



AGENCE NATIONALE DE LA RECHERCHE

ANR

# Work Programme 2018

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## A. Context and objectives of Work Programme 2018

### A.1) General context of the Work Programme

The French National Research Agency (ANR) funds project-based research carried out by public operators cooperating with each other or with private companies. An operational agency reporting to the Ministry of Research, it awards research funding based on competitive selection by peer review in a process that complies with international standards. In 2010, ANR was also appointed as the state operator for a large number of calls for research proposals by the Commissariat General for Investment (CGI), set up as part of the “Investments for the Future” programmes (PIA). The Agency can also facilitate access to various related calls for proposals through digital portals.

Its primary mission of funding public research involves ANR in the implementation of the National Research Strategy (SNR). The higher education and research act of 22 July 2013 established the need to define and implement a National Research Strategy. It entrusts the Strategic Research Council (CSR) with the task of drafting the broad outlines of the SNR and helping to review its implementation through the Operational Research Committee (COMop). It specifies that the Minister for Research is responsible for ensuring the strategy is consistent with the European Union strategy. All the provisions of this strategy have been incorporated into the Research Code.

Over and above the National Research Strategy, the ANR programmes, including its Generic Call for Proposals (AAPG), are designed to give researchers in various disciplinary fields access to co-funding for a large number of basic or applied research themes, in addition to the regular funding they receive. The agency thus has the mission of funding and promoting basic and applied research, technical innovation, technology transfer and public-private partnerships. Its action is designed to promote academic and technological excellence in French research by means of a rigorous competitive selection process based on peer review in compliance with international standards.

ANR also sets out to strengthen scientific cooperation at European and international levels by coordinating its programmes with European and international initiatives and by following the outlines of the international scientific strategy laid down by its governing Ministry. For example, it supports international consortia in partnership with other funding agencies in Europe and throughout the world.

The ANR Work Programme, and the framework for launching and managing the calls for proposals, evolved in 2013 in response to the France Europe 2020 Agenda. Nine major societal challenges<sup>1</sup> constitute the scientific backdrop for this Work Programme.

This presentation sets out France's research efforts to support our society in facing up to the major challenges that confront us. Its approach is similar to that of the H2020 Societal Challenges for Europe, and more recently the OECD Megatrends and the United Nations Sustainable Development Goals. It also helps citizens understand public research funding and enables quantified monitoring of the state's actions during the implementation of the SNR. The scientific, economic, environmental, social and cultural objectives are described in detail in the Appendix.

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<sup>1</sup> The challenge “a spatial ambition for Europe” is the responsibility of a different resources agency, the CNES (National Space Agency).

In this overall context, the ANR Work Programme is the roadmap that defines our country's priority research areas as set out in the SNR document. It also takes into consideration contributions from the five Alliances<sup>2</sup>, the CNRS (National Scientific Research Centre) and requests from MESRI (the French Ministry of Higher Education, Research and Innovation), which coordinates interministerial initiatives between the relevant ministries.<sup>3</sup>

Work Programme 2018 describes the initiatives and calls for proposals suggested by ANR under the 2018 budget year, giving its funding proposals all-round visibility. **It is directed towards all scientific communities and all public and private players involved in French research**, including small and medium-sized enterprises (SME) and very small enterprises.

As stated in the circular<sup>4</sup> on the scientific integrity policy, ANR ensures that all actions planned under Work Programme 2018 comply with the principles of the code of research ethics.

ANR will also address the issue of gender across all the actions included in Work Programme 2018 in application of a policy<sup>5</sup> to reduce inequality between men and women in higher education and research.

The ANR Board of Directors adopted this document on 27 June 2017.

## A.2) Structure and objectives of Work Programme 2018

Work Programme 2018 (WP 2018) is divided into four cross-disciplinary components, each with its own budget. Each component has its own funding instruments, calls for proposals and programmes. **The main “Research and Innovation” component corresponds to the Generic Call for Proposals (AAPG).**

The funding instruments offered by ANR are presented in brief in Section C of this document. Each funding instrument has its own purpose, specific anticipated effects and distinct characteristics in terms of selection and monitoring. There are collaborative research instruments, instruments specific to individuals and all the other WP 2018 programmes and calls for proposals. When submitting a project, researchers have to choose the funding instrument that will best serve the scientific objectives and requirements of their project.<sup>6</sup>

The **four components** of Work Programme 2018 are summarised below. They incorporate several strategic dimensions:

### 1. “Research and Innovation coordinated by the Generic Call for Proposals” component

The “Research and Innovation” component combines the acquisition of basic knowledge with targeted, often applied, research. It is the subject of the Generic Call for Proposals (AAPG) and uses all the instruments (listed in detail in section C) that fund either individual research projects coordinated by young researchers (**JCJC**) or collaborative research projects. These collaborations may be between public entities in a national or international context (**PRC** and

<sup>2</sup> Allenvi (Environmental Research Alliance), Allistene (Digital Science and Technology Alliance), Ancre (National Energy Research Coordination Alliance), Athena (National Alliance for the Humanities and Social Sciences) and Aviesan (National Alliance for Life Sciences and Health).

<sup>3</sup> Governing ministry: Research and Higher Education. Other relevant ministries include agriculture, ecology, healthcare, industry, defence, foreign affairs, culture and national education.

<sup>4</sup> Circular 2017-040 of 15-3-2017 – MENESR – DGRI – SPFCO B2

<sup>5</sup> Follow-up to the 9<sup>th</sup> European Conference on Gender Equality in Higher Education and Research – DGSIP – DGRI

<sup>6</sup> The submission and evaluation procedures are described in the various calls for proposals and their appendices, including the Generic Call for Proposals (information available on the website from September 2017). We recommend checking the updated agendas for these various calls for proposals on the agency's website.

**PRCI** respectively) or between public and private entities with potential for openings to the world of business (**PRCE**).

The societal challenges defined as the framework for the National Research Strategy – France Europe 2020<sup>7</sup> are also the backdrop for ANR's Generic Call for Proposals (AAPG) 2018, with the exception of the “space” sector which falls under the remit of CNES. These major challenges require both basic and applied research and are listed below:

1. “Efficient resource management and adaptation to climate change”
2. “Clean, safe and efficient energy”
3. “Stimulate industrial renewal”
4. “Life, health and well-being”
5. “Food security and the demographic challenge”
6. “Sustainable mobility and urban systems”
7. “Information and communication society”
8. “Innovative, inclusive and adaptive societies”
9. “Freedom and security of Europe, its citizens and its residents”

The “Research and innovation” component coordinated by the AAPG has been structured into research themes through consultation, taking account of the SNR, contributions about possible updates from the five Alliances and CNRS and requests from MESRI. This ministry coordinates interministerial initiatives between the relevant ministries<sup>8</sup> and the challenges' scientific advisory panels.

- A total of 36 research themes are presented in the framework of the nine societal challenges.<sup>9</sup>
- Three themes fall outside the challenge framework. Their goal is to support certain fundamental disciplines.<sup>10</sup>
- Eight research themes relate to cross-disciplinary issues where several challenges meet (“Interchallenge” themes). They are necessarily interdisciplinary.

**Every theme of the Work Programme corresponds to a scientific evaluation panel.**<sup>11</sup> The panels corresponding to the interdisciplinary or cross-disciplinary themes include members who cover all the required disciplines.

## 2. Specific initiatives outside the AAPG (Flash, Challenges, etc.)

<sup>7</sup> [http://cache.media.enseignementsup-recherche.gouv.fr/file/Strategie\\_Recherche/26/9/strategie\\_nationale\\_recherche\\_397269.pdf](http://cache.media.enseignementsup-recherche.gouv.fr/file/Strategie_Recherche/26/9/strategie_nationale_recherche_397269.pdf)

<sup>8</sup> Governing ministry: Research and Higher Education. Other relevant ministries include agriculture, ecology, healthcare, industry, defence, foreign affairs, culture and national education.

<sup>9</sup> As recommended by the Strategic Research Council, every one of these challenges calls for both basic and applied research. “Fundamental” knowledge is identified either as a specific theme, if it underlies the entire challenge, or otherwise within specific themes to which it relates. The research themes tend to encourage an interdisciplinary approach and an integrative vision in line with the expectations of the SNR.

<sup>10</sup> Two of them, “Mathematics” outside the challenges and “Condensed and diluted matter physics”, may of course potentially contribute to several challenges in the medium or long term. Conversely, the “Particle physics, universe science and history and structure of the Earth” theme has no direct link to any of the nine challenges.

<sup>11</sup> Subtheme in some cases.

Certain topics that are very focused on precise objectives require an extremely rapid response or specific arrangements.

ANR has set up a specific instrument to respond to urgent needs for research with scientific relevance to an event or disaster of exceptional magnitude: **the flash call**. The instrument has come into play five times since its creation (Flash Haiti, Flash Fukushima, Flash Drones, Flash Ebola and Flash Asile (Asylum)). The fast-track procedures can select and fund projects very quickly whilst ensuring competitive selection by peer review complying with the best standards. Decisions regarding calls are advertised widely.

Other topics need teams to be pitted against each other, developing competing approaches to overcome major scientific or technological barriers. ANR has therefore devised a special Challenge system. Usually coordinated by a co-funding partner, the challenges select and fund several teams whose respective approaches compete through a series of tests. These challenges are subject to specific calls for proposals setting out their respective objectives and the type of test envisaged. Applicants are advised to consult the 2018 programme on the ANR website.

### 3. “Building the European Research Area (ERA) and France's international attractiveness” component

This component makes funding instruments available to French researchers and teams to increase the influence and appeal of the country's research and help to construct the European Research Area. These instruments specify or supplement their counterparts under the Horizon 2020 programme. They foster the development of high-level research partnerships, helping French teams to assume leadership roles in European and international programmes.

The societal challenges underlying Work Programme 2018 have strong European and international dimensions, as they have been designed on a sector-by-sector basis to be consistent with and to complement the societal challenges of the European Horizon 2020 framework programme. The content of several challenges is designed to fit in with European (ERA-NET, JPI, ERA-NET COFUND etc.) and international (Belmont Forum etc.) programmes. Moreover, bilateral agreements between ANR and foreign agencies enable the development of strategic partnerships or facilitate international cooperation in a research area without borders, particularly within the framework of the AAPG (PRCI, "Research and Innovation" component) – see sections [D.5](#), [D.6](#) and [D.7](#)).

The “Building the European Research Area (ERA) and France's international attractiveness” component of Work Programme 2018 takes the form of several dedicated funding instruments, each the subject of a specific call for proposals:

- **“Setting up European or International Scientific Networks” (MRSEI)** aims to strengthen the position and influence of French research in the European and international spheres (specific call for proposals: see section [D.5](#)).
- **“Springboard-ERC” (T-ERC)** aims to boost the success of French researchers applying for European Research Council (ERC) Starting Grants and Consolidator Grants (specific call for proposals: see section [D.6](#)).

In addition to these specific instruments, ANR funds French teams under bilateral and multilateral partnerships through joint programming initiatives (JPI), European instruments in



FP7 (such as **ERA-NET** or **ERA-NET+**) and Horizon 2020 (such as **ERA-NET COFUND**) and also under other multinational initiatives responding to major global challenges (**G8 research**, **Belmont Forum**, etc.) (see section [D.7](#) and Tables 2 and 3 for a summary of these international calls for proposals; the list of calls is updated regularly on the ANR website).

#### 4. "Economic impact of research and competitiveness" component

The purpose of this component is to stimulate partnerships with companies and transfer the findings from public research to the business community. The initiatives proposed boost cooperation and partnerships, creating value from the results of public research. They also encourage companies' R&D efforts by providing incentives to invent and innovate. These initiatives are positioned in a context of increasing technological maturity and greater integration of these inter-sector partnerships. Since relatively few SMEs and middle-market companies in France offer innovations in services or products, due to difficulties in forging links with the public research sector, some initiatives are targeted specifically towards these SME and middle-market companies.

In addition to the "Collaborative Research Projects Involving Enterprises (PRCE)" instrument under the "Research and Innovation" component (AAPG), the IERC component consists of specific programmes:

- **LabCom and LabCom Consolidation:** To create and consolidate shared laboratories established jointly by a public research laboratory and a small or medium-sized enterprise (SME) or a middle-market company. The technological maturity of the projects is intermediate (see section [D.1](#)).
- **Industrial chairs:** To create chairs in public laboratories, established with companies and funded jointly by ANR and the companies. This initiative aims to strengthen the potential for innovative and strategic research in priority areas for French industry where technology readiness levels (TRL) are still low (see section [D.2](#)).
- **Carnot Institute:** To develop contractual research between public research organisations and the business world (see section [D.3](#)).

Partnerships between business and public research are also encouraged in the "Research and innovation" component (AAPG) through the "Collaborative Research Projects Involving Enterprises (PRCE)" instrument ("Research and Innovation" component).

All these initiatives are coordinated with academic research transfer structures, including those funded under the Investments for the Future plan such as the SATTs, but also with public structures close to the business world. For example, as in the past, the 2018 ANR calls for proposals will be open to labelling by competitive clusters.

#### A.3) Other funding opportunities, ANR partnerships and co-funding

In line with its mission as a project-based research funder, ANR establishes partnerships with other funders (see Table 4 in the Appendix) such as:

- the National Solidarity Fund for Autonomy (CNSA),
- the Ministry of Defence (Defence Procurement Agency – DGA),
- the Ministry of Health (General Directorate for Care Provision – DGOS),
- the Ministry of Agriculture, Food and Forestry (MAAF),
- the Ministry of the Environment, Energy and the Sea (MEEM),

- the General Secretariat for Defence and National Security (SGDSN).

These particularly valuable partnerships provide project funding and co-funding opportunities that complement the ANR's own operating budget.<sup>12</sup> Examples include the **Astrid** and **Astrid Maturation** programmes specific to dual-use research, implemented by ANR with DGA funding (see section [D.4](#)).

Other public institutions also provide funding for project-based research and launch their own calls for proposals, e.g. the National Cancer Institute (INCa) and the National Agency for HIV and Hepatitis A Research (ANRS). To ensure efficiency, projects relevant to these calls for proposals are not funded by ANR. Consequently, the eligibility of projects submitted to ANR that are relevant to themes likely to be supported by these bodies, regardless of the WP 2018 call for proposals for which they are submitted, will be evaluated jointly by ANR and the other bodies.

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<sup>12</sup> Co-funding is understood to mean that part of the aid allocated to the project (based on the initial request) comes from the ANR partner. This does not normally involve additional funding.

## B. Description of research associated with the ANR Generic Call for Proposals 2018 (AAPG 2018).

### B.1) Research in support of the challenge

#### “Efficient resource management and adaptation to climate change”: towards an understanding of global change.

In light of world population growth and ever-increasing needs in terms of energy, raw materials, products and services, environmental changes are becoming an increasingly pressing matter at all scales, from individual landscapes to the planet as a whole (climate, biodiversity loss, soil degradation, air and water pollution, etc.). This new era, dubbed the Anthropocene epoch, has brought with it the need for an integrated approach to managing both the environments and the development trajectories of human societies in all their diversity.

It is therefore necessary to expand our basic knowledge about the processes behind the changes and comprehend their local and regional effects on resources, ecosystems, societies and human activities, especially those dependent on ecosystem services. There is also a need for research into social innovations – legal, economic, political and technological – to avoid or reduce the impacts, compensate for losses, restore environments and adapt to new constraints and opportunities. This challenge contributes to major international initiatives in the field ([GEO](#), [Future Earth](#), [GFCS](#), [IPCC](#), [IPBES](#), [SDG](#), etc.) and is backed by international calls for proposals. All this research is firmly rooted in the context of the Paris climate agreement signed at COP21 in late 2015, the first ever universal climate agreement. Awareness of the threats to human well-being and the need to develop procedures for implementing the Paris Agreement raise new research questions under two themes:

#### **B.1 – Theme 1: Fundamental knowledge about natural environments and biodiversity**

*Subtheme 1.1: Fluid and solid earth*

*Subtheme 1.2: Living earth*

#### **B.1 – Theme 2: Scientific and technological innovations to support the ecological transition**

as well as themes shared with other challenges (see section [B.11](#), themes 5 to 8)

### B.2) Research in support of the challenge

#### “Clean, safe and efficient energy”

ANR aims to use this challenge to mobilise the best scientific and technological skills to tackle the issues of the energy transition at both national and global level and to help construct the future energy mix in the context of France's “Factor 4” emissions target for 2050. The research contributes to the SNR in this area, to the recent National Energy Research Strategy (SNRE) introduced in an [Order of 21 December 2016](#) by the Ministers for Energy and Research, and to France's commitment to doubling public R&D funding for clean energy announced during COP21 at the end of 2015<sup>13</sup>.

The challenge focuses on six major objectives:

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<sup>13</sup> See the [Mission Innovation](#) site: <http://www.mission-innovation.net/participating-countries/france/>

- Mobilising all scientific disciplines capable of producing **basic knowledge** relevant to the energy transition;
- Promoting the **systemic, integrative** and generally **multidisciplinary** approaches often required when dealing with energy issues;
- Promoting and **exploring** radically new ideas and **disruptive concepts** outside existing paradigms;
- Designing **materials, methods and processes** for use in energy technologies; the intention is to support a wide spectrum of projects on **energy-related materials**, ranging from research and design focusing on materials with the properties required for the target applications to their integration into functional systems;
- Providing **proofs of technological concepts**, which may include developing new laboratory test facilities or integrating facilities into existing experimental sites. However, the challenge's scope is limited to the earlier stages of development (Technology Readiness Levels 1 to 5);
- Promoting the contribution of the **humanities and social sciences** to discussions on the energy transition and characterising the way in which societal choices are made through the deployment of energy technologies.

Apart from the first subtheme, which is concerned with the production of basic knowledge and disruptive concepts, and subtheme 7, which aggregates contributions from the humanities and social sciences, the remaining subthemes cover energy issues from primary resource capture to end use, particularly in the industrial sector, including conversion of energy vectors, storage and distribution. Each subtheme includes research aiming to acquire basic knowledge about the theme in question:

## **B.2 – Theme 1: “Clean, safe and efficient energy”**

*Subtheme 1.1: Basic and exploratory research and disruptive concepts*

*Subtheme 1.2: Renewable energy capture and harvesting energy from the environment*

*Subtheme 1.3: Energy from under the ground*

*Subtheme 1.4: Conversion of primary resources into fuels and platform molecules, carbon chemistry*

*Subtheme 1.5: Dynamic management of energy systems: storage, networks, vectors*

*Subtheme 1.6: Energy-saving industrial facilities and processes, CO<sub>2</sub> capture*

*Subtheme 1.7: Energy transition and humanities and social sciences*

A cross-disciplinary theme relates to the "Clean, safe and efficient energy" challenge (see section [B.11](#), theme 3).

## **B.3) Research in support of the challenge**

### **“Stimulate industrial renewal”**

The image of French industry is tarnished by pollution generated within companies or in the environment. In addition, competitiveness is falling and products are ageing in sectors that have not opted to specialise in innovative, high-added-value products. French industry must therefore reinvent itself and strive towards clean, sustainable manufacturing, promoting a circular economy to get ahead of its competitors. This applies both to existing industries, which must be supported in their (r)evolution, and to **industrial sectors that need to emerge** to cater for new requirements.

The goal of this challenge is thus to support this transition, funding projects that prepare for these changes **in the medium and long term**. The research will cover broad **industrial fields** (e.g. manufacturing industries, chemical and process industries, agri-food industries etc.) and a huge spectrum of **scientific disciplines** (industrial engineering, robotics, ergonomics, human/machine interfaces, economics, physics, chemistry, mechanics, materials, process engineering etc.) that can deal with the **technological aspects** and associated **human and societal dimensions** (workplace organisation, integration in the urban fabric, valuing human capital, new business activities etc.). The research will target all aspects of current or emerging industries, from the design, manufacture and assembly of materials and objects to industrial organisation and the world of work. However, projects relating to materials developed primarily for the energy sector should be submitted under the "Clean, safe and efficient energy" challenge.

The results of this research are expected to provide **medium- or long-term renewal**, which will combine **innovation, savings and solutions to society's pressing needs**. Thus, in line with the "industrial leadership" priority and the "key enabling technologies" (KET) aspect of the Horizon 2020 programme, the "Stimulate industrial renewal" challenge aims to support studies at a broad spectrum of TRL (TRL 1 to 4), ranging from basic research with no immediate applications to research guided by industrial issues. Consequently, **the various themes will also consider basic research projects focusing on new approaches**.

The renewal of French industry involves **multiplying the links between academic laboratories and business**. These links may include technology transfer, but they should also enable **a rapid transfer of newly-acquired knowledge to potential users**. Proposals may therefore be experimental, theoretical, technological, industrial or instrumental, and may include fundamental aspects of knowledge acquisition. Proposals are expected to be evenly spread between breakthroughs away from existing approaches, the elimination of technological barriers in new production processes and the acquisition of new knowledge on themes of interest. Modelling and simulation may be included in proposals meeting the above objectives or be the focus of specific proposals.

***B.3 – Theme 1: The factory of the future: people, organisation, technologies***

***B.3 – Theme 2: Metallic and inorganic materials and associated processes***

***B.3 – Theme 3: Molecular chemistry, sustainable chemistry and associated processes***

***B.3 – Theme 4: Polymers, composites, physics and chemistry of soft matter***

***B.3 – Theme 5: Nanomaterials and nanotechnologies for the products of the future***

***B.3 – Theme 6: Sensors, instrumentation***

***B.3 – Theme 7: Chemistry: analysis, theory and modelling***

A cross-disciplinary theme relates to the "Stimulate industrial renewal" challenge (see section [B.11](#), theme 3).

## **B.4) Research in support of the challenge**

### **“Life, health and well-being”**

The “Life, health and well-being” challenge offers enormous potential for pushing back the frontiers of knowledge and transferring the results to individuals and society. This challenge is also a driver for innovation and economic growth in the industry sectors of biotechnology, pharmaceuticals, diagnosis and medical devices.

The ANR Work Programme 2018 offers 12 themes associated with the "Life, health and well-being" challenge, most of them cross-disciplinary and all very open to basic research proposals. Three of these themes are presented in the section on multidisciplinary initiatives (see section [B.11](#), themes 1, 2 and 7). All the themes are distributed between three broad fields:

- i) decoding the multi-scale cellular, physiological, developmental and ageing mechanisms that take place in living organisms, an essential step towards understanding and diagnosing pathologies caused by malfunctions in these mechanisms. Initiatives should go beyond the descriptive stage of genome observation and sequencing to address the understanding of functional mechanisms and their disorders.
- (ii) understanding pathological processes with a view to preventing, treating or compensating for disabilities. This involves medical innovation, such as identifying new biological markers or innovations in cell, tissue or organism imaging, new therapeutic targets and molecules, innovative high-content, high-throughput screening methods, pharmaceutical and pharmacological innovations, biotherapy for repair, regeneration and replacement, biomaterials and technological research in e-health and telemedicine.
- (iii) knowledge about determinants of public health and health-oriented social sciences to describe the causal chains of socioeconomic, gender, environmental and cultural inequalities, health crises, the impact of chronic diseases on individuals and their environment, social, economic and political dynamics relating to health innovations and healthcare regulation and finally methodological research, regardless of its field of application.

ANR finance supplements funding from other bodies. The health portal ([www.aap-recherchesante.fr](http://www.aap-recherchesante.fr)) provides information on all calls for proposals published in France in the field of health and sets out the specific features of each one. For example, ANR does not fund research into cancer, HIV/AIDS and viral hepatitis or certain environmental aspects of health. These themes are the responsibility of INCa, ANRS or ANSES. Projects in these fields that incorporate a partnership with industry or an international partner may nevertheless receive ANR funding, along with projects submitted for ERA-NET-type calls for proposals open to these themes. Clinical research projects should preferably be submitted under the hospital clinical research programme (PHRC), and research projects on health and care systems should be submitted under the healthcare performance research programme (PREPS) run by the Directorate-General for Healthcare (DGOS).

***B.4 – Theme 1: Biochemical and structural approaches***

***B.4 – Theme 2: Genetics, genomics and RNA***

***B.4 – Theme 3: Cellular biology, developmental biology and evolution***

***B.4 – Theme 4: Physiology and physiopathology***

***B.4 – Theme 5: Immunology, infectiology and inflammation***

***B.4 – Theme 6: Molecular and cellular neuroscience; developmental neuroscience; integrative neuroscience***

***B.4 – Theme 7: Translational health research***

***B.4 – Theme 8: Medical innovation***

***B.4 – Theme 9: Healthcare technologies***

ANR also proposes international and European initiatives under the "Life, health and well-being" challenge, which can be found on the ANR website.

## **B.5) Research in support of the challenge**

### **"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"**

Research under this challenge relates to food security, the sustainability of agricultural, forest, aquaculture and marine ecosystems and the bioeconomy. It is partly directed towards achieving UN sustainable development goal 2, "Zero Hunger", and the terms and ambitions of the Paris climate agreement.

Food security means ensuring the world's population has access to enough healthy, balanced and nutritious food to satisfy its needs and food preferences. Ensuring food security should not detract from the other interdependent sustainable development goals, including reducing inequality, access to energy and water, protecting biodiversity, fighting land degradation and combating climate change.

In the face of global change, food and non-food systems using biomass are undergoing or must undertake significant transformations. This involves both reducing the ecological footprint of agricultural, forestry, livestock, aquaculture and fish production and processing and adapting these sectors to current global changes: climate change and biodiversity loss, the expanding world population, changes in biomass consumption practices and the globalisation of trade. All these factors exert growing pressure on production systems. They generate increased health risks and have potential repercussions for human health.

The development of the bioeconomy, as laid down in the relevant French strategy, can make a considerable contribution to addressing these issues: complementary food and non-food use, new joint models for the use of bioresources, optimisation and reuse in a circular economy, new modes of economic and territorial organisation and governance etc.

Biological resources, fundamental components in the functioning of these systems, must be studied to determine both their intrinsic properties and their ability to respond to these objectives.

The challenge is highlighting two priority initiatives in 2018, the bioeconomy (under an inter-challenge initiative) and micro-organisms, restricting the fields of investigation to the fundamental and generic mechanisms by which they operate and the different holobionts in all their dimensions.

Achieving these goals will require systemic, cross-disciplinary and applied research and innovation and exploratory cross-disciplinary research to produce fundamental knowledge. Research areas include biological resources, biomass, productive ecosystems and food systems and will target in particular the production of new bioresources, new practices, new social organisations and new markets.

The work relates to different organisational levels and spatial and temporal scales, from the gene to the individual, from the individual to the population and then to the ecosystem, from local solutions to global coordination and from short-term decisions to long-term objectives. Research may also focus on the links between these scales.

These complex, interlinked areas draw on the life sciences, soil science and agronomy, social sciences, humanities and physical sciences for the processing of bioresources.

These objectives relate to two specific issues:

**B.5 – Theme 1: Animal biology, photosynthetic organisms and micro-organisms of interest for biological resources**

*Subtheme 1.1: Knowledge base in the biology of organisms of interest for biological resources, their specific models and associated organisms*

*Subtheme 1.2: Animal biology, photosynthetic organisms and micro-organisms of interest for biological resources: adaptation and reduction of inputs*

**B.5 – Theme 2: Nutritional biology, food, healthy and sustainable food systems and global food security**

*Subtheme 2.1: Nutritional biology and food science*

*Subtheme 2.2: Evolution of technologies, behaviours, sectors and public policies for healthy and sustainable food*

*Subtheme 2.3: Global food security*

and to issues shared with other challenges (see section [B.11](#), themes 3 to 8).

**B.6) Research in support of the challenge**

**“Sustainable mobility and urban systems”**

Research submitted for this challenge should explore ways in which urban systems, transport, housing and their users can adapt to the need for sustainable development. The challenge particularly stresses integrated and systemic approaches to the analysis of societal and environmental processes in their interactions and complexity. Mobility, habitat and coexistence more generally should be considered in the light of environmental pressures, ecosystem services, the reduction of nuisance factors and the global changes that are already happening or are predicted in the medium and long term. Without losing sight of vulnerabilities and potential social inequalities, research should assess and improve the performance of buildings and transport, as well as the organisation of urban systems.

Particular attention will be paid to advances made by the digital society to support, develop and promote more sustainable mobility and smarter urban management while ensuring sustainable and adaptable infrastructure and networks meeting existing and emerging needs. Governance procedures and the development of public policies that play a role in the management, evolution and promotion of urban systems must be analysed in light of these objectives.

Research undertaken in this framework must pursue several scientific objectives:

- Constitute new bodies of knowledge focused on energy efficiency, environmental impacts and quality of use for components such as vehicles and buildings at different scales, examining the interactions between these criteria and the scales;
- Develop modelling of physical and social objects and their interactions as well as data management to support design, decision-making and performance assessment;
- Explore how digital technologies can cause changes to mobility, housing, urban systems and user behaviour;
- Assist in developing methodological and technological solutions to design, build, renovate and adapt urban systems to the new energy and environmental requirements and to uses;
- Take part in discussions and the development of innovative approaches to planning (see



the Horizon 2020 “nature-based solutions” and “integrated cities” themes).

**B.6 – Theme 1: “Sustainable mobility and urban systems”**

*Subtheme 1.1: Fundamental knowledge, exploratory research and disruptive concepts*

*Subtheme 1.2: Sustainable cities and territories*

*Subtheme 1.3: Sustainable construction*

*Subtheme 1.4: Clean, safe, connected and automated vehicles*

*Subtheme 1.5: Networks and services*

## B.7) Research in support of the challenge

### “Information and communication society”

The “Information and communication society” challenge calls for basic and applied research in digital sciences and technologies. The cross-disciplinary nature of this research also makes it relevant in a more application-based and interdisciplinary approach, to respond to all the Work Programme challenges.

Digital sciences and technologies are at the heart of major economic, social and human issues. Integrated circuits and processors have become omnipresent – they can now be found in a wide range of utility, domestic and leisure equipment. Connectivity between these devices and telecommunications networks, and ultimately the Internet, has become or is becoming the norm. The critical role played by information systems in the smooth operation of major public infrastructure (transport, water, energy etc.), companies and institutions raises questions over security, safety and sovereignty. The analysis of data, whether or not it is generated by these systems, for diagnostic purposes, decision support and task automation is growing rapidly. Expertise in hardware, software and network technology is thus more strategically important than ever, for both our autonomy and our competitiveness.

Several digital technologies contribute to advances in science: the processing of huge volumes of data produced by scientific observation in biology, physics, astrophysics etc., high-performance computing used for simulation in most disciplines, connected objects for scientific observation etc.

In addition, the accelerated convergence between the digital and physical worlds implies the development of techniques for human-machine interaction using a multi-sensory approach. It also calls for research focusing on the development of autonomous, highly-interactive robotics for professional, domestic and service purposes. Progress in digital science and technology is also dependent on progress in micro- and nanoelectronics, IT, mathematics, automation, signal processing etc. To cover the full range of research fields and applications, researchers in all disciplines need to foster close cooperation in all sectors of activity. The "Information and communication society" challenge thus has two priorities: exploring how digital technology can serve society and designing and developing tomorrow's digital technologies by evolving concepts, methods and tools. It includes seven themes:

***B.7 – Theme 1: Foundations of digital technology***

***B.7 – Theme 2: Software sciences and technologies***

***B.7 – Theme 3: Interaction, robotics and artificial intelligence***

***B.7 – Theme 4: Data, knowledge, big data, multimedia content and artificial intelligence***

***B.7 – Theme 5: High-performance computer simulation for understanding, optimisation and decision making***

***B.7 – Theme 6: High-performance communication infrastructure (network, computing and storage)***

***B.7 – Theme 7: Micro- and nanotechnologies for information and communication processing***

The "Information and communication society" challenge also relates to two cross-disciplinary themes (see section [B.11](#), themes 1 and 4).

Lastly, in the context of the FranceIA<sup>14</sup> initiative and the future Flagship soon to be launched by the European Commission, the challenge highlights two scientific fields: artificial intelligence (AI) and quantum technologies.

The need to process huge volumes of data (images, text, music etc.) produced by human activity and scientific observation, the availability of data through Internet connectivity and the benefits of its commercial exploitation have been major factors in the renewal of Artificial Intelligence, and particularly in the development of machine learning and the emergence of data analytics. The impacts on society, in terms of employment or the transformation of certain occupations, for example, have prompted multidisciplinary discussions on the ethical, legal and societal consequences. Within the "Information and communication society" challenge, the problems of Artificial Intelligence are explored in themes 3 and 4.

Quantum technologies constitute a set of disruptive technologies that relate firstly to information processing, communication and security and secondly to the production of extremely accurate measurements. In return, these new technologies stimulate basic studies and considerable investment is taking place worldwide. The technological exploitation of concepts from quantum mechanics, such as superposition or the entanglement of micro- and nanometric objects and photons, promises radical changes in the power of future computers, far exceeding the most advanced current models and ensuring unbreakable security for communications. New sensors can be designed for prospecting for underground wealth, improving GPS or analysing individual biomolecules. Basic knowledge of quantum mechanics must be broadened and technologies and innovations developed for quantum technologies to reach full maturity. Within the "Information and communication society" challenge, the themes relating to quantum technology are themes 1, 2, 6 and 7, along with theme 6 of the "Stimulate industrial renewal" challenge (section [B.3](#)) and theme 2 of the non-challenge section ([B.10](#)). Projects addressing quantum technology will be evaluated by a specific panel.

## B.8) Research in support of the challenge

### “Innovative, inclusive and adaptive societies”

In accordance with the recommendations of the SNR, MESRI, DGRI and the ATHENA Alliance, the outlines of the "Innovative, inclusive and adaptive societies" challenge relate to the broad disciplinary fields of the Social Sciences and Humanities as defined in the European Research Council classification.<sup>15</sup>

Both basic and applied research are required to respond to this challenge. All methods (quantitative, qualitative, qualitative-quantitative, etc.), all techniques and all approaches based on direct investigation or on second-hand data sources are welcome. Special attention will be given to research into **gender** and all its theoretical or themed dimensions in the field of SSH: questions of ethics, identity, social representation and parity in both science subjects and in research institutions.

It is expected that methodological approaches will be explained and applied to theoretical questioning. Wherever possible, researchers are encouraged to draw on large databases, archives and longitudinal studies from very large research infrastructure (TGRI) and databases

<sup>14</sup> [https://www.economie.gouv.fr/files/files/PDF/2017/Rapport\\_synthese\\_France\\_IA\\_.pdf](https://www.economie.gouv.fr/files/files/PDF/2017/Rapport_synthese_France_IA_.pdf)

<sup>15</sup> SH 1 to SH 6: *individuals, institutions and markets/institutions, values, beliefs and behaviour/environment, space and population/the human mind and its complexity /cultures and cultural production/the study of the human past*).

of European consortia (like DARIAH). Within the limits of the financial resources available, the "Innovative, inclusive and adaptive societies" challenge may part-fund surveys or the constitution of corpora (texts, images, oral archives) on three conditions: 1) that they coincide with a research project; 2) that open access to the data is ensured; 3) that a mechanism exists for perpetuating the data. Projects relying on the processing of personal data must pay special attention to protecting the data, and this point will be considered in the evaluation.

***B.8 – Theme 1: Social innovation and progress***

***B.8 – Theme 2: Inequality, discrimination, migration and radicalisation***

***B.8 – Theme 3: Changes in labour and employment***

***B.8 – Theme 4: Lifelong cognitive skills, education and training***

***B.8 – Theme 5: Cultures, creation and heritage***

The "Innovative, inclusive and adaptive societies" challenge also relates to three cross-disciplinary themes (see section [B.11](#), themes 2, 4 and 8).

## **B.9) Research in support of the challenge**

### **“Freedom and security of Europe, its citizens and its residents”**

Research under this challenge requires an integrated approach to risk management in both the physical world and cyberspace. This involves characterising threats and vulnerabilities, developing prevention and the protection of property and people, managing crises and analysing instruments, including legal mechanisms, that contribute to the exercise of individual rights and freedoms.

In a context where security is associated with perceptions and the management of risks, and with social responsibilities and their impacts, the "Freedom and security of Europe, its citizens and its residents" challenge focuses on the issues and consequences for the public and private organisations and institutions responsible for security, risk professionals and populations, regardless of the risks envisaged.

This challenge therefore mobilises the lessons learned from sociology, economics and legal disciplines as well as from technological research. It covers the security of persons and the fight against terrorism and crime, emergency assistance and human protection and the multiple procedures for searching for and managing evidence. It also relates to the protection of vital infrastructure and networks as well as the protection of sea, land and air spaces and their borders. All these aspects imply the essential need to respect personal privacy and protect personal data and human dignity.

Basic research is needed to help create a core of knowledge using an integrated approach that brings together natural and environmental sciences, digital sciences, engineering and all social sciences and humanities. Research is invited on a single theme divided into five subthemes.

For the other themes, the involvement of end users, specifiers and operators is encouraged, along with consideration of the priorities expressed by CoFIS (the French security industries committee)<sup>16</sup> and other vital sectors (energy, networks, transport etc.).

### ***B.9 – Theme 1: “Freedom and security of Europe, its citizens and its residents”***

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<sup>16</sup> <http://www.gouvernement.fr/comite-de-la-filiere-industrielle-de-securite-cofis>

*Subtheme 1.1: Basic research related to the challenge*

*Subtheme 1.2: Risks, crisis management regardless of origin, resilience of systems*

*Subtheme 1-3: Fighting organised crime, terrorism and violent radicalisation*

*Subtheme 1.4: Cybersecurity: freedom and security in cyberspace, securing information systems, fighting cyberterrorism*

*Subtheme 1.5: Protecting vitally important infrastructure and networks, monitoring sovereign areas*

## **B.10) Research outside the challenge framework**

**B.10 – Theme 1: "Mathematics":** theme complementing the "Foundations of digital technology" theme of the "Information and communication society" challenge

This theme essentially encompasses the field of pure mathematics (the ERC PE01 sector): logic, algebra, number theory, geometry, topology, Lie algebras and groups, analysis, operator algebras and functional analysis, theoretical aspects of partial differential equations etc. Applied mathematics projects with a theoretical nature that are not covered by the societal challenges are also invited for this theme.

**B.10 – Theme 2: "Condensed and diluted matter physics"**

This theme covers a broad field of physics, consisting essentially of the ERC PE02 sectors (except the subdisciplines PE02\_01 to 04): "Fundamental constituents of matter: plasma, atomic, molecular, gas and optical physics" and PE03 (except the sub-disciplines PE03\_05 and 07): "Condensed matter physics: structure, electronic properties, fluids, nanosciences, biophysics".

**B.10 – Theme 3: "Subatomic physics, universe sciences, structure and history of the Earth"**

This theme addresses all basic research projects in subatomic and theoretical physics, astrophysics, cosmology, astronomy, planetary science, exobiology and the structure and history of the Earth (including remote palaeoenvironments with no equivalents in the current era). The ERC sectors covered are "Fundamental constituents of matter" (ERC PE02 sub-disciplines 01 to 04), "Universe Sciences" (all sub-disciplines of sector ERC PE09) and "Structure and history of the Earth" (sub-disciplines of sector ERC PE10).

## **B.11) Research in support of major cross-disciplinary challenges**

### **B.11 – Theme 1: "Mathematics, computer science, automation and signal processing to meet the challenges of biology and health"**

*(theme common to the "Life, health and well-being" and "Information and communication society" challenges)*

This theme relates to projects aiming to develop concepts and new methods using digital technology for: i) the analysis of large volumes of biological data generated by high-throughput omics, including the use of this data for decision support, exchanges of data, access, security, regulation and data management ethics in pre-clinical, clinical, population and epidemiological research; ii) cellular and tissue microscopy; iii) signal processing biological and medical imaging; iv) the predictive analysis of biological processes and methods for comparing them with experimental data; v) the development of simulation for complex biological systems, digital simulation, high-performance computing and associated optimisation, immersive simulation (virtual and augmented) for the integration and representation of multimodal, multi-scale data.

### **B.11 – Theme 2: "Public health"**

*(theme common to the "Life, health and well-being" and "Innovative, inclusive and adaptive societies" challenges)*

The scope of this scientific theme concerns integrated and multidisciplinary research (epidemiology, biostatistics, management, economics, sociology, law, history, philosophy, ethics etc.) in the field of public health whose goal is to: i) analyse and understand the role of different factors (social, economic, behavioural, environmental etc.) and their interaction on well-being, vulnerability, health and the origins and reduction of inequality; ii) to propose an integrated, interdisciplinary analysis framework for the impact of multiple determinants on disease and health, including mental health; iii) evaluate the risks, propose methods for the monitoring, anticipation, prevention and adaptation of health policies and systems (including primary care). Special attention will be paid to methodologies for analysing the social, behavioural and environmental determinants of health throughout life and in different areas of activity (residential, professional etc.).

### **B.11 – Theme 3: "Bioeconomy: specific technologies (chemistry, biotechnology, processes) and systemic approaches"**

*(theme common to the "Clean, safe and efficient energy", "Stimulate industrial renewal" and "Food security and the demographic challenge" challenges)*

This theme is open to cross-disciplinary and/or specific systemic approaches to the challenges of the bioeconomy, as well as the methods and technologies associated with this field, including biotechnologies and chemical transformation processes. All bioresources (harvested, cultivated, livestock, forestry, waste etc.) in continental and marine systems are covered. The scope of the theme includes disciplines associated with: i) the production and mobilisation of bioresources; ii) bioresource transformation; iii) externalities and levers for the development of the bioeconomy: life cycle analyses, land use change etc. The relevant disciplines fall within the life sciences, engineering, chemistry and the social sciences and humanities. Multidisciplinary approaches are welcome.

### **B.11 – Theme 4: "The digital revolution: relationship to knowledge and culture"**

*(theme common to the "Information and communication society" and "Innovative, inclusive and adaptive societies" challenges)*

The proposals invited for this theme will come under one of the three topics in the joint action: i) education and training; ii) knowledge creation and sharing; iii) culture and heritage. The projects will be coordinated by an interdisciplinary team or partnership, bringing together researchers from digital science and technology and from the social sciences and humanities. The targeted results can relate to a single disciplinary field (SSH or ICTS) if the project draws on concepts or tools from recent advances in the other field. These conditions explicitly encourage the submission of interdisciplinary projects, indicating how the co-construction of common research subjects, at the interface between disciplines, enables scientific questions to be better formalised and/or contributes to methodological renewal. This theme is thus not suitable for proposals that would conduct both types of research (SSH; ICST) in two detached series of tasks.

**B.11 – Theme 5: "Dynamics of ecosystems and their components to improve their sustainable management"**

*(theme common to the "Efficient resource management and adaptation to climate change" and "Food security and the demographic challenge" challenges)*

This theme concerns basic or applied research projects aiming to understand the dynamics of production ecosystems to improve their sustainable management, proposing innovations for the integrated, sustainable management of ecosystems, contributing to the development of pathways and scenarios to support transitions, and in particular projects dealing with: i) the adaptation dynamics of ecosystems; ii) the role of biodiversity and related ecosystem services; iii) interactions between productive systems and systems with little human impact; iv) the impact of agro-ecosystem practices on environmental changes; v) alterations to productive aquatic ecosystems (marine or continental). The relevant disciplines fall within the life sciences, the environment, engineering and the social sciences and humanities. Multidisciplinary approaches are welcome.

**B.11 – Theme 10.6: "Contaminants, ecosystems and health"**

*(theme common to the "Efficient resource management and adaptation to climate change" and "Food security and the demographic challenge" challenges)*

The scientific scope of this theme covers research projects that contribute to expanding knowledge about the characterisation of physical, chemical or biological contaminants, what happens to them and their effects on human, animal and plant health and on ecosystems as part of the "One Health" concept. In particular, projects should address: i) the determination of the exposome (including the cocktail of contaminants); ii) the contaminants, environmental metrology, bio-indicators and bio-markers; iii) the effects of contaminants on health and ecosystems; iv) the eco-dynamics of contaminants and interactions; v) the adaptive mechanisms in exposed organisms; vi) the evaluation of new tools for managing the risks associated with contamination. The relevant disciplines fall within the life sciences, engineering and the social sciences and humanities. Multidisciplinary approaches are welcome.

**B.11 – Theme 7: "Health and environment, including the 'One Health' concept, emerging or re-emerging infectious pathogens and diseases and resistance to antimicrobial agents"**

*(theme common to the "Efficient resource management and adaptation to climate change", "Life, health and well-being" and "Food security and the demographic challenge" challenges)*

The scientific scope of this theme concerns: i) the mechanisms by which pathogens spread and infectious diseases emerge (human, plant or animal, including zoonoses) in connection

with environmental and anthropogenic factors; ii) methods for control and surveillance, prevention, identification of populations and areas at risk, preparation for the risk of epidemics or pandemics and the social conditions required for systems for tackling epidemics; iii) all pathogens, regardless of their origin and products; iv) resistance to anti-microbial, anti-parasite and anti-fungal treatments, insecticides and biocides; v) modelling emergence, dissemination, exposure or elimination parameters, retrospective analyses and the creation of databases to help define indicators for a predictive approach to epidemic evolution in health monitoring. The relevant disciplines fall within the life sciences, engineering and the social sciences and humanities.

***B.11 – Theme 8: “Interactions between humans and the environment: societies, climate change, sustainable regional development, food security”***

*(theme common to the “Efficient resource management and adaptation to climate change”, “Food security and the demographic challenge” and “Innovative, inclusive and adaptive societies” challenges)*

The scientific scope of this theme covers three aspects: i) societies in the face of environmental change; ii) integrated approaches to sustainable regional development; iii) the SSH knowledge base for food security and ecosystem sustainability. The projects will contribute to the analysis of modes of development and governance adapted to environmental changes, taking into account vulnerabilities and social, cultural, economic and political changes affecting the conditions of adaptation, but also natural and technological risks and resource depletion. The research may address different temporal and spatial scales and comparative or retrospective approaches that focus on single or multiple sectors. The proposals submitted will fall within individual disciplines in the humanities, social sciences or environmental and life sciences, or take an integrated, multidisciplinary approach.



## C. Funding instruments under the generic call for proposals

The 2018 ANR generic call for proposals deploys a range of funding instruments to fulfil the role assigned to it by French public research and innovation policy and to address the project-based funding needs of the research community. There are two categories of funding instruments under the generic call for proposals, and their expectations and characteristics determine key points in project selection and monitoring:

- The "**individual**" category relates solely to the "Young Researchers" instrument (**JCJC**).
- The "**collaborative research**" category offers three instruments: "Collaborative Research Projects " (**PRC**), "Collaborative Research Projects Involving Enterprise" (**PRCE**) and "International Collaborative Research Projects" (**PRCI**).

### C.1) Instrument specific to young researchers (JCJC)

The goal of the "Young Researchers" (JCJC) funding instrument is to prepare the next generation of young research talent to become the future leaders or directors of French scientific research. The instrument empowers young researchers and encourages them to adopt innovative approaches as they tackle scientific and technological bottlenecks.

The instrument allows young researchers to develop their own research theme, form or consolidate a team, acquire a project-based research culture and unleash their innovative talents quickly.

The instrument is also a springboard for young French researchers who, thanks to initial support from ANR, are given help with submitting a project in response to calls from the European Research Council (ERC), improving their chances of success.

Targeted at individuals, the instrument only provides for the funding of the young researcher's team. The instrument is not open to non-holders in 2018.

### C.2) Funding instruments dedicated to collaborative research

Collaborative projects set out to achieve scientific or technological results by pooling the skills and resources of different public or private, national or international research teams or groups. By facilitating collaboration, the grants awarded accelerate the proposed research. These instruments encourage research teams to work on projects for which collaboration provides added scientific value, either by making the research possible or by paving the way for more ambitious or higher-quality results. Proposals for multidisciplinary research are welcome.

#### C.2-1) Collaborative research projects (PRC)

"Collaborative research projects" (PRC) is the main ANR funding instrument. It includes all forms of collaboration<sup>17</sup> not covered by the PRCI and PRCE instruments.

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<sup>17</sup> The collaborative nature of a project is not evaluated based on the number of partners involved, but on the added value the proposed collaboration will deliver (in terms of scientific expertise, and not just in administrative terms) and the opportunity opened up by obtaining project-based funding to implement the collaboration, given the scientific originality of the scientific work done by the organisations, teams or groups involved. Nevertheless, in special situations where projects are of an extremely high level, they can be submitted even if proposed by single organisations, teams or groups.

### ***C.2-2) International collaborative research projects (PRCI)***

ANR collaborates with research funding agencies in other countries and signs agreements facilitating collaboration between teams from different countries. ANR establishes bilateral agreements that can relate to targeted themes or be open to all ANR-funded research themes. The objectives of these agreements include:

- Speeding up and developing French researchers' collaborations with top European and international research teams in key fields,
- Fostering partnerships with emerging countries on themes of mutual interest with shared benefits,
- Promoting the formation of elite international teams able to conduct and share research at the highest global level.

For partnerships centred around specific research areas, ANR and its partners aim to extend research over two to three years in order to strengthen collaborations and encourage the emergence of quality projects.

The “International Collaborative Research Projects” (PRCI) funding instrument is specific to these bilateral collaborations between at least one French partner (eligible for ANR funding) and at least one foreign partner (eligible for funding from a foreign funding agency that has signed a bilateral agreement with ANR). There should be a high level of synergy between the two partners submitting a project, shown by equal involvement of the French and foreign partners and the identification of scientific project coordinators in each country. The countries covered by these bilateral agreements for Work Programme 2018 are:

- *In Europe: Germany, Austria, Luxembourg and Switzerland.*
- *Internationally: Brazil, Canada, China, Hong Kong, Japan, Mexico, Singapore, Taiwan and Turkey.*

Table 2 provides the details of the research issues concerned.<sup>18</sup>

### ***C.2-3) Collaborative Research Projects Involving Enterprise (PRCE)***

The “Collaborative Research Projects Involving Enterprise” (PRCE) funding instrument is specific to collaborations between one or more academic or public research laboratories **and** one or more companies, **targeting results that are beneficial to both parties**. It enables public research facilities to address new research issues, or address them differently, and companies to access high-level public research in order to improve their innovation capacity over different time scales.

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<sup>18</sup> List drafted at the time of publication of WP 2018 and likely to be supplemented or amended: applicants are invited to consult the ANR website regularly. Country-specific appendices (available on the ANR generic call for proposals web page) lists eligible themes and the specific submission and selection procedures. The appendices set out additional eligibility conditions for the generic call for proposals and must therefore always be consulted prior to any submission to ANR or foreign partners.

## D. Funding instruments under specific calls for proposals

Work Programme 2018 proposes various **funding instruments**, each with its own specific anticipated effects and distinct characteristics in terms of selection and monitoring. This section is devoted to describing funding instruments that can be used outside the generic call for proposals. These relate to specific programmes or calls for proposals, for which the timetables can be consulted on the Work Programme publication page on the ANR website.

### Specific initiatives outside the AAPG (Flash, Challenges, etc.)

The Challenges and Flash calls are subject to specific calls for proposals setting out their objectives and the research covered.

Applicants are advised to consult the 2018 programme on the ANR website. The calls are given specific publicity when they are launched.

### “Economic impact of research and competitiveness” component

ANR’s main mission is to encourage the transfer of results from public research to the business community. In addition to collaborative projects involving companies (see “Collaborative Research Projects Involving Enterprise” in section B-1-2), which constitute the instrument for the generic call for proposals in relation to the socioeconomic world, ANR has a series of programmes to revitalise the partnership between laboratories and private companies by means of various project-based research methods.

This cross-cutting component combines three programmes covered by specific calls for proposals: **LabCom and LabCom Consolidation**, **Industrial Chairs** and **Carnot Institute**, as well as two programmes entirely funded by the French Defence Procurement Agency (DGA): **Astrid** and **Astrid Maturation**. All the component's instruments involve the participation of research bodies and companies. Eligibility conditions and details about expectations from proposals are set out in the relevant calls for proposals.

## D.1) LabCom and LabCom Consolidation

The programme supports the creation of joint laboratories (**LabCom**) shared between public research bodies and small and medium-sized enterprises (SMEs) or middle-market companies in order to develop existing potential for industrial partnerships and knowledge transfer among academic researchers, particularly those involved in non-partnership research. The aim of the programme is to help these researchers to establish lasting bilateral partnerships with companies, especially SMEs and middle-market companies, as these partnerships are crucial to the innovation process. The transfer of results and knowledge from public-funded research to this type of company can be a significant factor in innovation, competitiveness and job creation.

For this programme, open since 2013, ANR offers fixed funding of €300k for the public research laboratory. The funding is simple to arrange, very quick to set up and flexible in terms of how the grant is used. The programme is continuing in 2018 under similar conditions and criteria to previous programming.

The **LabCom** programme also introduced a second phase in 2017. This will involve so-called **consolidation** aid of up to €100k over twelve to eighteen months, funded equally by ANR and the company. It is offered through a call for proposals open to laboratories previously awarded LabCom funding whose financial returns, generated by exploiting the shared results, are not yet enough to support the laboratory financially.

These programmes are the subject of a specific ongoing call for proposals (repeated two to three times a year). Applicants are advised to consult the relevant page on the ANR website.

## D.2) Industrial chairs

This programme is designed to mobilise resources to consolidate and strengthen the competitiveness of French companies<sup>19</sup> and has a threefold objective:

- Enable teaching and research staff and French or foreign researchers with international reputations, whether or not they are mobile, to work on ambitious, innovative research programmes with clear industrial relevance.
- Build and structure collaborative scientific research initiatives in areas that are strategic priorities for the public and private stakeholders involved in the industrial chair by fostering strong and lasting partnerships.
- Provide research-based teaching at the highest international level by making the long-term vision, methodologies and experience of members of the business community available to the PhD and post-doctoral researchers hosted by academic research laboratories.

This programme features a call for proposals open to all research themes on topics defined jointly by the industrial chair's host institution<sup>20</sup> and one or more partner companies. The project is coordinated by an eminent scientist, the future holder of the industrial chair, and funded jointly by ANR and the partner company or companies.

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<sup>19</sup> or engaged in R&D activity in France.

<sup>20</sup> The host institution must be a **research partner**: a public-sector or similar partner whose main purpose is to carry out research, such as a university, French public scientific and technical research establishment (EPST), French cultural and professional public institution (EPSCP), industrial or commercial public establishment (EPIC) focused on research, university hospital centres and institutes and so on.

The selection process involves a single application document submitted by the host institution in close collaboration with the partner company or companies (which is binding on the companies from the point of when the proposal is submitted), along with the curriculum vitae of the prospective candidate for the industrial chair.

Funding will be granted for up to 48 months. The ANR contribution will be matched with funding from the company or companies, paid in cash to the host institution.

This initiative is subject to a specific call for proposals. Researchers are advised to consult the 2018 timetable of calls for proposals on the ANR website.

### D.3) Carnot Institute

Since 2006, the Ministry of Higher Education and Research has awarded the Carnot Institute label to public research institutions whose main strategic focus is partnership-oriented research. To promote and support cooperation between research institutions and the business world, ANR makes an annual contribution (based on partnership revenues) to the Carnot Institutes. This contribution is used to develop scientific resources and to professionalise partnerships with business.

A committee of experts, mostly from the business world, known as Carnot Commission 3 was tasked with proposing avenues of development for the Carnot system following the results of the first two Carnot phases. The commission was very positive about the system's operation, concluding that "this simple, empowering instrument, subject to regular retrospective evaluation, is a real success, strengthening links between public research and companies and supporting the institutes' development". This assessment of the programme after ten years of operation led to its extension under the "Carnot 3" call.

In order to scale up the Carnot programme and ensure effective leverage, the "Valorisation – Carnot Institutes" programme is allocated a budget under the Investments for the Future programme. Three calls for proposals<sup>21</sup> have been launched in this framework, one for initiatives targeting small and medium-sized enterprises (SME), a second for specifically international initiatives and a third to structure provision in response to demand from economic sectors, especially small and medium-sized enterprises or industry (SME/SMI) and middle-market companies.

### D.4) Astrid and Astrid Maturation

The **Astrid** (French acronym for "specific support for defence research and innovation") and **Astrid Maturation** programmes are entirely funded by the French Defence Procurement Agency (DGA) through specific calls for proposals managed by ANR. Applicants are advised to consult the timetable and funding terms of these calls for proposals on the ANR website.

- The Astrid programme aims to open up new research avenues on dual-interest themes (civilian and military applications). The goal is to explore scientific and technical bottlenecks and encourage potentially beneficial technological breakthroughs for defence, civilian research and industry.
- The Astrid Maturation programme promotes the application of scientific research carried out via other dual-use research funding instruments, such as the Astrid programme.

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<sup>21</sup> See the relevant page on the ANR website: <http://www.agence-nationale-recherche.fr/carnot>.

The cross-disciplinary dimension of the Astrid programmes is seen in a broad scientific spectrum covering all the key domains of dual-use research.

### “Building the European Research Area (ERA) and France's international attractiveness” component

In addition to international collaborative research projects (PRCI – see section C-2.2), the main instrument for bilateral collaboration under the ANR generic call for proposals, other types of European and international initiatives are provided through the “Building the European Research Area (ERA) and France's international attractiveness” component of Work Programme 2017:

- Setting up European or International Scientific Networks (**MRSEI**)
- Springboard-ERC (**T-ERC**)
- Specific European or international calls for proposals (**ERA-NET**, **JPI**, bi- or multilateral calls for proposals)

#### D.5) Setting up European or International Scientific Networks (MRSEI)

The objective of the “Setting up European or International Scientific Networks” (**MRSEI**) programme is to give French researchers easier access to European and international funding programmes such as Horizon 2020. Proposals submitted should thus be followed by an application to a European or international call for proposals.

The objective of this instrument is to reinforce France's scientific positioning by coordinating proposals submitted to large-scale European or international calls for proposals. Proposals are expected to demonstrate the steps involved in constructing a scientific network on an internationally-recognised level, on topics in any discipline, with a strategic, economic, technological or societal impact. The instrument does not provide funding for research activities.

The **MRSEI** instrument will be subject to one or two specific calls in 2018. Applicants are advised to consult the relevant page on the ANR website.

#### D.6) Springboard ERC (T-ERC)

The “Springboard ERC” (**T-ERC**) funding instrument is part of the national strategy to strengthen French research and technological innovation and to increase France's international scientific influence and attractiveness.

The aim of the **T-ERC** programme is to give young French or foreign researchers attached to a French public research body the opportunity to submit a new application for a European Research Council (ERC) "Starting Grant" or "Consolidator Grant" with the best chance of succeeding.

The T-ERC programme will be the subject of two specific calls in 2018 (in October for Starting Grant candidates). Applicants are advised to consult the relevant page on the ANR website.

#### D.7) Specific calls for proposals for European or international collaboration

In connection with the various societal challenges, ANR has formed multilateral partnerships with its European counterparts in the framework of European initiatives such as **ERA-NETs**-, **ERA-NET Cofunds** and **Joint Programming Initiatives (JPIs)**. These initiatives complement the conventional collaborative projects in the framework programmes. In this context,

emphasis is placed on multi-year prioritisation of European activities and coordination between national and European measures. The precise manner in which these programmes complement one another is determined on a long-term, sector-by-sector basis. ERA-NETs, ERA-NET COFUNDs and JPIs are subject to specific calls for proposals.

In addition to relationships established with certain agencies at the European and international levels in the generic call (the PRCI instrument), ANR has developed specific relationships with foreign funding agencies such as BMBF (Germany) and JST (Japan). Initiatives on specific research topics are thus carried out either bilaterally (NSF – United States) or multilaterally (Belmont Forum, the CRCNS ORA call). These initiatives generate **specific calls for proposals**.

Initiatives carried out under European Union programming may work together (ERA-NET COFUND/JPI calls) and with multilateral initiatives such as those carried out by the Belmont Forum (Belmont Forum/JPI and ERA-NET COFUND/Belmont Forum calls).

***All international initiatives take place through calls for proposals announced on the ANR website.***

***We recommend checking the list of current calls (and their appendices describing the application conditions) and the up-to-date schedule on the ANR website regularly.***

*(See tables 2 and 3 below)*





## E. Appendices

**Table 1: Bilateral collaborations under the International Collaborative Research Projects (PRCI) generic call for proposals**

*Applicants are advised to consult the ANR website before making a submission to ANR or the foreign partner.*

*Challenge 1: "Efficient resource management and adaptation to climate change"*

*Challenge 2: "Clean, safe and efficient energy"*

*Challenge 3: "Stimulate industrial renewal"*

*Challenge 4: "Life, health and well-being"*

*Challenge 5: "Food security and the demographic challenge"*

*Challenge 6: "Sustainable mobility and urban systems"*

*Challenge 7: "Information and communication society"*

*Challenge 8: "Innovative, inclusive and adaptive societies"*

*Challenge 9: "Freedom and security of Europe, its citizens and its residents"*

Countries (agencies)	Collaboration themes proposed by ANR in 2018 to be confirmed with the agreement of the foreign agency	Challenges concerned
<b>Brazil</b> (FACEPE)	<ul style="list-style-type: none"> <li>• Information and communication technologies</li> <li>• Social sciences and humanities</li> </ul>	Challenges 7, 8, non-challenge
<b>Brazil</b> (FAPESP)	<ul style="list-style-type: none"> <li>• Information and communication technologies</li> <li>• Social sciences and humanities</li> </ul>	Challenges 7, 8, non-challenge
<b>Canada</b> (NSERC)	Themes of the Canadian SPG-P (Strategic Partnership Grants for Projects) programme: Environment and agriculture; advanced manufacturing; information and communication technologies; natural resources and energy	Challenges 2, 3, 5, 6, 7, non-challenge
<b>China</b> (NSFC)	<ul style="list-style-type: none"> <li>• Water security and drainage basin management               <ol style="list-style-type: none"> <li>(1) Water cycle in drainage basins and its response to global change</li> <li>(2) Impact of human activities on water security in drainage basins, water treatment and management</li> </ol> </li> <li>• Green chemistry (recycling, recovery, clean-up, bioresourced chemistry, transformation of CO<sub>2</sub>),</li> <li>• Materials (physical metallurgy)</li> <li>• Low-energy, resource-efficient ICT</li> </ul>	Challenges 1, 2, 3, 7 non-challenge
<b>Hong Kong</b> (RGC)	All the disciplinary fields funded by ANR and the HK agency	All challenges except Challenge 9

<b>Japan</b> (MEXT/NRSA)	Generic technologies for operations in hostile environments under extreme conditions: robotics including cobotics, remote operations, positioning, identification and mapping, image processing, observation systems, sensors, materials*	Challenges 3, 7
<b>Mexico</b> (CONACYT)*	<ul style="list-style-type: none"> <li>• Efficient resource management and adaptation to climate change</li> <li>• Food security and the demographic challenge</li> <li>• Social sciences and humanities</li> </ul>	Challenges 1, 5, 8, non-challenge
<b>Singapore</b> (NRF)	Materials, nanotechnology, nanosystems applied to societal challenges 2, 3, 6, 7: "Clean, secure and efficient energy", "Stimulate industrial renewal", "Sustainable mobility and urban systems" and "Information and communication society"	Challenges 2, 3, 6, 7
<b>Taiwan</b> (MOST)	All the disciplinary fields funded by ANR and the Taiwanese agency	All challenges except Challenge 9
<b>Turkey</b> (TUBITAK)	<ul style="list-style-type: none"> <li>• Marine geoscience</li> <li>• Seismic risks</li> <li>• Functioning of marine ecosystems</li> <li>• Social sciences and humanities</li> <li>• Information and communication technologies</li> <li>• Energy</li> </ul>	Challenges 1, 2, 5, 7, 8 non-challenge
<b>Germany</b> (DFG)	All the disciplinary fields funded by ANR and DFG, except social sciences and humanities*	All challenges except Challenge 8**
<b>Austria</b> (FWF)	All the disciplinary fields funded by ANR and FWF	All challenges
<b>Luxembourg</b> (FNR)	All the disciplinary fields funded by ANR and the Luxembourg agency	All challenges
<b>Switzerland</b> (FNS)	All the disciplinary fields funded by ANR and FNS	All challenges

\* MEXT funding is limited to nuclear research whereas there is no ANR funding for this, so the common projects expected concern technologies relating to the decommissioning of nuclear power plants that can also be applied to other non-nuclear fields.

\*\* Social sciences and humanities are subject to a specific ANR-DFG call for proposals ("FRAL").

**Table 2: Bilateral collaborations outside the International Collaborative Research Projects (PRCI) generic call for proposals**

*Applicants are advised to consult the ANR website before making a submission to ANR or the foreign partner.*

Countries (agencies)	Collaboration themes proposed by ANR in 2018 to be confirmed with the agreement of the foreign agency	Challenges concerned
<p><b>Germany</b> (BMBF) Field: Energy</p>	<p>The French National Research Agency is launching a collaboration with the Bundesministerium für Bildung und Forschung (BMBF) in the field of energy. The initiative aims to promote French-German collaboration on preliminary research (up to TRL 5) in the field of energy. The call focuses on the issues of energy storage and conversion (batteries, hydrogen and fuel cells, power-to-X etc.) and smart grids (including socioeconomic and territorial aspects). These collaborations must involve public research bodies and companies in each country.</p>	<p><i>“Clean, safe and efficient energy”</i></p>
<p><b>Germany</b> (DFG) Field: Social sciences and humanities</p>	<p>The French National Research Agency (ANR) and the Deutsche Forschungsgemeinschaft (DFG) are launching the 12th French-German call for proposals in the social sciences and humanities. The call for proposals covers all disciplines in the social sciences and humanities. It aims to support projects proposed jointly by French and German teams.</p>	<p><i>“Innovative, inclusive and adaptive societies”</i></p>
<p><b>Japan</b> (JST) Through the CREST programme</p>	<p>The French National Research Agency is launching a collaboration with the Japan Science and Technology Agency (JST) as part of the Japanese CREST programme on three broad themes corresponding to shared priorities: "Quantum Technologies", "Artificial Intelligence" and "Symbiotic Interaction Technology". All these themes are supported separately by CREST programmes. Projects must involve French and Japanese teams and be submitted jointly to CREST and ANR.</p>	<p><i>“Clean, safe and efficient energy”</i> <i>“Stimulate industrial renewal”</i> <i>“Information and communication society”</i></p>

**Table 3: Specific calls for proposals for European or international collaboration outside the generic call for proposals and bilateral calls**

*Applicants are advised to consult the ANR website before making a submission to ANR or to foreign partners.*

Name	Description	Challenges concerned
<b>GenderNet Plus</b> Achieving gender equality in research and innovation	The details of this call will be published on the ANR website.	<i>All challenges</i>
<b>Call for proposals arising from CSA IC4WATER</b> (Water Resource Management in support of the United Nations Sustainable Development Goals)	This call supports the United Nations Sustainable Development Goals. Coordinated by the Water JPI and launched through the CSA (Coordination and Support Action) IC4WATER, the call aims to support collaborative transnational research and innovation projects designed to support water policy implementation.	<i>“Efficient resource management and adaptation to climate change”</i>
<b>BioDivScen</b>	BioDivScen will launch a joint Biodiversa and Belmont Forum call covering biodiversity and ecosystem service scenarios. The details of this call will be published on the ANR website. <i>(Promoting and implementing joint programming at the international level to reinforce research on the development of scenarios of biodiversity and ecosystem services)</i>	<i>“Efficient resource management and adaptation to climate change”</i>  <i>“Biological resources, sustainable operation of ecosystems and the bioeconomy”</i>
<b>AXIS</b> (Assessment of Cross(X)-sectoral climate Impacts and pathways for Sustainable transformation)	The AXIS consortium was set up to improve the integration of climate research disciplines around the shared objective of improving the evaluation of the potential impact of climate change on biophysical systems and on society. AXIS intends to achieve this by launching a single transnational call funded by 11 European backers.	<i>“Efficient resource management and adaptation to climate change”</i>  <i>“Biological resources, sustainable operation of ecosystems and the bioeconomy”</i>
<b>ERAMIN 2</b> Raw Materials	Potential new call planned under the ERAMIN 2 ERA-NET COFUND.  This call will not be co-funded by the European Commission. The details of this call will be published on the ANR website.	<i>“Stimulate industrial renewal”</i>  <i>“Efficient resource management and adaptation to climate change”</i>
<b>E-Rare-3</b> Rare diseases	Potential new call planned under the E-RARE ERA-NET. The call for proposals will cover rare diseases, excluding rare cancers and rare infectious diseases. Other conditions may apply to this call.  The details of this call will be published on the ANR website.	<i>“Life, health and well-being”</i>
<b>ERA-CVD</b> Cardiovascular diseases	Potential new call planned under the ERA-CVD ERA-NET. The call for proposals will cover cardiovascular diseases.  The details of this call will be published on the ANR website.	<i>“Life, health and well-being”</i>
ERA-NET under the <b>AMR JPI</b> (Anti-Microbial Resistance).	The AMR JPI aims to coordinate research in the field of antimicrobial resistance associated with the misuse and overuse of antibiotics in humans and animals.  Potential new call planned under the AMR ERA-NET COFUND. This call will not be co-funded by the European Commission. The details of this call will be published on the ANR website.	<i>“Life, health and well-being”</i>
<b>CoEN</b> Centres of Excellence in Neurodegenerative Diseases (National Neurodegenerative Disease Plan)	The goal is to promote transnational collaboration between researchers at identified centres of excellence in neurodegenerative disease in Germany, Canada, Spain, Flanders, France, Ireland, Italy, Slovakia and the UK. CoEN aims to finance research projects using innovative unconventional approaches and projects with a high level of scientific risk in the field of neurodegenerative diseases.	<i>“Life, health and well-being”</i>

<b>JPco-fuND - JPND JPI</b>	<p>The goal is to coordinate research aiming to understand the causes of neurodegenerative diseases, develop treatments and identify the best ways of treating patients suffering from these diseases. A potential new call is planned under the JPco-fuND ERA-NET COFUND.</p> <p>This call will not be co-funded by the European Commission. The details of this call will be published on the ANR website.</p>	<i>"Life, health and well-being"</i>
<b>NEURON 3</b>	<p>The NEURON ERA-NET aims to coordinate basic, clinical and translational research into diseases of the nervous system, excluding neurodegenerative diseases. A potential new call is planned under this ERA-NET. This call will not be co-funded by the European Commission.</p> <p>The details of this call will be published on the ANR website.</p>	<i>"Life, health and well-being"</i>
<b>CRCNS 2018</b> Collaborative Research in Computational Neuroscience	<p>The CRCNS programme supports research in the field of computation neuroscience. It aims to understand the functions and structures of the healthy and pathological brain and to propose solutions for processing and sharing neuroscience data. The 2018 call for joint research projects should include France, the USA, Germany, Israel and Japan (to be confirmed) as partner countries in the field of computational neuroscience. The details of this call will be published on the ANR website.</p>	<i>"Life, health and well-being"</i> <i>"Information and communication society"</i>
<b>EuroNanoMed 3</b> Nanomedicine	<p>This initiative aims to accelerate the maturity of neuromedicine at European level by encouraging collaborations between academic researchers, clinicians and industrial companies and promoting nanotechnology transfer to clinics and/or companies.</p> <p>Potential new call planned under the EuroNanoMed 3 ERA-NET COFUND. This call will not be co-funded by the European Commission.</p> <p>The details of this call will be published on the ANR website.</p>	<i>"Life, health and well-being"</i>
<b>PerMed</b> ERA-Net Cofund in Personalised Medicine	<p>The PerMed ERA-NET COFUND aims to support the international research community in the field of Personalised Medicine. The PerMed ERA-NET COFUND will launch calls for proposals on themes identified in the International Consortium for Personalised Medicine (ICPerMed) Action Plan.</p>	<i>"Life, health and well-being"</i>
<b>ERA-HDHL</b> ERA-NET under JPI HDHL (Health Diet for a Healthy Life)	<p>JPI HDHL addresses three aspects of nutrition: determinants of diet and physical activity, diet and food production and diet-related chronic diseases.</p> <p>Potential new call on chronic diseases planned under the ERA-HDH ERA-NET COFUND.</p> <p>This call will not be co-funded by the European Commission. The details of this call will be published on the ANR website.</p>	<i>"Life, health and well-being"</i>
<b>Forest Value</b> Innovative Forest-Based Bioeconomy	<p>Developing or identifying new strategies, methods, processes or products to enable forestry and the timber sector to offer new bioproducts/services while remaining competitive, efficient and sustainable.</p>	<i>"Efficient resource management and adaptation to climate change"</i> <i>"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"</i>
<b>SusCrop</b> Sustainable crop production	<p>Promoting predictive methods for improving varieties, the development of genotypes with new phenotypes and the creation of varieties; proposing and implementing new methods and practices for the integrated management of plant diseases; improving the efficiency of input use by plants and crop systems, developing ecosystem approaches for agriculture (plant as a meta organism)</p>	<i>"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"</i>
Joint call for proposals by the <b>ERA-GAS ERANET</b> (Monitoring & mitigation of greenhouse gases from agri- and silviculture)	<p>The details of this call will be published on the ANR website.</p>	<i>"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"</i>

and the <b>Susan ERANET</b> (Sustainable animal production)		
<b>PRIMA</b> Partnership on Research and Innovation in the Mediterranean Area	The details of this call arising from article 185 will be published on the ANR website.	<i>"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"</i>
<b>JPI Urban Europe + NSFC</b> (China)	This multilateral call between member countries of JPI Urban Europe and the Chinese NSFC agency aims to support joint research work on sustainable urban development issues. The call should target four themes: - Climate change and new urban economies - Transforming energy systems towards a circular urban economy - Urban governance and innovation in urban services - Interdisciplinary urban data laboratory	<i>"Sustainable mobility and urban systems"</i>
<b>CHIST-ERA 3</b>	The call for proposals targets two emerging themes: "Object recognition and manipulation by robots : Data sharing and experiment reproducibility" "Big data and process modelling for smart industry"	<i>"Information and communication society"</i>  <i>"Stimulate industrial renewal"</i>
e-Infrastructure & Data Management call from the <b>Belmont Forum</b>	The call for proposals targets the sharing of interdisciplinary data in the field of research into global environmental changes	<i>"Information and communication society"</i>  <i>"Efficient resource management and adaptation to climate change"</i>
<b>CoBioTech</b> Biotechnology	Potential new call planned under the CoBioTech ERA-NET COFUND. This call will not be co-funded by the European Commission. The details of this call will be published on the ANR website.	<i>"Stimulate industrial renewal"</i>  <i>"Clean, safe and efficient energy"</i>  <i>"Food security and the demographic challenge: biological resources, sustainable operation of ecosystems and the bioeconomy"</i>
<b>EQUIP</b> for collaborative research on sustainability, equity, wellbeing and cultural connections	Call for pilot proposals involving Indo-European collaboration on the themes of sustainability, equity, wellbeing and cultural connections	<i>"Innovative, inclusive and adaptive societies"</i>  <i>"Life, health and well-being"</i>  <i>"Efficient resource management and adaptation to climate change"</i>  <i>"Information and communication society"</i>
<b>ORA V</b> (ANR, DFG, ESRC, NWO + JSPS)	The call for proposals is open to the social sciences and to all the research themes.	<i>All challenges</i>
<b>HERA-JRP-PS</b> (HERA 4)	The goal of the "Public Spaces: Culture and Integration in Europe" call under the HERA-JRP-PS ERA-NET COFUND is to develop theoretical and empirical understanding of public spaces in the European context from the perspective of the humanities.	<i>"Innovative, inclusive and adaptive societies"</i>

**Table 4: Partnerships and co-funding in Work Programme 2018**

*The list of partnerships and co-funding arrangements may be modified or supplemented.*

*Applicants are invited to consult ANR's website before submitting any proposals.*

Partner	Main themes that may be covered by co-funding	Challenges and calls for proposals potentially concerned
<b>CNSA</b> National Solidarity Fund for Autonomy	Themes related to ageing, autonomy and quality of life	"Life, Health and Well-being" and "Innovative, inclusive and adaptive societies": <b>AAPG</b>
<b>DGA</b> Defence Procurement Agency	Dual-use civilian and military themes (energy, global security, cybersecurity etc.)	"Clean, secure and efficient energy", "Stimulate industrial renewal", "Information and communication society" and "Freedom and security of Europe, its citizens and its residents": <b>AAPG</b> and <b>Astrid and Astrid Maturation programmes</b>
<b>DGOS</b> General Directorate for Care Provision	Translational health research (synergy between basic research and clinical research)	"Life, health and well-being": <b>AAPG</b>
<b>MAAF</b> Ministry of Agriculture, Food and Forestry	Agri-ecological plan for France, including Ecophyto	"Food security and the demographic challenge": <b>AAPG</b>
<b>MEEM/MAAF</b> Ministry of the Environment, Energy and the Sea/Ministry of Agriculture, Food and Forestry	Innovative projects in support of public policy to redefine policies on adaptation to climate change and determine the conditions for their implementation in the context of the ecological transition.  Issues identified in the future agriculture, food and forestry act of 13/10/2014 and the agri-ecological plan for France, mostly within the Ecophyto plan	"Efficient resource management and adaptation to climate change" and "Food security and the demographic challenge": <b>AAPG</b>
<b>SGDSN</b> General Secretariat for Defence and National Security	Global security and cybersecurity	"Freedom and security of Europe, its citizens and its residents": <b>AAPG</b>