



From SINTEF's Multiphase Flow Laboratory at Tiller, near Trondheim.



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SINTEF's position in the European Research Area

Since 1984 the European Research Area (ERA) has developed enormously through seven Framework Programmes for research. As a result, the EU exercises considerable influence over the participating countries. Closer national follow-up will be needed if Norway is to benefit from the possibilities provided by the ERA.

This article provides a summary of the development of the European Research Area (ERA). It includes a review of the ERA's various policy instruments and brief explanations of a number of abbreviations in use. The article focuses on the areas which are of greatest interest for SINTEF.

Introduction

There is agreement throughout Europe that the European Research Area is a major arena for research activity. The ERA will play an increasingly important role as it is developed. The fact that Norway in a few years' time will contribute up to NOK 2 billion annually means that it will also become an even more important arena for the financing of research.

Norway is a fully qualified member of the existing ERA, with SINTEF being the leading Norwegian participant. Norway's ambition is to make use of the ERA technically and financially, and SINTEF is well qualified to ensure Norway's position in the ERA of the future.

To date, focus has been mainly on the EU's Framework Programmes for research, and this in particular is what comes to mind when European research or the ERA is mentioned. However, the ERA is already much more than the Framework Programme itself and new programmes and initiatives will come, for which funding is only partially provided by the European Commission. There will also be

completely new mechanisms for the selection of research themes and participation. The role of the European Commission will become less direct, though its role in forming research policy will probably become much greater. This article provides an overview of initiatives currently represented by the ERA and of some of the challenges ahead.

Historical development

The European Research Area as we know it today has developed gradually through the Framework Programmes for research which commenced in 1984. The first programmes were combinations of sub-programmes with no distinct common superstructure. In the earliest years, Norwegian participation was funded project by project through the country's research council system, something which entailed both advantages and disadvantages. One of the disadvantages was the unpredictability in Norwegian funding. Would a project receive support even if it were accepted by the EU? A great advantage was that it was easier to enter and position oneself in a consortium where one could contribute technically and financially without competing for project funding. This put Norwegian participation in a good position early in the 1990s and laid the foundation for long-term co-operation.

Norway became a fully qualified member of the Framework Programmes from the fourth one which commenced in 1994. This

quickly had an effect on the way in which one operated. Participation in the ERA was no longer a competition for Norwegian public R&D funding, but a European competition involving two new aspects: Technical competition with the best research institutes in Europe, and the authorities' requirement for a good return on the Norwegian investment.

SINTEF was involved in the EU research from an early stage, and good contacts have been developed in the course of over twenty years of participation. This has been a contributory factor in making SINTEF Norway's foremost representative in technical collaboration as regards both the number of projects and funding through the Framework Programme.

The objective of the programmes has changed a good deal and rather than catering to the needs of big industry they are now directed at finding solutions to social challenges. As a result, the technical foundation of the Framework Programmes has become significantly more broad-based. The financial allocation has changed from being purely project based to involve a large number of new funding mechanisms. These increase the European Commission's influence on research policy but result in less direct support from the EU. National co-financing and combined prioritisation are necessary if one is to benefit from the potential in the ERA.

In the Framework Programmes each country pays in to the community in proportion to its Gross Domestic Product (GDP)¹. Luxembourg is the only country which contributes more per head of the population to the Framework Programme than Norway. Norway's challenge of ensuring a good return on its investment is a demanding one. The Norwegian GDP is increasing and it is

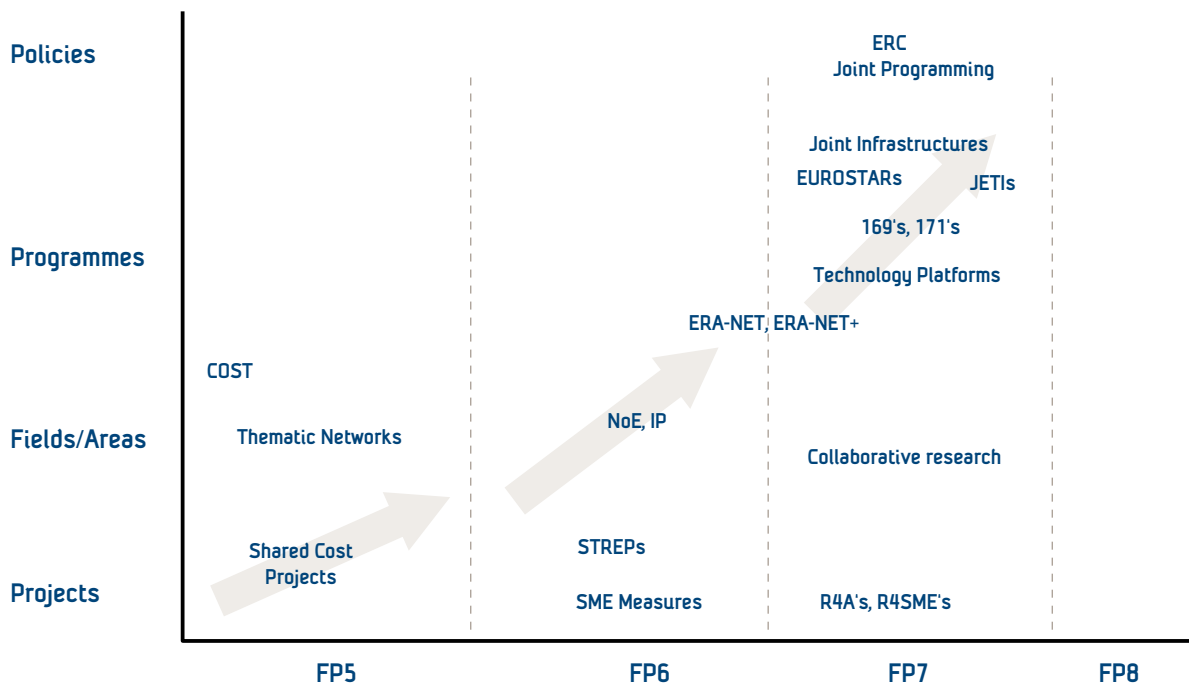
becoming increasingly difficult to obtain what amounts to a fair return. The rate of return for Norway has sunk from about 1 in the EU's Fifth Framework Programme to about 0.84 in the Sixth and to 0.75 so far in the Seventh. Not only do the other Nordic countries achieve more support per head of the population than they pay in to the Framework Programme, but they also manage to receive more support per head than Norway has so far. In SINTEF's opinion, there is significant potential for Norway to achieve a better return, both in connection with projects and in support within the Framework Programme.

At the beginning of the Fifth Framework Programme (FP5), the Commission founded the European Research Advisory Board (EURAB). From the initial appointment of the Board, Norway had two representatives. When the Board was re-appointed in connection with FP6 and after the expansion of the EU, there was a single Norwegian representative. At the beginning of FP7, EURAB was replaced by the European Research Area Board (ERAB), which had a different mandate and was more closely associated with the European Commission. Also in this connection Norway was represented, this time by SINTEF's President, Unni Steinsmo, who was also the only representative from the institute sector in Norway.

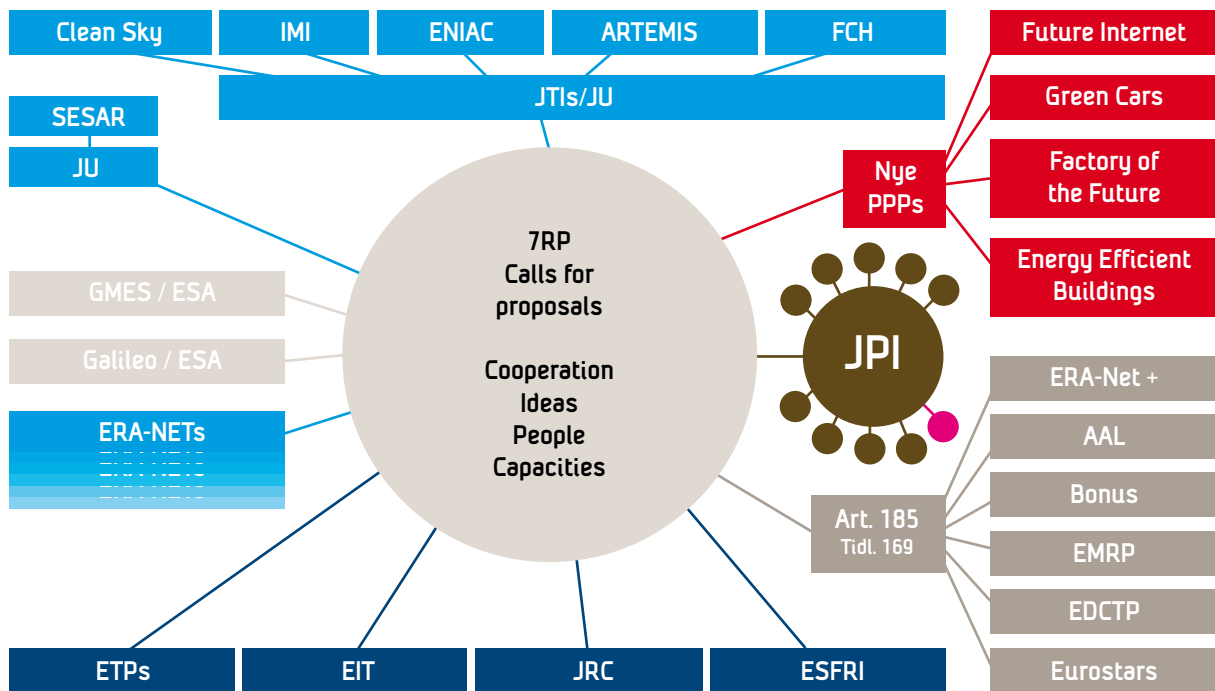
The ERA today

The ERA is in a continuous process of evolution, effected by way of somewhat unpredictable political processes. Providing a good overview is therefore both complicated and time-consuming, involving many terms and many abbreviations. To assist in the understanding of the ERA, the Research Council of Norway has produced the diagram on the following page. This shows the elements of the ERA which are of greatest interest to the Norwegian research communi-

The diagram below shows how the Framework Programmes have developed more in the direction of policy formation without relinquishing direct project funding. The diagram has been developed by Chris Hull of the European Association of Research and Technology Organisations (EARTO).



¹ From the Norwegian government's budget for 2011, Page 185: "The combined budget for the Seventh Framework Programme is approximately EUR 50.5 billion. The total Norwegian membership subscription will be approximately NOK 10 billion at today's exchange rate. The subscription for each individual year is therefore determined by the budgetary profile of the Framework Programme, the development of Norway's Gross Domestic Product, compared with the GDPs of the other participating countries, and the development of the exchange rate".



Elements of the ERA which are of major interest to Norwegian research communities and which are affected by funding from the Seventh Framework Programme. The diagram has been developed by Simen Ensby of the Research Council of Norway.

ties and which are affected by funding through the Seventh Framework Programme.

When the Seventh Framework Programme was adopted, the budget to be made available in the period from 2007 to 2013 was well over EUR 50 billion. Annual allocations in the first few years will be about half of what will be allocated towards the end of the programme. The annual Norwegian subscription will also be more than doubled between the first and last years of the period. Many of the elements illustrated in the diagram were not known when the programme was adopted. The easiest way to explain this is to divide the diagram up and consider each individual part.

The core of the Framework Programme consists of the programmes called Cooperation, Ideas, People and Capacities. These four programmes in turn have their sub-programmes which allocate funding through "Calls for proposals" for sub-programmes in specific themes. A theme is often repeated every two years. Three years into FP7, project support amounting to almost EUR 15 billion has been allocated. Norway's share of this is EUR 250 million, or about 1.67 per cent. SINTEF's share is about EUR 60 million, representing 75 to 80 per cent of the volume of projects SINTEF has in the ERA.



The ETP's (European Technology Platforms) are an important political tool for special interest groups. There are about thirty ETPs which are largely self-financing. Participation here is demanding but necessary if one wants to have any influence. SINTEF is involved in a number of ETPs and in the governing bodies of a few selected ones. The most important output from an ETP is a Strategic Research Agenda (SRA), which, if it is a good one, forms the foundation for a Joint Technology Initiative / Joint Undertaking (JTI/JU). This has

been the case for IMI, ENIAC, ARTEMIS and FCH, which are mentioned below, and for the recently introduced Public-Private Partnerships (PPPs).

EIT (European Institute of Innovation and Technology) selected its first three technical fields in 2009. In this process, no Norwegian institutes qualified. This is only the starting phase and success depends on comprehensive domestic funding in addition.

The Joint Research Centre (JRC) is the EU's own research centre and is funded as part of the Framework Programmes for research. The JRC has its headquarters in Brussels and comprises seven institutes located in five different countries. Its activities consist of essential goal-oriented basic research projects directly applied to EU policy development.

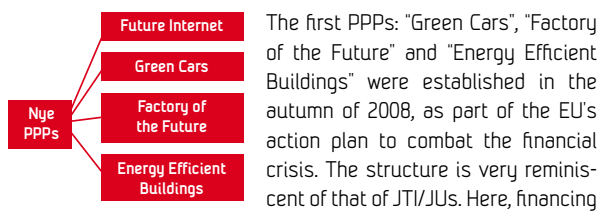
ESFRI (European Strategy Forum on Research Infrastructures) prioritises the major research infrastructure elements in Europe. The host nations have a right to make major contributions so as to attain status as part of the strategic European infrastructure. Norwegian technical communities are connected with 21 of 44 projects. Norway is host nation for two of the projects: SIOS (Svalbard International Arctic Earth Observing System) and ECCSEL (European Carbon Dioxide Capture and Storage Laboratory Infrastructure). NTNU and SINTEF are in the driving seat of ECCSEL.



The first JTI/JUs have been initiated, following a good deal of work in the associated ETP, and they represent powerful industrial interests. Funding from the EU is comparatively low, but is derived from the budget of the Framework Programme. The national authorities must provide partial financing, and just how much Norway may have to contribute to the total funding is unclear right up to the commencement of the projects. SINTEF has had much success in

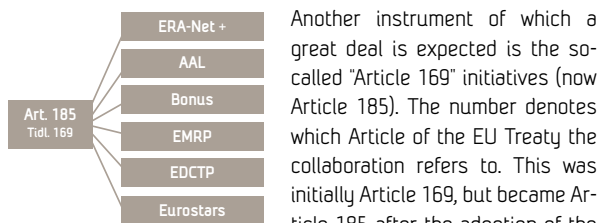
the FCH (Fuel Cell and Hydrogen), ARTEMIS (embedded computer systems) and ENIAC (European Nanoelectronics Initiative Advisory Council) projects and has been selected for several major projects and participates in steering committees. SINTEF's participation in IMI (Innovative Medicines Initiative) and Clean Sky (Aeronautics and Air Transport) is modest. The first major challenge for a JTI/JU is to achieve total financing if a good job is to be done. Moreover, each JTI/JU has its own rules regarding the basis of calculation for approved costs. These rules are not necessarily the same as those applying to the Framework Programme. The EU's contribution is moreover so small that significant national funding is necessary for success.

SESAR
JU SESAR (Single European Sky ATM Programme) is an ambitious programme for operations in European airspace. SINTEF is heavily involved and several projects are in the process of initiation. As with JTI/JUs, adequate supplementary funding at a national level is a challenge if one is to contribute actively to the programme.



The first PPPs: "Green Cars", "Factory of the Future" and "Energy Efficient Buildings" were established in the autumn of 2008, as part of the EU's action plan to combat the financial crisis. The structure is very reminiscent of that of JTI/JUs. Here, financing is split between the Commission, the national authorities and the industry which is being reconstructed. The "Future Internet" project was established during 2009. Calls for proposals for all these PPPs are integrated in funding announcements connected with the Framework Programme's sub-programmes in the autumn of 2010.

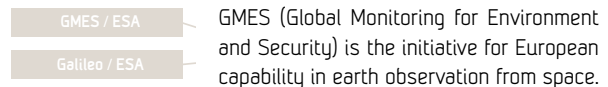
JPI (Joint Programming Initiatives) are a new instrument for achieving binding research collaboration. The countries decide where they wish to participate and finance their own participation by way of their national research funding. Ten themes have been selected so far, of which the first is a pilot project connected with Alzheimer's disease. Norway has taken the initiative for, and will lead, the "Healthy and productive seas and oceans" theme area.



Another instrument of which a great deal is expected is the so-called "Article 169" initiatives (now Article 185). The number denotes which Article of the EU Treaty the collaboration refers to. This was initially Article 169, but became Article 185 after the adoption of the Lisbon Treaty. Such initiatives are partially financed by the EU and partially through national research funding, but financial support is awarded according to national rules and may vary from country to country. Among specific programmes are AAL (Ambient Assistant Living), Bonus (Baltic Sea Research), EMRP (science of measurement), EDCTP (Health in developing countries) and Eurostars (research-performing SMEs and their partners).

ERA-NETs ERA-NET and ERA-NET+ are network programmes which are partially financed by the Commission in order to co-ordinate different countries' research programmes and activities. It is primarily the research-financing organisations in Europe which participate in ERA-NET. The objective is to achieve shared activities and develop

multinational allocation announcements in selected theme areas.



GMES (Global Monitoring for Environment and Security) is the initiative for European capability in earth observation from space. This is co-financed by the ESA and FP7. The same applies to the Galileo satellite navigation system, for which Norway and the EU have signed a bilateral collaborative agreement.

Conclusion

The European Research Area has developed enormously through seven Framework Programmes for research. After initially focusing on a few shared challenges connected with the needs of industry, the EU has involved itself strongly and achieved much clearer influence over the research priorities of the participating countries.

The focus has been transferred to dealing with the major social challenges rather than industrial growth. Many different policy instruments have been tried and new ones are being added. The connection between shared funding from the EU and the participating nations' own funding has become stronger. Active countries achieve success and see significant benefits, both professionally and as regards a fair return on the research financing. Those countries which are successful allow their national priorities to form the foundation of the ERA's activities.

If the Norwegian research communities are to achieve optimal benefit from the ERA, stronger national follow-up will be necessary. From the point of view of the research institute sector, this means predictable terms of reference which are comparable with those of other European countries. The ERA will develop to encompass a wide range of programmes and initiatives. This is something which Norway will have to adapt itself to. If Norway wants the best possible return on what it contributes to the ERA, this will call for major changes in research policy in Norway.

Recommendations

- Support for project establishment for participation in the ERA must be improved.
- The research institutes' approved research projects with EU support should be co-financed by the Research Council of Norway so that the actual costs are covered.
- The Research Council of Norway's programmes should prioritise projects which are complementary and which extend and develop EU-funded projects with Norwegian participation.

References

- *Third FP7 Monitoring Report*, The European Commission, July 2010
- Godø, Langfeldt, Kaloudis et al. "In Need of a Better Framework for Success", evaluation of Norwegian participation in FP6 and the first part of FP7, NIFU/STEP, January 2010
- *Statsbudsjettet 2011 (the Norwegian state budget 2011)*, the Norwegian Ministry of Education and Research, Page 185

Websites

cordis.europa.eu, www.forskningradet.no/no/EUforskning...ERA/1253952628399

Presentations

Simen Ensby, ERA presentation for SINTEF, August 2010