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International Comparisons: Science Capital Appraisal and Evaluation

Appendix E - Country Overview Compendium

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1 Introduction

The following country fact sheets were prepared as part of a study for BEIS on international practice in the governance, appraisal, monitoring and evaluation of science capital funding.

In this project, Technopolis prepared a number of case studies for 11 different countries. Before embarking on the development of in-depth country case studies, Technopolis prepared short country overviews on a longer list of 14 countries. These overviews were intended to provide initial insight into the approaches taken to science capital governance, appraisal, monitoring and evaluation in these countries, as well as indications of the likely information and evidence available, and therefore provide the basis for selecting a sub-set for further exploration. They were developed based on a first review of available national documentation and a small number of interviews with key experts in the field, and were discussed with BEIS at an inception meeting in March 2017.

The initial country overviews served as the starting point for the development of full country case studies (presented in the case study compendium, provided as a separate file. However, three of the countries examined (Austria, France and New Zealand) were not considered of sufficient interest to develop further into a full case study. The initial overviews (only) of these countries are presented below.

2 Austria

2.1 The process of allocating science capital funding

Research infrastructures are part of the "Creating knowledge, pushing excellence" pillar of Austria's Science, Technology & Innovation (STI) Strategy.[1] The main goals of this strategy regarding research infrastructures are to use them as a foundation for the internationalisation of the Austrian research landscape and for increasing the profile of universities and research organisations as hosts of research infrastructures. The strategy specifically calls for clear performance and funding agreements when financing research infrastructures, citing indicators such as publications or patents. It also recognises the need for increased collaboration in the usage of research infrastructures between research organisations, universities and industry.

One of the main outcomes of Austria's national STI strategy regarding research infrastructures was the subsequent publication of the Austrian Research Infrastructure Action Plan 2014-2020. This was developed by an intergovernmental working group, consisting of the Austrian Chancellery, the Ministry of Finance, the Ministry of Transport, Innovation and Technology (BVIT), the Ministry for Science, Research and the Economy (BMWFW) and the Council for Research, Technology and Innovation (RFTE). The Action Plan foresees two modules: The first concerns research infrastructures aimed solely at basic science, both in Austria and through participation in international research infrastructures; The second outlines goals and priorities regarding the use of research infrastructure by industry and other forms of application-oriented research. Both call for an increased Austrian participation in European and international infrastructures in the framework of the ESFRI-Roadmap. The Action plan also calls for the exploration of new usage models of research infrastructures, such as coordinated use between universities and industry.

According to BMWFW's research infrastructure database, the overall investment value of 1,631 Austrian research infrastructures amounted to €567m (cut-off year 2014). This includes investments in electronic databases, large research facilities and core facilities, as well as other physical research infrastructures. Another indicator for research infrastructure investments is compiled by the Austrian Statistics Office, which suggests that 6% of Austria's R&D expenditure is on research infrastructures. A 2015 study on the financing of research infrastructures in Austria also shows that public funding is the main source for financing research infrastructures, accounting for more than 90% of all investments.[2]

Public funding of research infrastructures is conducted largely through the basic financing of universities, with institutional public funding of research infrastructures implemented by the Ministry for Science, Research and the Economy (BMWFW). In addition, large parts of public funding of research infrastructures takes place through grants (*Drittmittel)*, for which universities and research organisations need to apply. The single most important source of such grants is the Austrian Research Promotion Agency (FFG), which in 2013 gave €42.7m in grants for research infrastructures. Other stakeholders investing in research infrastructures include the Austrian Science Fund (FWF), the Austrian federal development and financing bank (AWS) and state-level programmes.

[1] Austrian Chancellory (2011). Strategy of the Federal Government of Austria for Science, Technology and Innovation.

[2] Austrian Institute of Technology (2015). Financing of Research Infrastructures: STI policy and funding in the national and international context (in German).

The 2015 BMWFW "Action Plan of BMWFW for a competitive research area" reiterates the aim to increase use of research infrastructures by industry in order to increase quality and availability of university research infrastructure and to remain competitive at the international level. More specifically, it concludes that Austrian businesses (notably SMEs) have little knowledge about the availability of research infrastructures and how they could use them for industrial purposes.
According to BMWFW, Austria's total R&D expenditure in 2013 was €9.57bn - an increase of 15% compared to 2011. Research funding accounts for about a third of this total. Due to a decrease in private R&D expenditure because of the financial crisis, an increase in public research funding was necessary to hold the R&D level stable.[3]

2.2 The (ex-ante) appraisal approach

Planning and implementation of research infrastructure in Austria is not conducted centrally. The intergovernmental working group (see above) has been compiling analyses and recommendations regarding strategic construction and expansion of research infrastructure. However, the majority of research infrastructures are built by universities, who are therefore responsible for the respective appraisal processes. In an effort to reinforce cooperation and strategic expansion of university research infrastructures, the BMWFW now includes specific goals and measures in its performance agreements with the universities.
In addition to providing basic financing to universities, the BMWFW also finances research infrastructures directly through its higher education structural fund (*Hochschulraum-Strukturmittel*). In its current 2016-2018 funding period, the BMWFW has earmarked €50m for improving and building research infrastructures used in collaboration between universities. The maximum amount of each grant is €8m. This includes both centralised as well as decentralised equipment and instruments for research, knowledge-based resources such as collections, archives or structured scientific information, information and communication infrastructures, measuring networks, etc.
The awarding of funds is conducted by a selection committee consisting of a representative of the Austrian university rectors' conference, as well as representatives from BMWFW and the Ministry of Finance. The committee appraises the applications based on the following criteria[4]:

- Coherence regarding the university's research profile;
- Uptake of the national STI Strategy & Action Plans;
- Scientific quality of the research carried out so far and the importance of the project for the further development of a particular research field (particular focus on interdisciplinarity and innovation potential as well as expected added value with regard to young scientists);
- Social objectives, potentials or impacts directly and indirectly linked to this project (short, medium, long term);
- Uptake of the Grand Challenges as outlined in European programs and global activities (such as Horizon 2020, ESFRI Roadmap);

[3] https://wissenschaft.bmwfw.gv.at/bmwfw/forschung/national/forschung-in-oesterreich/forschungsfinanzierung/ (in German)

[4] http://unicontrolling.bmwfw.gv.at/index.php?option=com_content&view=article&id=49&Itemid=169 (in German)

- Participation in European and international networking platforms and initiatives, participation in national and international Open Data, Open Access, Open Innovation and Big Data activities;
- Integration potential of the project in terms of research fields, different institutions and different research cultures;
- How the project promotes synergies between research and teaching;
- Creation of innovative hybrid infrastructure or (regionally) distributed infrastructure, where hybrid infrastructure refers to a combination of virtual and physical infrastructure, combining different technologies and methods in a research infrastructure and the "transdisciplinary" components regarding non-academic areas of our society, such as the arts or the media;
- Modularity and Flexibility: Is the requested infrastructure continuously and easily adaptable to new research requirements due to a modular structure? How flexible is the proposed R&D infrastructure in terms of changing or evolving scientific challenges?
- Participatory projects: Projects and infrastructure for integrating civil society into R&D (such as for example FabLabs or MakerSpaces).

As outlined in the previous section, third party grants are another significant source for research infrastructure investments. Since mid-2016, the Austrian Research Promotion Agency (FFG) has operated a dedicated "research infrastructure support programme" with an overall budget of €11.7m.[5] To guarantee additionality of the funding, the FFG programme excludes projects that already receive financing from BMWFW's higher education structural fund. In contrast to the BMWFW fund, the FFG also awards funding to SMEs and large companies as well as non-university research organisations. The funding range per FFG project is between €0.5m and €2m. Where the research infrastructure is intended for profit-oriented usage, the co-financing rate through the program is limited to 50%, while for (generally) non-profit usage, the maximum co-funding rate is 85%. Overall, 75% of the project total costs have to be spent on building up the research infrastructure.
Besides the overall project quality, notable assessment criteria of the FFG research infrastructure programme include gender relevance, the proposed commercialisation strategy (in the case of for-profit use), the proposed strategy for academic use of the generated knowledge, research outcomes (publications, patents), as well as the relevance to existing research infrastructures and additionality.

2.3 Monitoring & evaluation

Strategic funding of research infrastructure has only recently been incorporated in to dedicated programmes. Accordingly, no M&E reports regarding the programmes mentioned above could be found online. The existence and details of evaluation systems would have to be explored further through interviews with the BMWFW and the FFG.

- However, the FFG research infrastructure funding programme does require participants to produce an interim and a final scientific report, while participants

[5] Austrian Research Promotion Agency (2016). Funding of Research & Development infrastructures. https://www.ffg.at/sites/default/files/allgemeine_downloads/strukturprogramme/fe-infrastrukturfoerderung.pdf (in German).

in the BMWFW programme are required to submit a final report that addresses several criteria ("objectives achieved within the scope of the project", "degree of achievement", "timely and financial implementation of the project" and "future development prospects"). The BMWFW also intends to commission an evaluation of all projects at the end of the 2016-2018 funding period.

3 New Zealand

3.1 The process of allocating science capital funding

The key player in the process of allocating science capital funding in New Zealand is the Ministry of Business, Innovation and Employment (MBIE), which uses different funds to invest in science and innovation. One of these funds is the "Strategic Science Investment Fund" (SSIF), which was established in 2016. Additional funding of $63 million (around €41m) over four years has been announced as part of Budget 2016 for the SSIF, meaning it is now worth nearly $250 million per year (around €164m). Around $50 million (€33m) of this total is earmarked for infrastructures (SSIF investment plan 2017-2024, p.7). Through the SSIF, New Zealand invests in research programmes and infrastructure that support underpinning research capability. This is intended to help in realising the 2025 vision for the New Zealand science system set out in the National Statement of Science Investment (NSSI, launched in October 2015). The SSIF will be managed as a portfolio of investments from 1 July 2017, as approved by the Cabinet in the SSIF Investment Plan in October 2016. The SSIF has two components:

- Programmes – research that underpins strategic priorities and is critical to the future of New Zealand's wellbeing, economy and environment.
- Infrastructure – access to and development of larger-scale research infrastructure that supports enduring priorities

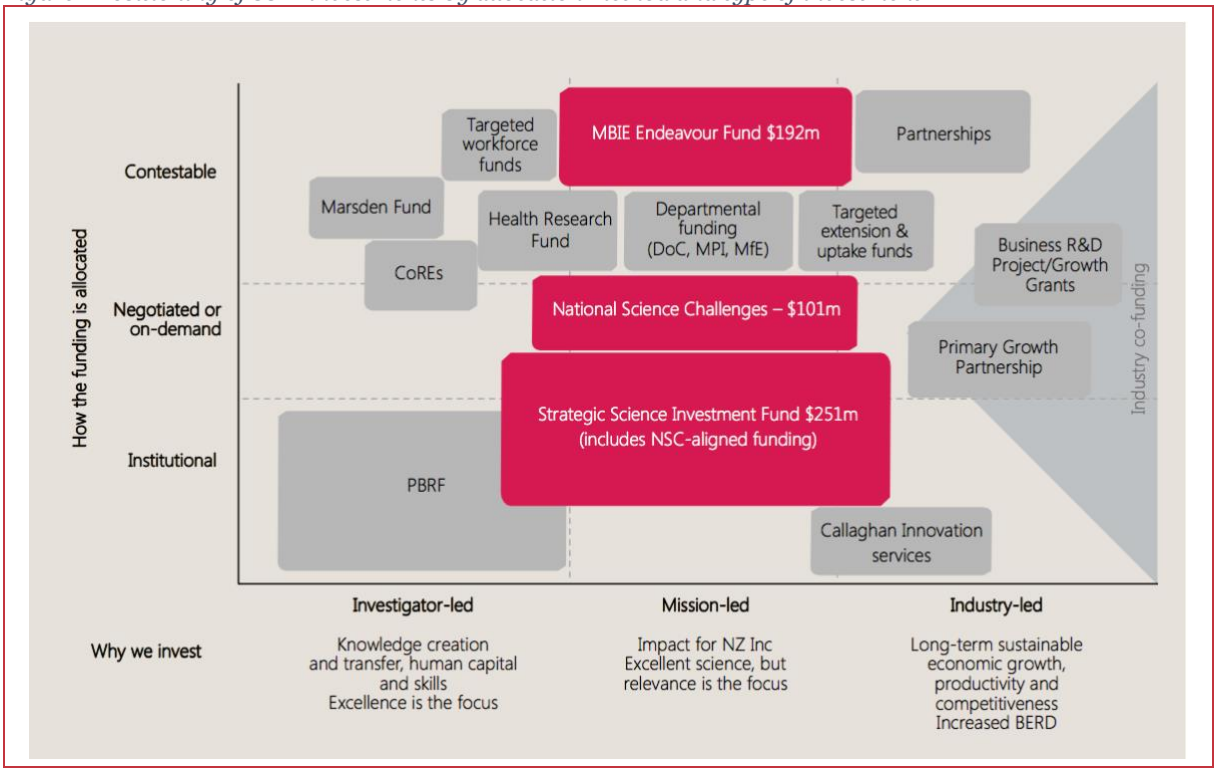
The SSIF intends to provide, among other tasks,

- a framework for strategic discussions between the Government and research organisations
- consistent, transparent decision-making and performance monitoring

Funding via the SSIF is allocated via institutional funding or via negotiated funding mechanisms. SSIF is therefore primarily a non-contestable, partnership-based mechanism between government and SSIF providers. Competitive elements may be used, however to "test the market, in order to identify the best capability and fit for delivering the new priority." (SSIF Investment Plan 2017-2024, p. 12). Furthermore, SSIF investments are strategy-driven and primarily mission-led. The following chart shows the positioning of SSIF investments with regard to the dimensions "rationale for the investments" and "allocation of funding". It also shows that the mission relevance is the focus of the SSIF investments, while research excellence is not the top priority.
The overall science priorities themselves are defined via a process led by the MBIE, resulting in the investment priorities in the National Statement of Science Investments. The process integrates research institutes, universities, independent research organisations, as well as the business sector, government departments (including the departmental Chief Science Advisers) and regional governments. Involvement is realised via a series of workshops with stakeholder groups. Comments are also sought from international experts. The draft document of the National Statement was released in 2014 for open consultation. The final document was released in October 2015.
Investment decisions are taken by the MBIE. It has a Science Board who make independent investment decisions on funding proposals that are referred to them by

MBIE's chief executive. Due to the recent establishment of the SSIF, further information about the operation of the SSIF, including the use of independent advisory and assessment panels are not yet published.
There are plans to set up a more structured roadmapping process: "In future, the Government will seek to inform research infrastructure capability development over a ten-year horizon with a research infrastructure roadmap that will draw on the NSSI and other government strategy, as well as scientific or technological developments. The roadmap will consider research infrastructure demands in priority areas, as well as cross-cutting issues such as data infrastructures, and inform future development of the SSIF investment plan." (SSIF Investment Plan, p. 19). In addition, it is interesting to note that, based on an "Agreement on Science, Research and Innovation Cooperation" made on 17 February 2017, New Zealand and Australia committed to cooperate in research infrastructure planning and investment.

Figure 1 Positioning of SSIF investments by allocation method and type of investment



Source: SSIF Investment Plan 2017-2024, p. 10

3.2 The (ex-ante) appraisal approach

The MBIE publishes an investment plan outlining the Government's strategic scientific goals and priorities, how the SSIF will invest, and performance expectations. Research organisations respond to the plan by developing allocation intentions and tailored investment proposals. In general, SSIF providers' proposals are expected to set out how they will deliver "excellent science with impact". The citations below, from the NSSI, describe the general understanding of excellence and impact.

- "Excellence encompasses the quality of the science, the people involved in it and the outcomes it generates. We understand excellence to mean the best people, taking a rigorous approach, leading to optimum results."

- "Impact encompasses the ways in which scientific research benefits individuals, whānau, communities, organisations, New Zealand, and the world. The dimensions of impact that we consider include those in the economic, environmental, health and social spheres, specifically including those identified under the Vision Mātauranga policy."[6]

In the NSSI (p. 12) the dimensions of impact are described in more specific terms, including aspects such as "new/improved products and services" (economic impact), "improved condition of an environmental asset" (environmental impact), "improved population health and health status for disadvantaged groups" (health impact) or "increased knowledge of and interest in science" (social impact).
For the research infrastructure investments, the SSIF details that "excellence" is meant to ensure that "investment is fit-for-purpose for users and builds valuable capability in the sector or industry." Impact is assessed in terms of uptake by, usefulness to, and the impact and excellence of science done. Furthermore, contributions to capacity development, international standing and broader economic goals are also relevant (SSIF investment plan 2017-2024).
The proposals also need to react to the investment signals laid out in the SSIF investment plan 2017-2024. They thus need to include the following aspects:

- The ongoing rationale for government intervention (market coordination failures, positive externalities, path dependency problems (p. 19).
- How providing access to the infrastructure platform will serve government priorities and the vision for a high-performing science system
- An approach to the evolution of the infrastructure investment over time, explaining how the investment will be agile in responding to technological or scientific developments
- Appropriate arrangements for co-funding, other contributions and/or a pricing model
- How the development, access and use of the platform reflects the approach laid out in "Vision Mātauranga"[7]
- A plan to leverage international connections and collaborations to benefit the broader science system and New Zealand.

Operationally, applicants responding to a call for proposals develop a concept business plan. This Concept Business Plan is limited to 20 A4 pages. It should be structured in three main sections:

- Vision:
  - Description of the proposal and how it will embody or give effect to the government's investment goals, collaborative arrangements etc.
- Excellence
  - Outline of how the Platform will be established and operated in a timely, well-organised, and successful manner, how the research is built and how access to the infrastructure will be facilitated.

[6] Source: FAQs on the National Statement of Science Investment

[7] The Vision Matauranga policy aims to take into account the interests and resources of the indigenous people of New Zealand into science and innovation policies.

- Impact
  - How the proposal will create direct and indirect benefit for New Zealand by generating value for its industries and other research end-users to deliver the expected benefits of the investment.
  - What are the needs that the platform will meet, and the scale and extent of potential benefits to New Zealand of the Platform?
  - What potential is there to deliver added value and benefits derived from leveraging and growing domestic and international partnerships and opportunities, including other strategically-valuable research?
  - How are research, science, technology or related activities delivered in the scale, type and pathways needed to achieve impact for research end-users and their sectors?
  - How is cost-effectiveness ensured?
  - What governance arrangements and organisational structures are used to promote organisational agility and responsiveness to end-users?

The concept business plans include an indicative budget for expenditure and revenue associated with the infrastructure.
The concept business plans are evaluated by an assessment panel consisting of national and international experts (e.g. in the case of the current assessment of the "Advanced Genomics Platform", the panel is chaired by an independent consultant). The Assessors will first assess each Concept Business Plan individually, then they will meet as a panel to confirm consensus scores for each Concept Business Plan. For the assessments, the proposals are scored on different dimensions (broadly, excellence and impact) on a 7-point scale, with an associated commentary recorded.[8]
The successful research providers are invited to submit a detailed business plan, which is again assessed. As the first round of proposals under the SSIF is currently in the final steps of stage one (results of the concept business plans assessment are expected mid-late March), there is not yet (early March 2017) any detailed information available on the content of the detailed business case or scoring procedures for the detailed business plans.

3.3 Monitoring & evaluation

In the National Statement of Science Investment from 2015, New Zealand committed to improvements in the evaluation and performance measurement in the science and innovation sector. Part of these improvements are system performance reports. They cover system-wide performance measures such as R&D intensities, research quality and commercialisation outcomes, public investment in science and innovation, institutional performance, business innovation measures, and public engagement with science and technology. The first was published in November 2016.
In terms of monitoring and evaluation of investments in research infrastructures, there are plans to establish a performance monitoring framework for the SSIF. The framework will be produced in early 2017. It is planned to be aligned with the 2016 Research, Science and Innovation Domain Plan. In this plan, there are numerous

[8] See the scoring guide in the document "Advanced Genomics Platform - Guidelines for Assessors Concept Business Plans 2017" on the MBIE website.

actions foreseen to establish a new research information system for the science system in New Zealand.
At the research infrastructure level, the different SSIF providers are asked to develop KPIs to enable their governing bodies and MBIE to measure progress against their strategy for each platform. These KPIs will set out measurable indicators at a platform level.
The MBIE and the SSIF provider are set to meet annually for a discussion about progress in achieving the strategy for each platform and any changes to that strategy.
There are currently no details available on the performance monitoring framework for the research infrastructures.

3.4 Potential for case study selection

The "Strategic Science Investment Fund" approach is a very recent instrument. Thus, a case study could likely build on recent conceptual considerations and experts involved in the recent policy design. However, there will be no substantial existing experience with the SSIF. There might specifically be a lack of information on the performance monitoring framework which was planned to be produced in early 2017, but is not yet available.

3.5 Sources

- National Statement of Science Investment
- Strategic Science Investment Fund – Investment Plan 2017-2024
- Research, Science and Innovation Domain Plan 2016
- Strategic Science Investment Fund: Advanced Genomics Platform: Call for Proposal for Concept Business Plans 2017
- Strategic Science Investment Fund: Advanced Genomics Platform: Guidelines for Assessors Concept Business Plans 2017

National eScience Infrastructure (NeSI) High Performance Computational Platforms and Services for New Zealand's Research Communities - Investment Case 2010

4 France

4.1 The process of allocating science capital funding

The French national strategy on research infrastructures is a strategic steering tool of the government. It reviews and highlights existing or planned infrastructure in an attempt to structure the landscape of infrastructures of national significance. Inclusion within the roadmap serves as a quality label, recognising the value of the infrastructure in the National Research Strategy (SNR).

The first roadmap was published in 2008 and it is updated every four years. The latest edition (2016) includes 95 research infrastructures, which fall into 9 main scientific fields and are a mixture of single-site (27), distributed (52) and virtual (16) facilities. Research infrastrctures are also grouped into four categies (see below), according to their national or multinational nature.

Table 1 Categories of research infrastructures in the French Roadmap

Type of Research infrastructure	Description	Number in 2016 Roadmap
International Organisations (IOs)	Legally based on an intergovernmental convention.	5
Very Large Research Infrastructures (VLRIs)	National and part of the government strategy, earmarked in the Ministry of research's budget and monitored individually at Government level.	20
Research infrastructures (RIs)	Depends on research operators, and implemented by them.	61
Projects	Either in the process of creation/construction, or having yet reached a full maturity that would entitle it to the status of "research infrastructure".	9

Source: French national strategy on research infrastructures - 2016 edition

The first French roadmap for research infrastructures (2008) identified 4 types of criteria applicable to any category of research infrastructures (see below). This suggests that the objectives go beyond merely research and scientific aims.

Table 2 Criteria used for the selection of research infrastructures in the 2008 roadmap

Scientific criteria	Education criteria
• Response to the needs of the scientific community • Quality of expected scientific production	• PhD and post-PhD students access • Higher education access
Knowledge transfer criteria	**Economic criteria**
• Importance of expected industrial partnerships • Importance of expected patent applications	• Importance of expected job and business creation • Importance of subsequent benefits for local businesses.

Source: *French national strategy on research infrastructures* - 2008 edition

The overall role of the State is to set the strategy and programming of national research infrastructures in order to ensure a strong representation of French RIs at European and international levels. The governance of individual infrastructures then depends on their type.

The Ministry in charge of education and research is highly involved in the governance of **international organisations and very large research infrastructures**. A steering committee (CD-TGIR) and a high council (HC-TGRI) bear the responsibility of setting up the Ministry's position, giving an opinion on high-level structuring decisions and following up on implementation. The Steering committee is chaired by

the director of Research and innovation at the Ministry in charge of education and research and composed of the presidents of French research Alliances[9], CEO of the French National Centre for Scientific research CNRS (largest French governmental research organisation) and General administrator of The French government-funded Alternative Energies and Atomic Energy Commission (CEA). In 2014, a Committee for legal structures was also set up to advise the Steering committee on how to address the requests for participation into international research infrastructures. Its objective is to make recommendations on the relevance of French involvement in new research infrastructures. The High council is an "independent body which is composed of 13 renowned experts from all scientific fields, with an extensive experience in management of major infrastructure and major research projects[10]". The Ministry also appoints Industry Liaison Officers within each VLRI, to act as industrial contact point to facilitate the relation with SMEs and foster a broader use of those infrastructures.
French participation to international organisations and the allocation of budget for large research infrastructures fall under the responsibility of the Ministry in charge of education and research. The budget for French participation to international organisations and large research infrastructures implementation in the past 3 years is shown in Table 3 below.

Table 3 Budget for French large infrastructures over the past three years

	2015	2016	2017
Large research infrastructures budget per year (€m)	€275.7	€234.4	€239.4

Source: Details on the finance law research and higher education – 2015, 2016,2017 (programme 172, action 13)

For **research infrastructures**, there is no centralised budgetary allocation or monitoring. Funding depend on each research organisation responsible. However, as part of the French Investment for the Future programme (PIA) (an economic stimulus package), the French Government provided funding for national infrastructure projects in the fields of health and biotechnologies. There were two waves of calls for proposals, in 2010 and then 2011, from which 23 projects were selected by the French national research agency (ANR). The budget for these 23 projects was of €336m.

Table 4 Health and biotechnology infrastructures calls in the frame of the PIA

Date	Title	Projects submitted	Projects selected
2010	National biology and health infrastructures – 1st wave	36	9
2011	National biology and health infrastructures – 2nd wave	27	14
Total		63	23

Source: Report on the implementation and monitoring of the Investment for the future programme – 2016

4.2 The (ex-ante) appraisal approach

The selection of research infrastructures for inclusion in the current (2016) roadmap was the result of a broad collective process that was initiated in 2014 and closely linked to the update of the ESFRI roadmap. Coordination groups (gathering Alliances, research organisations and the Ministry) were established to identify all potential

[9] Alliances are five thematic bodies, gathering public research entities, in charge of coordinating and prioritising public research in their field

[10] FRENCH NATIONAL STRATEGY ON RESEARCH INFRASTRUCTURES 2016 EDITION, p.158

research infrastructures by scientific domain. Each was asked to fill in a detailed questionnaire, which were then reviewed, validated and consolidated by the coordination groups for the relevant scientific domain. The High Council for very large infrastructures (HC-TGRI) reviewed all consolidated questionnaires and reported to the Steering committee (CD-TGIR). Based on this analysis, the Steering committee then established the comprehensive list of facilities officially registered for the 2016 French RI roadmap.

4.3 Monitoring & evaluation

The French national research agency (ANR) is responsible for monitoring the implementation of research infrastructure projects supported through the French Investment for the Future Programme. Indicators that have been established to measure project outcomes are summarised in the table below.

Table 5 Indicators for PIA infrastructures projects

Type of indicator	Description
Progress	Indicators such as projects' implementation rate
Research	Indicators such as number of publications
Training	Indicators such as number of people having taken part in a training made by the infrastructure
Usage	Indicators such as number of users during the year or occupation rate of the infrastructure
Valorisation	Indicators such as number of number of submitted patents by operators or users of the infrastructure, IP related royalties, etc.

Source: Report on the implementation and monitoring of the Investment for the future programme – 2016

Recently, actions were also taken to strengthen relations between research infrastrcutres and the business sector through the creation of a Committee for the economic valorisation of large infrastructures. This committee, consisting of experts in knowledge and technology transfer[11], has a role to:

- Assess the use, within all large infrastructures, of the full-cost calculation method; and set up a monitoring mechanism
- Build an action plan "Valorisation of very large research infrastructures (VLRI)", including a national coordination to ensure a better visibility and consistency of VLRIs in the research and innovation landscape (including synergies with existing TT and valorisation entities)
- Build indicators and measurement tools on the socio-economic impact of VLRIs.

4.4 Potential for case study selection

France appears to have limited potential for an in-depth case study. TThere is an established ex-ante appraisal procedure, but this process and the associated funding arrangements are not very transparent. There is also no formal system in place for monitoring and evaluation, although indicators for PIA infrastructures do exist and a Committee for the economic valorisation of large infrastructures was recently created.

[11] • Report on the implementation and monitoring of the national research and higher education policies - 2016

4.5 Sources

- French national strategy on research infrastructures - 2008 edition
- French national strategy on research infrastructures - 2012 edition
- French national strategy on research infrastructures - 2016 edition
- Report on the implementation and monitoring of the Investment for the future programme - 2016
- Report on the implementation and monitoring of the national research and higher education policies - 2016
- Details on the finance law research and higher education - 2015
- Details on the finance law research and higher education - 2016
- Details on the finance law research and higher education – 2017

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