projects have as a challenge to fit into the global strategic priorities of the FSIs, in terms of their scientific expertise and / or their missions with regard to public service.

PILLAR 1 A: THEMATIC PART

Pillar 1A contributes to the development of the necessary knowledge to support the decisions to be taken by the federal government in the short, medium and long term in order to cope with global change. The aim of pillar 1A is to respond to the research priorities identified at the European and international level such as H2020, Belmont Forum, IPCC, IPBES, EMB, SCAR, the strategic agendas of the JPIs in which BELSPO participates... These research challenges are guided by the international commitments that Belgium has endorsed (CBD, SDG-2030, the climate convention and the Paris agreement, the Antarctic Treaty, OSPAR).

They cover, inter alia, the research in support of mitigation and adaptation to climate change, the

protection of biodiversity and ecosystem services, the protection of the natural environment, natural risks, and the sustainable exploitation of resources.

PILLAR 1B: BOTTOM-UP PART
The contribution of the FSIs to the knowledge of the earth and universe system

Pillar 1B contributes to the strengthening of knowledge about the living (e.g. evolution) and non-living world (e.g. components of the Earth and Universe system). This part of pillar 1 is built around specific and innovative expertise that is specific to the FSIs and is in line with their strategic research challenges.

4.2. SCIENTIFIC APPROACH

According to thematic research of Pillar 1A, a single priority entitled '**habitability'** has been selected. This priority is declined in several aspects which cover the scientific basis necessary to converge towards interlinked Sustainable Development Goals (2015-2030):

- SDG 3 - Access to health
- SDG 6 - Access to safe water and sanitation
- SDG 11 - Sustainable cities and communities
- SDG 13 - Fight against climate change
- SDG 14 - Life below water
- SDG15 - Life on Land

4.3. CALL PRIORITIES

4.3.1. NATIONAL THEMATIC CALL RESEARCH PRIORITIES

The concept of **habitability**, in its broadest sense, refers to the potential of an environment – past, present or future; terrestrial or extra-terrestrial - to support and preserve life in all its forms.

Maintaining conditions of habitability is more relevant than ever. While in the short term, efforts focus on the implementation of appropriate measures to counteract the effects of the current COVID-19 pandemic, in the long term, the survival of humanity will notably depend on preserving and even restoring the conditions of habitability for all biological species on which it depends.

Balanced and functional interactions between human, animal and environmental components are essential for the persistence of life on Earth. The economic, sociological, environmental, anthropological, cultural, health, urban planning, agricultural, geophysical, geological, biogeochemical and biological dimensions are all concerned.

Climate change, biodiversity loss, demographic pressure, habitat loss and fragmentation, soil degradation and pollution, air pollution and evolution of air quality, pests and diseases threaten the balance of these interactions and therefore the preservation of habitability.

The '**habitability'** thematic priority covers the spectrum of research needed to understand the requirements for habitability, to evaluate the risks, analyse the causes and consequences of the degradation of these conditions, and to carry out research in support of measures to sustain habitability in the long term in a context of global change.

The research priorities aim, more specifically, at:

- Understanding the requirements for habitability
- Identifying factors likely to undermine habitability
- Reaching a sustainable habitability

The research priorities address the following topics:

[1.] UNDERSTANDING THE REQUIREMENTS FOR HABITABILITY

- Further understand the mechanisms underlying availability of the essential components for life (water, carbon, nitrogen) by studying the co-evolution and complex dynamic interactions between their internal and their atmospheric reservoirs.

- Improve knowledge on the evolution of interactions between species (including micro-organisms and their hosts, reservoirs, vectors). Better understand the links between human living conditions and behaviour, ecological integrity and emergence of infectious zoonotic diseases.

- Compare environmental and climate conditions that underpinned habitability in the recent or old past with those that enable life today. Identify natural/no-human processes to drive a system from habitable to non-habitable. This will include research on extreme environments (e.g. Antarctica, deep sea) or on other planets.

[2.] IDENTIFYING FACTORS LIKELY TO UNDERMINE HABITABILITY

- Study the instability of the environment (soil leaching, variability of magnetic fields, earthquakes, forest fires, ecosystem collapse, biodiversity loss, diseases outbreak etc.) linked to global change, which threatens human livelihoods and health, infrastructures and habitats.

- Study imbalances in biogeochemical cycles that threaten life in atmospheric, terrestrial, freshwater and marine environments.

- Study the relationship between pathogen dynamics and ecosystem change in different environmental, socio-economic, political and cultural contexts.

[3.] REACHING A SUSTAINABLE HABITABILITY

- In 'least developed African countries'[4], develop scientific support to Nature-Based Solutions (NBS) with the potential to take into account several cross-cutting issues, namely: supporting climate change adaptation and tackling ecosystems degradation, biodiversity decline, deforestation, and emerging of new zoonotic diseases. Explore the potential implementation of the NBS into policies at different levels.

- In Belgium, develop land use and land cover science-based practices that converge towards carbon neutrality, in particular those that enhance carbon sinks by optimising the management of and/or restore natural, agricultural or forest soils while taking into account other soil functions (including biodiversity protection, food and biomass energy production).

4 https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

- Through the OneHealth approach[5], test evidence of: (i) the feasibility to integrate human, animal, and environmental health efforts to predict and control certain diseases at the human–animal–ecosystem interface (infectious and chronic) or (ii) the improvement of prediction and control of certain diseases through the integration of approaches that consider human, animal, and environmental health components.

4.3.2. TRANSNATIONAL THEMATIC CALL RESEARCH PRIORITIES

The programme enables participation in transnational programmes, such as the ERA-NETs and the Joint Programming Initiatives (JPI).

Bearing in mind the priorities of Pillar 1, the programmes and actions in which BELSPO participates with new projects in 2020-2021 are:

- JPI Healthy and Productive Seas and Oceans, Water JPI (http://www.waterjpi.eu/) and JPI Antimicrobial Resistance (https://www.jpiamr.eu/)-
  Co-funded call on "Aquatic Pollutants"
  The deadline for submitting pre-proposals is on 18th May 2020
- BiodivERsA
  ERA-net BiodivClim. Co-funded call on biodiversity and climate change.
  Funding decision of selected proposals planned mid-Sept 2020.

The introduction of this type of projects is subject to separate calls following the international call calendars and procedures.

4.3.3. BOTTOM-UP PROJECTS

The aim of these projects is to support the Federal Scientific Institutes (FSIs) in their scientific potential in their specific areas of expertise or missions.

The projects do not have to be in line with the thematic research themes in the context of the calls, but must be linked to the general frame of Pillar 1.

Only FSIs can submit a bottom-up project. Given their scope and philosophy, bottom-up projects are restricted in terms of number of partners. They can be carried out by a single FSI (acting as coordinator) who, whenever required, may seek to have (an)other partner(s) - including other FSIs and/or other Belgian research institutions, African research Partners from Least Developed Countries, and/or other (non-BELSPO funded) international research partners - in order to answer the scientific questions posed.

4.4. PROJECT BUDGET

The maximum available budget for the current call 2020-2021:

Type of project	**in k€**
National thematic projects	6 885
Transnational thematic projects	1 672
Bottom-up projects	2 850

5 One Health aims to integrate a variety of expertise, including fields concerned with human and animal health, environment, nature, biodiversity, social and economic sciences, and anthropology. (at https://www.biodiversity.be/4822/)

4.5. PROJECT STARTING AND END DATE

The projects selected within the context of the current call will start 15 December 2020 or 15 January 2021, depending on the programme budget repartition over 2020 and 2021. The project contracts will have a duration of 2 or 4 years plus 3 months to allow meeting all administrative requirements before the effective start-up of the project.

5. PILLAR 3 - SCOPE AND RESEARCH PRIORITIES OF THIS CALL

5.1. RESEARCH FRAMEWORK

The implementation of this pillar is done only via **thematic projects**.

PILLAR 3 "FEDERAL SOCIETAL CHALLENGES"

This pillar supports research that addresses current societal challenges (not covered by the other pillars). The topics funded in this pillar are selected in function of those challenges (e.g. health, security, ageing, economy...) that are considered a priority by the federal authority (as stated for example in Governmental Agreements, federal and interfederal plans...) and that align with international and European research agendas.

The ultimate goal is to develop a solid scientific expertise to support the competencies, strategic orientations and policies of the federal state. Such expertise will clearly enhance the knowledge base around these challenges, reveal opportunities and possible caveats and provide useful recommendations for the federal level.

The topics of this pillar will encourage research that mobilises a large spectrum of disciplines, that are embedded in the international and European context and that will strengthen the participation of a wide range of stakeholders.

5.2. CALL PRIORITIES

5.2.1. NATIONAL THEMATIC CALL RESEARCH PRIORITIES

[1.] A JUST TRANSITION TOWARDS A CARBON NEUTRAL SOCIETY

The transition to a carbon-neutral society is an extremely broad theme which, for this 2020 call for proposals, will be confined to a series of dimensions of federal interest relating to the links between climate policy and social justice. A just transition is indeed a major political challenge, as shown by the relevant elements contained in the European Green Deal, the National Energy-Climate Plan and the latest biennial report of the Combat Poverty, Insecurity and Social Exclusion Service on "Sustainability and Poverty".

In this call for proposals, we are concerned with the following six research priorities linked to this theme:

1. Distribution of the costs and benefits to households

This is a part of the costs and benefits that directly impact household income and expenses (e.g. possible carbon pricing, investment in renewable energy solutions, the purchase of more expensive equipment because it is more sustainable, etc.). On the side of benefits from these costs, one thinks of a lower energy bill due to the investments made, etc. A precise understanding of the impact of the transition on household incomes is essential to apprehend the impact of the policies that are being adopted. Next to an income approach, a broader "wealth" approach that takes into account household assets would provide an even better understanding of the transformation towards a carbon-neutral society. And finally, the inclusion of non-material elements in this "household" analysis would make it possible to fine-tune the impacts even further. One thinks, for example, of taking several variables into account, like the state of health of households, the quality of housing and the environment in which they live, the time they have at their disposal..., in a cost-benefit analysis. In view of the profound uncertainties weighing on the long-term evolution of the different variables of the system, the analysis of the costs and benefits for households (in terms of income but also according to the non-material dimensions mentioned here) of the transformation towards a carbon neutral society should integrate a prospective dimension. The analysis should also take into account the profile of each household (composition, lifestyle, income...) in its ability to access low-carbon energy alternatives.

2. Changing energy demand in the context of energy transition

Energy consumption practices and the tendency to adopt less emitting practices vary greatly between social groups. A change in energy demand requires profoundly revised social practices (i.e. social innovation). It is necessary to take the measure of these differences, to understand the factors which explain this heterogeneity and the obstacles to changes in practices in order to provide insights on public policies which would enable everyone to take part in the transformation towards carbon neutrality.

3. Labour market transition towards a carbon neutral society

The energy transition will undoubtedly bring with it sectorial changes in employment, with some sectors and types of jobs growing, others decreasing or disappearing. No sector of activity will be left unaffected by these profound changes. An understanding of the current phenomena is important in order to enable the federal State to support the development of a just transition through appropriate public policies. In addition, other economic models are emerging which should also be taken into account in the analysis of the implications in terms of employment: one thinks of the development of a circular economy, sharing platforms, etc.

4. Impact on the population, with special attention to vulnerable social groups

Carbon emissions follow a social gradient so the impact of climate change and the efforts to be made towards a carbon neutral society will not be equal for all. Therefore, one crucial issue is to better understand the public strategies to be put in place to ensure that the consequences of climate change and to energy transition are just and equitable for all. How can we formulate a climate policy that does not threaten social cohesion, but that allows everyone to benefit from it? A comparison with policies in other countries can provide interesting insights in this matter. Scientific research must make further progress on this subject: what are the direct or indirect impacts (cf. point c) that can be expected, should we encourage in-cash benefits (direct compensation for carbon pricing, for example) or rather invest in public infrastructures? Other dimensions will also be the focus of researchers' attention:

- how to define a sustainable minimum income?

- how to support the political participation of vulnerable groups, who may be less inclined to take ownership in the climate and transition debate? And how can we encourage their participation in concrete initiatives, such as shared sustainable economic initiatives (energy communities, food cooperatives, cohousing, shared mobility, etc.) as well as in the development and evaluation of climate policies?

- extreme climatic events causing direct (heat waves, floods, etc.) or indirect (diseases, food, air quality, etc.) impacts on the population (with special attention to vulnerable groups): it seems that a scientific consensus has not yet emerged on the question of which condition produces which impact for which type of group, which justifies the pursuit of "evidence-based" scientific research on this question.

5. Social distribution of greenhouse gas emissions, monitoring and indicators

Researchers are invited to propose contributions to improve tools for assessing public policies on greenhouse gas emissions according to the socio-economic characteristics and practices of the households that cause them. Information on mode of transport, type of housing, geographical location, and household living and consumption patterns is currently not or only weakly correlated with the socio-economic status of households, making projections uncertain. Moreover, scientific contributions measuring CO2 reductions (based on the full life-cycle methodology) of measures of the PNEC related to the transport sector are welcome.

6. Climate justice and sustainable food and water:

While there is evidence of behavioural change on the part of households towards a more balanced diet based on shorter and more sustainable routes, the social costs and benefits, as well as the collateral risks (for society, health, etc.), of these changes are still poorly documented. This concerns both consumers themselves and producers where scientific research can contribute to the way in which the food transition can be achieved while reducing the impact on producer and household incomes. The analysis will focus on Belgium and the European context.

[2.] SOCIETAL SHOCKS, BETWEEN (R)EVOLUTION AND SOCIETAL RESILIENCE

Societies adapt permanently to long standing trends and to sudden unpredictable events. Trends, such as ageing, climate change, security issues, technological transformations, loss of biodiversity... result in a progressive adaptation of societies while sudden events, such as terrorist attacks or the COVID-19 virus outbreak, request a strong and rapid response.

In either case, our potential to adapt to disruptive trends or events depends crucially on the initial state of our systems (including our preparedness to events that are foreseeable), their resilience and the capacity to provide collective responses. These elements are at the heart of this call for proposals: a first sub-theme invites researchers to look at the medium and long term effects of COVID-19 for the state, the economy and individuals. A second sub-theme deals with technological developments, their impact and opportunities for our modes of production, consumption, and ways of living and functioning of the public sector.

1. Societal response and resistance to the pandemic shock

The exogenous shock of the COVID-19 pandemic has a lasting impact on our societal equilibrium both during and after the pandemic. Such a shock reveals the strengths and weaknesses of our society. Indeed, the consequences of the pandemic consequences depend crucially on the state of the health system and its absorption capacity, (1) on the responses of the authorities to prevent the spread of the virus, to preserve the educational, cultural and paramedical sectors that have been damaged, to support the

economy following the almost complete cessation of activity, (2) and on the characteristics and reactions of the population to the measures taken.

It is around these elements, developed below, that scientific contributions are expected in order to propose the elements of decision-making useful for our country and for the federal State. The research projects may focus on the crisis period itself and/or its longer-term extensions. These contributions will take into account the state of our society, its resilience as well as the short- and medium-term responses that it has provided.

The priority dimensions for study are:

- Organisation and role of the federal State.

  The responsibility of the federal State in the operational and integrated coordination of the crisis was based on special powers and resulted, on the one hand, in the activation of the official federal crisis structure, but also, on the other hand, in creating various peripheral, complementary or specific groups and bodies. The division of labour, the availability of data and modelling tools to provide ex ante information on the impact of the crisis measures, and the readability and effectiveness of the overall crisis management architecture will have to be analysed, in particular by comparing crisis management approaches between countries that have organised crisis management.

  The organisation of the health system plays a key role in the fight against the pandemic and its strengths and weaknesses should be assessed, including from a comparative European and international perspective.

  The shortage of certain strategic supplies and the emergency measures taken to acquire and/or produce them on our territory raises the question of the role of the state as a guarantor of supply, safety, quality, compliance with standards and delivery of strategic goods and services.
  The management of the crisis in Belgium has highlighted the importance of social stabilisers (in particular the measures relating to temporary unemployment and the activation of the bridging right for the self-employed, accentuated by specific measures) and the public measures taken to keep economic activity to a minimum and to restart it after the crisis. It is therefore necessary to examine the medium- and long-term consequences on different segments (businesses, employees, self-employed, vulnerable groups, etc.) of public policies put in place. In this respect, researchers can rely on public population monitoring tools, or even strengthen them, in order to base their projects. They also should examine the question of the tools that have proven to lack in the perspective of an efficient crisis management.

  More generally, it is the role of the State as a key player in the economy and social security, by bearing part of the bill in a European and global context where the shackles have been loosened, that is brought back into the spotlight and calls for critical scientific views on the paradigms at stake.

  Furthermore, the departments of the federal State must continue to fulfil their tasks, even in times of crisis, even when their missions are not directly related to the management of the crisis and to health aspects. Examples include the police, defence, public transport, etc. Solutions that can increase the resilience of these entities must therefore be put in place. The service provided to the citizen by public authorities has been profoundly modified for some. These exceptional reforms taken in times of crisis are particularly delicate when they affect fundamental aspects of the law (predictability, rights of defence and access to justice, oral nature of debates, prescription, proportionate infringement of freedoms, personal data, etc.). The question of the sustainability of the measures taken in times of crisis is crucial, since these measures must be integrated into the necessary reform/evolution of Justice.

The question of the relationship between the State and the media also becomes central when analysing crisis management. Equally important is the question of the relationship between the state and the scientific world in crisis and post-crisis management, as well as the relationship between the general public and scientific experts.

It is necessary to analyse the impact of the measures taken hic et nunc and to draw lessons for a more structural and integrated policy with a view to future crises.

- Economic organisation

The economy is severely and probably permanently affected by the fact that more than 30% of the activity has been paused during the containment period. The sudden and mass cessation of activities has undoubtedly acted as an accelerator of changes already at work: development of e-commerce and recourse to online marketing of goods and services for many companies deprived of contact with their customers, recourse to walking or cycling, a return to essential and local consumption favouring the short circuit, sovereignty of production, massive recourse to teleworking, and more widely a re-examination of the organisation of work (questioning of open spaces, shared offices, distant leadership, increased autonomy...) are a non-exhaustive list of examples of organisational changes that are likely to have a lasting effect on the way work is done and the institutional arrangements that govern it. These elements constitute dimensions on which researchers can base their research projects.

Finally, it is essential to align, on the one hand, the necessary revival of our economy under COVID with, on the other hand, measures to redeploy the economy in the context of the climate transition, and to avoid ignoring the environmental challenges facing us. Belgium's place and role, as a small open economy, within Europe and the European recovery plan to prevent a recession and the Green deal also deserve our attention.

- Individual and interpersonal organisation

The necessary measures to contain the pandemic have also impacted the individual sphere, as well as the "vivre ensemble". One part of the population found itself confined while another continued its professional activity in anxiety-provoking conditions to ensure the functioning of the country.

The management of each person's life has been profoundly affected, whether in their relationship to (tele)work, their management of domestic life and intra-family relations, in the management of their social life (maintained and even intensified thanks to technological means?), in their consumption of goods, services and culture...

We welcome scientific contributions that will examine the way this crisis has affected the living conditions of people. There is a fear of an increase in both physical and mental health problems, intra-family and domestic violence, child abuse, the difficulty of separating private and professional life, managing stress, maintaining the quality of social support, essential consumption, access to health and care services, purchasing supplies when e-commerce is not an option, to subscribe to the necessary administrative measures, etc. Some experts are already talking about a burnout of confinement, parental stress, an educational divide between those who can pursue an online curriculum and those who cannot, psychological decompensating, added symptomatology in chronic patients, incivilities and sometimes violent reactions to public measures that are badly experienced because they are considered too intrusive or encroach on the private sphere (one thinks of GPS tracking and the cross-referencing of epidemiological and location data).

We are also interested in this call to know if (and how far) this period has been a propitious moment to reflect on the way we live and whether these reflections lead to lasting changes of attitudes. Researchers could for example examine people's relationship to time, mobility, consumption, attitude to climate change, our relationship to others and the place of solidarity, trust in state, experts and the academic world in its management of the crisis...

To fully understand the burden of this crisis on our society, it is necessary to study the impact, in the short term, of this exceptional situation on the health and living conditions of the general population, but also of those who have been infected. Furthermore, it is crucial to understand the medium and long-term consequences of the COVID-19 crisis on the income distribution, health and well-being of the Belgian population and on the inequalities that prevail, especially on the most vulnerable groups. The use of different sources of administrative data can play an important role in this respect, as they make it possible to analyse the evolution of health and health inequalities during, just after the crisis and in the longer term.

2. Evolution and adaptation of societal structures and practices

Independently of exogenous shocks, any structure is subject to endogenous tensions, internal to the system, on a permanent basis. The society then evolves slowly, undoubtedly in a more consensual manner, more in tune with its fundamentals, through an adaptation of its structures.

This evolution constitutes the backbone of what is known as the 4th industrial revolution. This dimension is approached from a more endogenous perspective, internal to the system, even if centrifugal forces are at work.

Digitalisation, automation and robotisation of production processes (Industry 4.0), as a disruptive technology, will change the labour market and impact individuals. We are talking about Work 4.0 including teleworking, flexible working hours, agile work, team autonomy, entrepreneurship... A likely increasing polarization between low-skilled and high-skilled workers is likely to occur. The latter being the major beneficiaries.

Policies on innovation, safety, labour market organisation and regulation, health, welfare and social protection will adapt to these changes. Thus, issues related to blockchains and Artificial Intelligence (and the ethical questions that arise from them) will obviously be taken into account.
We will more specifically look at:

- the scientific basis and the impact of policies concerning :
    - digitalization on social protection,
    - the steps needed to adapt the labour market to new digital skills and abilities, etc.
- digitisation of the economy as a catalyst for globalisation and its potential consequences. In this respect, and by way of example, the following issues can be mentioned:
    - the adequacy of tax systems in relation to the characteristics of the 4th industrial revolution (determination and location of tax bases, increased role of intangible assets in value creation, active presence on a market without physical presence, etc.),
    - the link between digitalisation (in the perspective of the Digital Belgium plan, among others) and (re)industrialisation, in a perspective of a circular economy and/or a decarbonised economy,
    - the strong increase in online transactions (e-commerce).
- technological, legal and societal stakes of the new technologies of and for security, in connection with "new tech crimes" and the challenges posed, in particular on IT infrastructures, blockchain

4.0 technologies, adaptation of the legal framework, citizen confidence/response and government-citizen relations, as well as the question of extending the written and even digital procedure.

[3.] MIGRATION

Migration to Belgium (and to Europe in general) has always found its origin in a multitude of underlying reasons: lack of workforce in Belgium, lack of opportunities and freedom or climate pressures in the countries of origin... While the topic of migration has been high on the political agenda, it is now out-shadowed by the COVID-19 crisis. However, it remains a pressing issue that deserves future scientific contributions. Despite having devoted a call to the issue of migration in 2016, the BRAIN-be programme failed to develop sufficient critical mass of research to cover this subject. Many questions, for which researchers can provide insight, remain unsolved.

In this call for proposals, we are concerned with the issue of federal policies for integrating migrants and their families, developed in the following five research priorities:

1. Governance of migration

For Belgium, research projects will focus only on the examination of:

- the European developments in this matter within a context of redefining national legislation regarding the international protection of refugees,
- the impact of migration within federal policies and the diversity of migratory flows, whether legal and illegal, inward and outward, diverse in terms of opportunities for the long-term integration of populations, asymmetrical in its geographic distribution on Belgian soil,
- the impact of migration on health and social protection of established or recently arrived populations, in terms of biological risks (for old or new diseases, e.g. resurgence of tuberculosis, the actual pandemic COVID-19…) and psychological well-being (stress and mental health), the access to health and social care and impact on poverty and inequality but also the funding of social security,
- the impact of remittances on the economy and labour market of the country of origin or host country, as well as on the flows or family structure,
- the interactions among policies and migration, particularly through the orientation of public measures or citizen reactions…,
- how the interstate European policies affect migration flows and how Belgium stands in relation to these policies.

2. Longitudinal/historical look at the asylum 'crises'

The manner in which the asylum crisis is/has been managed in 2014/2015 (both at the European national and local level and by the Belgian population/citizens) can be studied. Some lessons can be drawn from it and from its extensions in terms of short and mid-term support of the targeted populations, e.g. unaccompanied minors, etc.

3. Impact analysis of extreme weather events and climate change

Even if they happen outside Europe, extreme weather events or climate change can have an impact on migration patterns towards Europe, and Belgium in particular. This relates to several dimensions, like the scale of the migration, the origin and characteristics of the migrants… Research projects will consider past trends and projections, bringing insight on Belgian and European policies, particularly regarding their capacity to foresee (and thus manage) future crises, in compliance with international law.

4. Integration of migrants

The analysis of the integration in Belgium of migrants' populations can be approached:

- both in terms of the image perceived by the Belgian population or by themselves, and in terms of reality of life,
- regarding the 'clash' of cultures to be reconciled and the path towards a shared future,
- considering the life and work paths to be built for migrants, the labour market access/openness (more specifically: the integration into the labour market of migrants issued from family reunification, as Belgium is one of the European countries where this share of migration is the highest), and the wage discrimination against immigrants already at work,
- through the social participation and activation of migrants.

5. Impact analysis of economic, social and health inequalities

This impact analysis will consider the link between inequalities and migration patterns in Belgium. Furthermore, the question on how Belgium, through Development Aid, can contribute to reducing this gap and the flow of migrants can be addressed.

5.2.2. TRANSNATIONAL THEMATIC CALL RESEARCH PRIORITIES

The programme enables participation in transnational programmes, such as the ERA-NETs and the Joint Programming Initiatives (JPI).

Bearing in mind the priorities of Pillar 3, the programmes and actions in which BELSPO participates in 2020-2021 are:

- JPI Climate (SOLSTICE): this call is closed
- JPI MYBL (EWG - equity and wellbeing across generations): this call is open until early September.

5.3. PROJECT BUDGET

The maximum available budget for the current call 2020-2021:

Type of project	**in k€**
National thematic projects	8 290
Transnational thematic projects	1 000
Bottom-up projects	NA

5.4. PROJECT STARTING AND END DATE

The projects selected within the context of the current call will start 15 December 2020 or 15 January 2021, depending on the programme budget repartition over 2020 and 2021. The project contracts will have a duration of 2 or 4 years plus 3 months to allow meeting all administrative requirements before the effective start-up of the project.

6. CONTACTS

Further information can be obtained by contacting the **secretariat**: **BRAIN-be@belspo.be**

7. COMPLAINTS

BELSPO places great importance on the quality of its service and on improving the way it operates. A special form to handle complaints has been created.

The complaint form is available at the following address:
http://www.belspo.be/belspo/organisation/complaints_en.stm

Complaints submitted anonymously or which are offensive or not related to our organisation will not be processed.

A complaint is handled as follows:

- Once your complaint has been filed, a notification of receipt will be sent;
- The complaint will be forwarded to the relevant departments and individuals and will be processed within one month;
- An answer will be sent by e-mail or letter;
- The complaint will be treated with strict confidentiality.

If you are dissatisfied by the initial response to a complaint, you can always contact the Médiateur Fédéral / Federal Ombudsman, rue Ducale / Hertogstraat 43, 1000 Brussels (email: contact@mediateurfederal.be / contact@federaalombudsman.be).

ANNEX 1: LIST OF FEDERAL SCIENTIFIC INSTITUTIONS (FSIs)

- National Archives and State Archives in the Provinces (ARA-AGR)
- National Institute of Criminalistics and Criminology (NICC-INCC)
- Royal Belgian Institute for Space Aeronomy (BIRA-IASB)
- Royal Belgian Institute of Natural Sciences (KBIN-IRSNB)
- Royal Institute for Cultural Heritage (KIK-IRPA)
- Royal Library of Belgium (KBR)
- Royal Meteorological Institute of Belgium (KMI-IRM)
- Royal Museum for Central Africa (KMMA-MRAC)
- Royal Museums of Art and History (KMKG-MRAH)
- Royal Museums of Fine Arts of Belgium (KMSKB-MRBAB)
- Royal Observatory of Belgium (KSB-ORB)
- Sciensano
- War Heritage Institute (WHI)

ANNEX 2: LIST OF FEDERAL DEPARTMENTS

- FPS Economy, SMEs, Self-Employed and Energy
- FPS Employment, Labour and Social Dialogue
- FPS Finances
- FPS Foreign Affairs, Foreign Trade and Development Cooperation
- FPS Public Health, Food chain safety and Environment
- FPS Internal Affairs
- FPS Justice
- FPS Mobility and Transport
- FPS Policy and Support
- FPS Social Security
- Ministry of Defence
- PPS Social Integration, anti-Poverty Policy, Social Economy and Federal Urban Policy