Sweden – National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	**National Roadmap**
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	

The Swedish Research Council applies the following definition of the term 'research infrastructures':
RI constitute necessary tools for conducting research of the highest quality.
RI include facilities, instruments, knowledge bases and services, and are intended for use by researchers or research groups within basic or applied research within all research areas.

RI can be centralised, distributed or virtual, and the infrastructure is made available based on academic assessment criteria.
RI may have different characteristics within different areas. They can, for example, be large research facilities for studies within materials science or physics, or distributed databases for research within the humanities, social sciences or medicine. The general rule for all infrastructures receiving support from the Swedish Research Council is that they must be generally accessible to Swedish researchers, and that access is regulated based on academic excellence. They may be national or international, but since 2008, they must be of national interest and fulfill the following general criteria, in full or in part. They must:

- provide the conditions for world class research,
- be of a broad national interest,
- be used by several research teams or users with highly advanced research projects,
- be so extensive that individual teams cannot run them on their own,
- have a long term plan for scientific goals, funding and utilisation,
- be open and easily accessible to researchers, industry and other stakeholders,
- have a plan for accessibility (in terms of using the infrastructure, access to collected data and presentation of results),
- in relevant cases, introduce new cutting-edge technology.

As part of the work with 2018 Strategic Infrastructure Guide, the definition will be revised.

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2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 22.

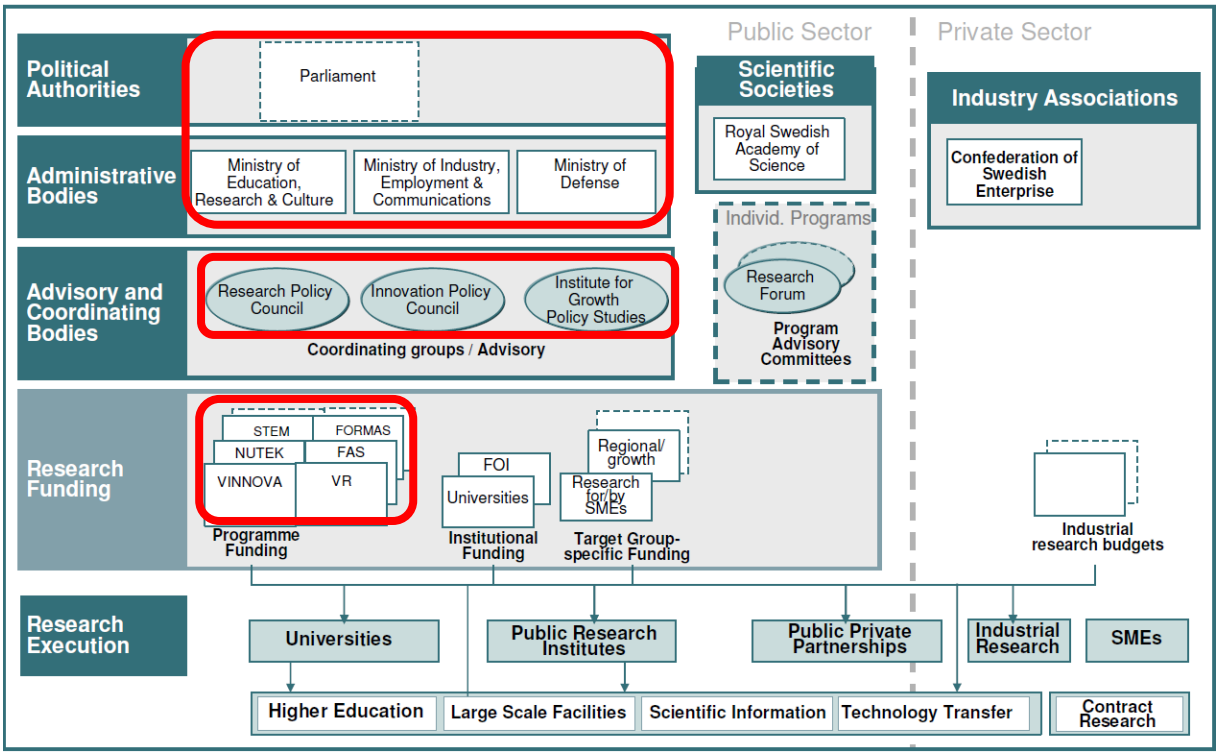

Figure 22: Organisational chart of the R&I system of Sweden (Private Sector Interaction in the Decision-Making Processes of Public Research Policies. Country Profile: Sweden, p. 1). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Since 2014, the Research Infrastructure Council has a close dialogue with Swedish higher education institutions on the review of the processes involved in the prioritisation, financing and organisation of national research infrastructures aimed at creating more sustainability and financial stability.
In the appendix, there is also a description of the background to the model for prioritisation and financing of research infrastructure, how the assessment of the proposals of needs has gone about and the future management of the call in 2017 and the forthcoming strategic guide, The Swedish Research Council's Guide to Infrastructures.

A new system for funding and prioritising RI is now in place. The Infrastructure Council finances only RI of national interest. RI that is specific to a particular research group or a university but is not developed for national purposes has to rely on alternative funding.

Embedding of RI in the national R&I system

The Swedish R&I system is characterised by high diversity in its funding arrangements and low diversity in terms of the categories of research performing organisations in the system. Firms account for at least two thirds of the research funded. The public-sector research effort is divided among three main types of research performers: (1) universities and university colleges, (2) research institutes, and (3) public authorities that perform in house research. The university and university college system is the largest part of the public research performing sector. Almost two thirds of publicly financed research in Sweden is done at 36 universities and university colleges. In reality the main share, almost 90%, of public funding goes to the ten biggest universities. Industrial research institutes are not part of the higher education sector but are classified as knowledge intensive firms and are organised under one umbrella organisation (RISE) which is a publicly owned

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company. There are a number of small public research institutes that are special purpose organisations such as the Swedish Institute of Advanced Studies, but these are not of direct relevance to R&I policy. Large scale research infrastructure in Sweden is incorporated in universities so there is no national lab system. (Jacob et al. 2016, p. 13)

3. RI in the National R&I System

The Swedish approach to R&I governance is predominantly decentralised. For this reason, it makes little sense to attempt to point to a particular actor as the main policy making body. A more useful approach would be to focus on where the main policy directives emanate from. This point is the Research Bill and the Innovation Strategy. The expert public agencies such as VINNOVA, the Swedish Energy Agency and the Swedish Research Council are key actors in the policy system. VINNOVA is the central coordinating actor for innovation issues while the Swedish Research Council is the principal actor for providing advice on the research system to the government. The Infrastructure council, part of the Swedish Research Council, has the main responsibility for RI strategy and investments. These actors have key policy implementation roles and are also main sources of advice and expertise to the Ministries. For this reason, it would also be remiss to maintain that policies are made at the Ministry level and then implemented at the Agency level. Instead, there is a complex backward and forward interaction between the Ministries and the Agencies which they govern on the one hand, and the Ministries and Parliament on the other. For R&I policy as in other policy areas, this process of upward and downward consultation is iterative and includes input from stakeholders either filtered through the Agencies or directly. In 2014, the new government added another actor to this constellation, and this is the Innovation Council. The status of this entity is advisory and the Prime Minister and the Minister of Finance are members as well as the Minister of Enterprise and Innovation and the Minister of Research and Higher Education. (Jacob et al. 2016, p. 14)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In order to face the challenges of tomorrow, and meet the needs of Swedish researchers for necessary research tools, a transparent prioritisation process is required, along with preparedness for long-term solutions that also allows for dynamics and renewal. The ambition is to counteract fragmentation by forming coordinating infrastructures within broad disciplines. The entire research system needs to be involved in the complicated processes that are to yield good decisions. The new model for prioritisation and funding of research infrastructures has a clearer infrastructure landscape as the goal. The balancing of local, national and international infrastructures requires well-informed discussions within the research community to identify the most urgent investments at each level. Involvement in international research infrastructure is of particular value, as it enables international academic exchanges and a broad knowledge transfer. A good interaction between various stakeholders and levels needs to be developed, particularly as the type of advanced and long-term investments that RI constitute require both strategic political decisions and highly qualified academic expertise. In light of this, the Swedish Research Council is working to support, bring together and coordinate the stakeholders and resources that in various ways have proven to be key factors in the creation of a beneficial Swedish research landscape. An important part of this process is to align the internal Swedish RM process, including both the RI need inventory and the strategic Guide (i.e., roadmap) to the ESFRI process.

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References

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- Jacob, M., Lindholm Dahlstrand Å., Sprutacz M. (2016); RIO Country Report 2015: Sweden. <https://rio.jrc.ec.europa.eu/en/file/9573/download?token=Qh6D-s0j> [Last access: 08/2017].
- Private Sector Interaction in the Decision Making Processes of Public Research Policies. Country Profile (2004): Sweden, European Commission, Public Sector Innovation.

Further links

- Hicks, D. (2012) 'Performance-based University Research Funding Systems', Research Policy, 41/2: 251–61.
- Call information for projects on research infrastructure <https://www.vr.se/inenglish/researchinfrastructure.4.ff38e12132ffa0680b8000799.html> [Last access: 08/2017].
- The Ministry of Industry, Employment and Communication and the Ministry of Education and Science, Innovation Sweden – A strategy for growth and renewal (Innovativa Sverige - Enstrategi för tillväxt genom förnyelse), (Ds 2004:36), 2004. < http://www.regeringen.se/49bbba/contentassets/d0f7ce031b504663893e4ff83f89cd93/innovative-sweden---a-strategy-through-renewal > [Last access: 08/2017].

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InRoad synchronising research infrastructure roadmapping in Europe