

# Mapping ERA-NETs across Europe: overview of the ERA-NET scheme and its results

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## Foreword

This report has been prepared by the Institute for Prospective Technological Studies (IPTS) of the European Commission's Joint Research Centre (JRC).

It was produced as part of NETWATCH. NETWATCH is the European Commission's information platform on transnational R&D programme collaboration with a current focus on the ERA-NET scheme. Its main objective is to support policy makers and researchers in the field by providing up-to-date information and evidence-based analysis of the active networks and the development and application of an impact assessment framework for R&D transnational collaboration at European level. For further information see <a href="http://netwatch.jrc.ec.europa.eu">http://netwatch.jrc.ec.europa.eu</a>.

This report presents the first mapping of the active ERA-NETs across Europe.

## Acknowledgements

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We would specially like to thank to all the ERA-NETs coordinators who kindly took the time to respond to the questionnaire through the NETWATCH information platform and participated in the telephone interviews.

## **Executive Summary**

This report provides a first mapping of the active ERA-NETs as well as a battery of indicators to characterise the transnational networks. It has been produced as part of NETWATCH (<u>http://netwatch.jrc.ec.europa.eu</u>), a main aim of which is the development and implementation of an analytical framework for transnational R&D collaboration at European level.

This mapping provides a snap-shot of the ERA-NET landscape at the time of the analysis and involves collecting information along a range of dimensions that 'characterise' ERA-NETs (e.g. number of countries involved, joint activities developed, thematic coverage, etc.).

The data collection for the first mapping exercise was carried out by JRC-IPTS between October 2009 and January 2010. It was organised through an online questionnaire that was sent to the coordinators of the running ERA-NETs via the NETWATCH information platform.

The scope of the mapping includes data from a total of 47 active ERA-NETs, from which: 32 are FP7 ERA-NETs; 8 are ERA-NETs Plus, and 7 are FP6 ERA-NETs (running at least until the end of 2010).

Main findings:

- The most predominant interest of the active ERA-NETs is on scientific or technical domains (such as nanotechnology or chemistry). Moreover, around 15% of the ERA-NETs with a unique focus concentrate their interest on specific policy areas generally related to grand societal challenges (such as water or climate change), on industry sectors (related to applied research in fields such as transport or food production) or on the development of particular regions (e.g. Mediterranean or Balkan areas).
- ERA-NETs are moving from a major interest in networking and building relations with international peers towards a more strategic approach. Almost 80% of the networks consider the implementation of joint calls a key strategic objective while around 30% consider the definition of common research and the implementation of joint programmes "very important" objectives.
- The scheme is seen as a valuable tool by programme managers and owners across Europe to foster transnational collaboration. This is evidenced by the increasing number of countries engaging in the scheme. Today 51 countries participate in the scheme, which represent an increase of around 27% compared to 2008. Furthermore, approximately half of the new networks set up under the FP7 (including ERA-NET Plus actions) are continuation of previous ERA-NETs.
- The average size in terms of countries participating in an ERA-NET follows very similar patterns to that in 6th Framework Programme. On average, 13 countries participate in a network.

#### Geographical dimension

- All Member States continue highly involved in the scheme, France and Germany being the leading participants. Furthermore, it is interesting to mention the significant involvement of a group of small countries: Austria, Finland, The Netherlands and Belgium.
- The great majority of Associated Countries involved in the FP participate in the ERA-NET and ERA-NET Plus schemes, with a significant participation of Turkey, Norway, Switzerland and Israel. The new Associated Countries such as Albania, Montenegro and Bosnia Herzegovina-are showing their interest in taking part in R&D transnational networks, although this is still limited to those ERA-NETs with a strong regional focus on the Balkan countries and their participation is still quite rather symbolic.
- An increasing number of Third Countries are being involved in the networks. However, their individual participation is also rather symbolic, with less than 5%.
- Looking at R&D intensity we observed that there is, in general, a positive correlation between this variable and participation in ERA-NETs. The vast majority of European countries follow the same trend. However, data on R&D intensity reveals that, as a group, the Nordic countries (with the exception of Norway) present a distinct pattern that is different from the rest of the European nations, with lower than expected levels of participation for countries with such high R&D intensities. In general terms, the long history of cooperation in R&D and innovation in the Nordic region may partially explain this, but it is difficult to conclude from this analysis whether the existing Nordic R&D cooperation is a substitute for, rather than a supplement to, collaboration at a wider level.

#### Participant dimension

- A total of 38 institutions act as coordinators, which are in the great majority programme managers at national level. The involvement of regional stakeholders as coordinators is marginal.
- The coordinators of all of the FP7 and ERA-NETs Plus actions originate from only 11 countries. The distribution of the coordinators among countries follows a pattern similar to the country participation itself: Germany and France are clearly the most active countries and especially significant is the involvement of the small countries (Austria, The Netherlands and Finland). Despite its high rate of participation, UK and Spain's role as coordinators is very small

#### Thematic dimension

- The most relevant thematic priorities are "nanosciences and nanotechnologies" (15% of the total ERA-NETs), "food, agriculture and fisheries" (13%) and "health" and "environment", which represent around 10% each. The areas of "space" and "security" are not currently being covered by any ERA-NET.
- All types of research (basic, applied and pre-competitive) are performed through ERA-NETs, but applied research is a clear priority.

• The main target groups eligible for funding of the joint activities (mainly joint calls) developed by the networks are Higher Education Institutions (HEIs) and Public Research Organisations (PROs). Although private companies' involvement in research is essential for the exploitation and commercialisation of research results, they seem to be less predominant as target groups eligible as beneficiaries of the joint activities of the ERA-NETs.

#### Joint activities of the networks

- The networks generate a wide range of tangible and intangible outputs (e.g. mutual learning, cooperation agreements, joint calls, join programmes, training activities, etc.). In line with the level of importance of the strategic objectives mentioned before, the design and implementation of joint calls are clearly the most relevant joint activities of the networks.
- A total number of 42 joint calls have been already completed and 47 are planned for the coming months. The data available show that the great majority of the running ERA-NETs have completed or planned at least one joint call. Only 10% of the networks analysed do not have any joint call active or planned.
- The fields of nanosciences and transport are clearly the most active in launching joint calls. In general terms, there is a positive correlation between the distribution of ERA-NETs by research fields and the number joint calls launched.

## 1. Introduction

This report provides a first mapping of the active ERA-NETs as well as a battery of indicators to characterise transnational networks. It has been produced as part of NETWATCH (<u>http://netwatch.jrc.ec.europa.eu/nw/</u>), a main aim of which is the development and application of an analytical framework for transnational R&D collaboration at European level.

Regular mapping is intended to provide a snap-shot of the ERA-NET landscape at the time of the analysis and involves collecting information along a range of dimensions that 'characterise' ERA-NETs (e.g. number of countries involved, joint activities developed, thematic coverage, etc.).

The ERA-NET scheme has been recognised as a successful instrument to catalyse cooperation between national R&D programmes<sup>1</sup> and as a valuable experience for the development of more sustainable Joint Programming Initiatives (JPI) in Europe<sup>2</sup>. Hence, this first mapping exercise aims to provide useful inputs to make a more efficient use of the scheme as well as to facilitate a more strategic approach to decision-makers at Member State (MS) and EU level concerning R&D transnational collaboration.

#### Methodology: Data collection process and scope of analysis

The data collection for the first mapping exercise was carried out by JRC-IPTS between October 2009 and January 2010. It was organised through an online questionnaire that was sent to the coordinators of the running ERA-NETs via the NETWATCH information platform. This process was complemented by telephone interviews in order to guide the respondents through the questionnaire. By doing so, our aim was also to ensure a very high rate of response. However, the questionnaire was not fully completed by all the coordinators and some gaps should still be filled in. Reminders to coordinators to update the information have been sent and this limitation will be overcome in the second information collection round.

The questionnaire was designed to get the necessary data to develop a set of indicators (both qualitative and quantitative) to characterise ERA-NETs. The battery of indicators, which constitutes the basis for the mapping exercise, can be found in Annex I. Similar data collection is envisaged to be carried out over time (initially planned twice a year) with the aim of further monitoring the evolution and activities of the ERA-NETs.

A new list of indicators and a new data collection process will be developed for the impact assessment framework in due time, which will allow us in the medium and long run to assess the effects and benefits of the transnational R&D collaboration activities for national policies and for the realisation of the ERA.

<sup>&</sup>lt;sup>1</sup> European Commission (2009). "FP6 ERA-NETs Study. Impact assessment of the ERA-NETs scheme under the Sixth Framework Programme", Report prepared by Matrix Insight and Ramboll Groups for Directorate general for Research. Matrix Study; and Amanatidou (2010), "ERA-NET on Stage event- Final Report".

<sup>&</sup>lt;sup>2</sup> See Elena *et al.* (2010). "Developing the European Research Area: Opening-up of national R&D programmes and Joint R&D policy initiatives". JRC-IPTS Scientific and Technical Report.

The scope of the current analysis includes the active<sup>3</sup> FP7 ERA-NETs and ERA-NETs Plus as well as ERA-NETs launched under FP6 and running at least until the end of 2010. Data from a total number of 47 active ERA-NETs have been gathered (see Annex II), from which: 32 are FP7 ERA-NETs; 8 are ERA-NETs Plus, and 7 are FP6 ERA-NETs.

## 2. Mapping FP7 ERA-NETs across Europe

ERA-NETs aim to foster transnational collaboration in Europe at programme level in a wide range of domains and with different foci. The majority of ERA-NETs examined describe themselves as having a unique focus, although one quarter are defined as a combination of two (or even three) foci<sup>4</sup>.



Figure 1. Main focus of the ERA-NETs

As we observed in Figure 1, from the networks with a unique focus, almost half concentrate their interest upon a particular scientific or technical domains (such as nanotechnology or chemistry), while around 15% are focused either on a specific policy area (generally related to areas close to grand societal challenges, such as water or climate change), an industry sector (related to applied research in areas such as transport or food production) or a regional area (e.g Mediterranean or Balkan areas).

The four-step approach of the scheme<sup>5</sup> allows each ERA-NET to plan an evolving set of joint activities depending on the degree of maturity of the network. Each step of the process involves different strategic objectives.

While the most common rationales for participation in the scheme during FP6 were the creation and support of transnational R&D projects and building up new relationships with peers from other

<sup>&</sup>lt;sup>3</sup> Until January 2010 when the data collection exercise was finalised.

<sup>&</sup>lt;sup>4</sup> No answers from two ERA-NETs (CORNET II and PathoGenoMics)

<sup>&</sup>lt;sup>5</sup> (1) Systematic exchange of information and good practices on existing programmes; (2) Definition and preparation of common strategic activities; (3) Implementation of joint activities between national or regional programmes; (4) Funding of joint transnational research.

countries<sup>6</sup>, the analysis of the strategic objectives of the new ERA-NETs evidences that the networks are moving towards a more strategic approach. As Figure 2 shows, all the objectives set up for the scheme are considered today, for the majority of the respondents, very important or important. Particularly significant are the implementation of joint calls, which has been identified of "very important" for around 77% of the respondents and the exchange of information and good practices, which is very important for almost 60% of the ERA-NETs.

Interestingly, not only the objectives related to steps 1 and 2 of the scheme, but also the implementation of joint activities with a longer approach – actions strongly related with step 3 and 4 – has been rated as important or very important for a significant percentage of ERA-NETs. Particularly, the definition of common research agendas is seen as "very important" for almost 32% of the ERA-NETs and the implementation of joint programmes is considered "very important" for around 30% of the coordinators. This implies a consolidation of the four steps of the scheme and, consequently, ERA-NETs are increasingly being considered a step towards Joint Programming (JP).



Figure 2. Importance of the strategic objectives of the networks

Approximately half of the new networks set up under the FP7 (including ERA-NET Plus actions) are continuation of previous ERA-NETs. This is the case for all of the ERA-NET Plus actions and for around 34% of the FP7 ERA-NETs. This reflects the attractiveness of the scheme as a tool to foster collaboration between programme managers and owners across Europe. It also shows successful collaboration patterns of the consortium involved since in most of the cases the continuation of the ERA-NET is done with the same (or very similar) partners on the same or related field.

<sup>&</sup>lt;sup>6</sup> European Commission (2009). "FP6 ERA-NETs Study. Impact assessment of the ERA-NETs scheme under the Sixth Framework Programme", Report prepared by Matrix Insight and Ramboll Groups for Directorate general for Research

Studying in detailed those networks that rated as "very important" both longer term objectives<sup>7</sup> together with the evolution and maturity of the networks may be of value for the identification of JP themes and potential partners to developed JPIs. Actually, the six FP7 ERA-NETs<sup>8</sup> that consider very important the definition of common research agendas and the implementation of joint programmes are a continuation of previous ERA-NETs or are directly related to other ERA-NETs or to other forms of transnational collaboration activities (such as Article 185<sup>9</sup>). Their previous experience as networks and their linkages with other transnational collaboration activities could explain their longer-term approach. The research fields covered by these consolidated consortia are: nanotechnologies, environment and food, agriculture and fisheries.

By 2008, over 40 countries had taken part in the scheme. Today the geographical coverage includes a total of 51 countries, which represents an increase of around 27%. It can be argued that this reflects a growing interest of different countries in engaging in R&D transnational collaboration activities and evidence the attractiveness of the scheme not only for MS but for Associated and Third Countries.

Besides the increase of the net number of countries involved in the scheme, the size of an ERA-NET (see Figure 3) follows very similar patterns to that in FP6. On average, 12 countries were participation in FP6 ERA-NETs and 13 in the FP7 ERA-NETs.



Figure 3. Size of ERA-NETs (Number of countries involved)

Another way of analysing the size of the networks is taking into consideration the amount of funds invested in joint actions (mainly in joint calls and joint programming). However, since the majority of the new ERA-NETs are in the first stage of their life cycle, there is still scare information on funding. The next mapping exercise will provide more data and analysis on this topic.

<sup>&</sup>lt;sup>7</sup> Implementation of joint programmes and definition of common research agendas.

<sup>&</sup>lt;sup>8</sup> Woodwisdom 2, MNT-ERANET II, BS- ERA-NET, See-ERANET plus, Bonus, IMERA plus

<sup>&</sup>lt;sup>9</sup> Previous Article 169.

## Geographical dimension

The next map illustrates the country involvement in ERA-NETs under FP7 and ERA-NETs Plus actions, France being the leading participant.

## Figure 4. Country involvement in FP7 ERA-NETs and ERA-NET Plus



In addition to looking at net participation, it is interesting to analyse the relationship between the individual country's involvement in the scheme and other variables related to the country's capacity to engage in transnational R&D collaboration activities. It may be argued that when countries have more resources and capacity at their disposal they can be expected to participate in such R&D activities more extensively.

Looking at R&D intensity<sup>10</sup> we observed that there is, in general, a positive correlation between this variable and participation in ERA-NETs (see Figure 5 for FP7 networks and Figure 6 for FP6 networks<sup>11)</sup>.

The vast majority of European countries exhibit the same trend. We find an exception in the Nordic countries. While the Nordic countries have some of the highest R&D intensity rates in Europe they have lower participation rates in the ERA-NET scheme than one might expect given the slope of the regression line for all the other countries. As shown in Figures 5 and 6, the trend line of these countries<sup>12</sup> (the blue line) lies above the regression line of the rest of European countries (the red line). The only exception is Norway, which has participation rates in line with its R&D intensity. The Nordic countries (with the exception of Norway) form a group with a distinct pattern of participation that differs from the rest of the European nations.

The region's long history of cooperation in R&D and innovation and the existence of joint institutional structures (e.g. NordForsk and the Nordic Innovation Centre) and joint programmes (e.g. the Top-level Research Initiative) in the Nordic region may partially explain the pattern of participation in European initiatives, with participation in Nordic schemes 'competing' with participation in European schemes. In the case of the ERA-NET scheme, for example, the creation of NORIA-net<sup>13</sup>, a new Nordic instrument, could affect the Nordic countries' participation in ERA-NETs. It is difficult to conclude from this analysis, however, that existing Nordic R&I cooperation is a substitute for, rather than a supplement to, collaboration at a wider level<sup>14</sup>.

The picture is similar for ERA-NETs under both FP6 and FP7.

<sup>&</sup>lt;sup>10</sup> 'R&D intensity' is defined as the R&D expenditure as a percentage of GDP.

<sup>&</sup>lt;sup>11</sup> In Figures 5 and 6, averages for the period 2007-2008<sup>11</sup> have been used for FP7 ERA-NETs, while averages for the period 2002-2006 have been used for networks launched under FP6.

<sup>&</sup>lt;sup>12</sup> Finland, Sweden, Denmark and Iceland.

<sup>&</sup>lt;sup>13</sup> Launched by NordForsk in 2007, this coordination programme is modelled on the ERA-NET scheme. Its aim is to encourage collaboration between the Nordic countries as well as the Baltic countries and North-Western Russia. As expected, Finland and Sweden have participated most actively in the initiative. Of the 11 NORIA-nets developed so far, five are coordinated by Sweden and four by Finland, which represents more than 80% of the total projects. Denmark and Norway only coordinate one network each, while Iceland has not yet taken on a coordinating role. For more detailed information, see NORDERA Report (2010a) "Nordic R&I cooperation: achievements and challenges". Available at: <u>http://www.nordera.org/</u>.

<sup>&</sup>lt;sup>14</sup> See NORDERA Report (2010b) "Nordic R&D collaboration at EU level", available at <u>http://www.nordera.org</u>.



Figure 5. Country participation in running FP7 ERA-NETs<sup>15</sup> and R&D intensity

Figure 6. Country participation in FP6 ERA-NETs and R&D intensity



<sup>&</sup>lt;sup>15</sup> Including FP7 ERA-NETs and ERA-NETS Plus actions.

Focusing on MS participation (see Figures 7 and 8), the ERA-NET scheme, both under FP6 and FP7, has been able to attract a wide participation by all MS.









<sup>&</sup>lt;sup>16</sup> Including FP7 ERA-NETs and ERA-NETS Plus actions.

Similar clusters of countries with different behaviour can be identified in both FP6 and FP7 ERA-NETs:

- A group of four large countries (France, Germany, Spain and UK) which participate extensively, with France and Germany clearly being the leading participants.
- A group of small countries also with a significant level of participation (Austria, Finland, The Netherlands and Belgium). In terms of participation, Italy could be also included in this group, despite its bigger size.
- A diverse group of countries with a medium participation, included countries such as Sweden, Poland, and Greece.
- Finally, the new MS with a lower degree of participation with Romania and Hungary being clearly the most active of this group.

Almost all the Associated Countries (see Figure 9) involved in the FP<sup>17</sup> participate in the ERA-NET and ERA-NET Plus schemes, with a significant participation of Turkey, Norway, Switzerland and Israel.

The new Associated Countries – such as Albania, Montenegro and Bosnia Herzegovina- are showing their interest in taking part in R&D transnational networks, although this is still limited to those ERA-NETS with a strong regional focus on the Balkan countries and the participation is still quite symbolic.



Figure 9. Associated Countries Participation in FP7 ERA-NETs<sup>18</sup>

Finally, please note that a significant number of Third Countries<sup>19</sup> participate in the scheme. However, their individual participation is also rather symbolic, with less than 5%.

<sup>&</sup>lt;sup>17</sup> With the exception of Lichtenstein and Serbia.

<sup>&</sup>lt;sup>18</sup> Including FP7 ERA-NETs and ERA-NETS Plus actions.

<sup>&</sup>lt;sup>19</sup> A total of 12 countries: Algeria, Armenia, Azerbaijan, Egypt, India, Korea, Moldova, Morocco, Russia, Tunisia and Ukraine.

### Participant dimension

The eligible partners for ERA-NET actions are typically:

- Programme Owners: national ministries/regional authorities responsible for defining, financing or managing research programmes carried out at national/regional level.
- Programme Managers: other national/regional organisations that implement research programmes under the supervision of the programme owners, such as research councils or funding agencies.

In the active FP7 ERA-NETs a total of 38 institutions act as coordinators, being the great majority programmes managers at national level (see figure 10). The involvement of regional stakeholders as coordinators is marginal.

Furthermore, it is interesting to mention that two ERA-NET Plus actions<sup>20</sup> are coordinated by international organisations founded to tackle better their field of interest (Baltic sea and metrology respectively) and are also responsible for the corresponding Article 185<sup>21</sup> (previously Article 169) projects.



Figure 10. Type of Institutions coordinating FP7 ERA-NETs and ERA-NETs Plus actions

The distinction between programme managers and owners is mainly used in the policy arena. However, it is often misleading, since in many countries institutions could play both roles (and thus cannot be attributed to one role alone. Furthermore, it leaves aside other types of organisations that could potentially be eligible to be part of an ERA-NET.

<sup>&</sup>lt;sup>20</sup> BONUS + and iMERA Plus.

<sup>&</sup>lt;sup>21</sup> Article 169 of the EC Treaty enables the Community to participate in research programmes undertaken jointly by several Member States, including participation in the structures created for the execution of national programmes. Article 169 became Article 185 of the Lisbon Treaty. Therefore, we will hereafter refer to Article 185 of the Lisbon Treaty.

To overcome this limitation and to capture better the profile of the organisations involved in the networks, we propose (for the next mapping) to characterise institutions following the next typology:

- International organisation
- National Ministry or Department with responsibilities for distributing funds to Research Agencies or Councils
- National Ministry or Department with responsibilities for distributing funds directly to researchers
- National Agency or Council with responsibilities for distributing funds directly to researchers
- Regional organisation
- Other

The distribution of the coordinators among countries follows a pattern similar to the country participation itself (see Figure 11), although with some differences.



Figure 11. Coordination of FP7 ERA-NETs and ERA-NETs Plus actions by country

The coordinators of all of the FP7 and ERA-NETs Plus actions originate from only 11 countries<sup>22</sup>:

- Germany and France are clearly the most active countries, hosting the coordinating institutions of 66% and 38% of all the active FP7 ERA-NETs and ERA-NETs Plus, respectively.
- Despite its high rate of participation, UK and Spain's role as coordinators is very small. UK only coordinates 6% of the FP7 ERA-NETs and no ERA-NET Plus, and Spanish organisations do not coordinate any consortia under FP7.

<sup>&</sup>lt;sup>22</sup> Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Romania and UK.

- Especially significant is the case of the small countries, which have a remarkable active role as coordinators. Institutions from Finland are coordinating 38% of the ERA-NETs Plus; Austria coordinates 6% of the FP7 ERA-NETs and 13% of the ERA-NETs Plus; and The Netherlands coordinates 13% of the FP7 ERA-NETs.
- A last group includes Belgium, Denmark and Greece, which coordinate only one ERA-NET each.
- Romania is the only new Member States present as coordinator in one ERA-NET.
- Neither Associate Countries nor Third Countries coordinate any ERA-NET.

### Thematic dimension

The ERA-NET scheme has been recognised as instrumental in the Joint Programming process by contributing significantly to the coordination of national programmes in several scientific and technological fields<sup>23</sup>. In this context, the analysis of the thematic orientation of the networks could be particularly relevant to identify possible themes upon which to develop JPIs and, in general terms, to support the work being done at different levels for more strategic research cooperation in Europe. The first JPIs are now becoming a reality and some of them have been based on experience and knowledge generated from relevant ERA-NETs<sup>24</sup>.

According to the thematic priorities defined by the FP7, the running ERA-NETs are working in eight thematic priorities (see next figure):

- Energy
- Environment
- Food, Agriculture & Fisheries
- Health
- Information and Communication Technologies (ICT)
- Nanosciences and Nanotechnologies
- Socio-economic Science and Humanities
- Transport

Interestingly, 33% of the ERA-NETs analysed do not have a specific thematic focus and are classified under "horizontal" networks. The most relevant thematic priorities are "nanosciences and nanotechnologies" (15% of the total ERA-NETs), "food, agriculture and fisheries" (13%) and "health" and "environment", which represent around 10% each. The areas of "space" and "security" are not currently being covered by any ERA-NET.

<sup>&</sup>lt;sup>23</sup> Amanatidou (2010). "ERA-NET on Stage event- Final Report". Available at <u>ftp://ftp.cordis.europa.eu/pub/fp7/coordination/docs/era-net-event-final-report-2010\_en.pdf</u>.

<sup>&</sup>lt;sup>24</sup> In support of this learning process, parallel reports using NETWATCH database and ERAWATCH Research Inventory are being produced by the JRC-IPTS analysing in detailed two JPIs: "Agriculture, Food Security and Climate Change" and "A Healthy Diet for a Healthy Life".



Figure 12. ERA-NETs by FP7 Thematic Priority

The picture is similar if we consider the thematic orientation of the ERA-NETs in a broader sense. In order to go beyond the thematic classification of ERA-NETs according to the FP priorities, the questionnaire provided the possibility to classify the ERA-NET according to the research field(s) the network is actually covering. A comprehensive list of thematic fields<sup>25</sup> has been prepared following the same classification as in ERAWATCH<sup>26</sup> for support measures (national R&D programmes).

According to the ERAWATCH classification (see Figure 13), the most important research fields covered by the ERA-NETs are the same as before: "environment", "health" and "food, agriculture and fisheries". The exception is the field of nanosciences, which is clearly less predominant. The ERA-NETs with no specific focus (or "horizontal") are significantly less (20 percentage points less following the ERAWATCH classification). Again, research related to security, defence and space are not covered by any ERA-NET.

<sup>&</sup>lt;sup>25</sup> The research fields used are those included in the ERAWATCH Research Inventory to classify the support measures. They are the following: No specific thematic focus, Biotechnology, Energy, Environment (including climate change), Food, agriculture and fisheries, Government and social relations, Health, Information and communication technologies (ICT), Industrial production, Materials, Nanosciences and nanotechnologies, Security and Defence, Services, Socioeconomics sciences and humanities, Space ,Transport and Other.

<sup>&</sup>lt;sup>26</sup> For more information see <u>http://cordis.europa.eu/erawatch/index.cfm</u>.



Figure 13. Research fields covered by the ERA-NET according to ERAWATCH classification

Other related issues especially important to better understand the activities developed by ERA-NETs are the type of research supported by the networks and the target groups that are eligible for funding. This information will give us some insights useful for the future analysis of the impact of ERA-NETs on the research community.

Next figure shows that all types of research (basic, applied and pre-competitive) are performed through ERA-NETs, but applied research is a clear priority.



Figure 14. Type of research supported by ERA-NETs

Even though applied research seems to be the most common type of research covered by the ERA-NETs, the main target groups eligible for funding of the ERA-NETs joint activities (mainly joint calls) are the traditional performers of basic research: Higher Education Institutions (HEIs) and Public Research Organisations (PROs) (see Figure 15).

Private companies' involvement in research is essential for the exploitation and commercialisation of research results. However they seem to be less predominant as target groups eligible as beneficiaries of the joint activities of the ERA-NETs. To be closer to market necessities and foster the execution of research in Public-Private Partnerships (PPPs), it would be desirable that ERA-NETs increase the proportion of private companies that are eligible for funds.

Regarding SMEs (Small and Medium Enterprises), several ERA-NETs<sup>27</sup> have also been created with particular relevance for these organisations, while there are also two horizontal ERA-NETs specifically dedicated to SMEs<sup>28</sup>.



Figure 15. ERA-NETs' target groups eligible for funding

## Joint activities of the ERA-NETs

As mentioned before, ERA-NETs follow a step-wise approach with different strategic objectives and thus different joint activities depending on the stage of their life cycle. The networks generate a wide range of tangible and intangible outputs but not all are considered equally relevant by ERA-NETs.

Next figure presents a typology of joint activities than can be developed by ERA-NETs and the level of importance granted by the respondents. In line with the level of importance of the strategic objectives explained before, the design and implementation of joint calls are clearly the most relevant joint activities of the networks.

<sup>&</sup>lt;sup>27</sup> E.g. Manunet and MNT-ERA.NET.

<sup>&</sup>lt;sup>28</sup> CORNET II and EraSME2



## Figure 16. Different joint activities developed by ERA-NETs and their level of importance

Being the most important activity of the transnational networks, our analysis has been focused on joint calls. A total number of 42 joint calls have been already completed<sup>29</sup> and 47 are planned for the future. The data available show that the great majority of the running ERA-NETs have completed or planned at least one joint call. Only 10% of the networks analysed do not have any joint call active or planned.

The fields of nanosciences and transport are clearly the most active in launching joint calls (see Figure 17). In general terms, it can be argued that there is a positive correlation between the distribution of ERA-NETs by themes<sup>30</sup> and the number joint calls launched. For instance, as Figure 18 shows, horizontal ERA-NETs (which represent around 30% of the total ERA-NETs analysed) have around 30% of the completed joint calls and 40% of the planned joint calls.

<sup>&</sup>lt;sup>29</sup> By January 2010 when the data collection process was finalized.

<sup>&</sup>lt;sup>30</sup> Considering the FP7 Thematic Priorities.



Figure 17. Joint calls completed and planned by FP7 thematic priority

Particularly significant are the cases of transport and nanosciences and nanotechnology, which in relative terms have more joint calls completed (the joint calls completed are 7 and 9 percentage points higher than their participation in the ERA-NETs analysed, respectively).



Figure 18. Number of ERA-NETs and Joint calls completed

## 3. Main findings

The mapping exercise presented in the report constitutes the first comprehensive effort to map ERA-NETs and their activities across Europe. When the mapping exercise is repeated<sup>31</sup>, the comparisons over time will allow us to monitor the evolution of ERA-NETs in Europe.

The first mapping provides us with some insights useful for policy makers to make a more efficient use of the instrument and to strategically plan their involvement in R&D transnational collaboration.

The main findings can be summarised as follows:

- The mapping shows that the most predominant interest of the active ERA-NETs is on scientific or technical domains (mainly nanotechnology). Moreover, around 15% of the ERA-NETs with a unique focus concentrate their interest on specific policy areas generally related to grand societal challenges (such as water or climate change), on industry sectors (related to applied research in fields such as transport or food production) or on the development of particular regions (e.g Mediterranean or Balkan areas).
- ERA-NETs are moving from a major interest in networking and building relations with international peers towards a more strategic approach. Almost 80% of the networks consider the implementation of joint calls a key strategic objective while around 30% consider the definition of common research and the implementation of joint programmes "very important" objectives.
- The scheme is seen as a valuable tool by programme managers and owners across Europe to foster transnational collaboration. This is evidenced by the increasing number of countries engaging in the scheme. Today 51 countries participate in the scheme, which represent an increase of around 27% compare to 2008. Furthermore, approximately half of the new networks set up under the FP7 (including ERA-NET Plus actions) are continuation of previous ERA-NETs.
- The average size in terms of countries participating in an ERA-NET follows very similar patterns to that in 6<sup>th</sup> Framework Programme. On average, 13 countries participate in a network.

#### Geographical dimension

- All Member States continue highly involved in the scheme, being France and Germany the leading participants. Furthermore, it is interesting to mention the significant involvement of a group of small countries: Austria, Finland, The Netherlands and Belgium.
- The great majority of Associated Countries involved in the FP participate in the ERA-NET and ERA-NET Plus schemes, with a significant participation of Turkey, Norway, Switzerland and Israel. The new Associated Countries such as Albania, Montenegro and Bosnia Herzegovina- are showing their interest in taking part in R&D transnational networks, although this is still limited to those ERA-NETS with a strong regional focus on the Balkan countries and the participation is still quite symbolic.

<sup>&</sup>lt;sup>31</sup> Similar data collection is envisaged to be carried initially planned twice a year.

- An increasing number of Third Countries are being involved in the networks. However, their individual participation is also rather symbolic, with less than 5%.
- Looking at R&D intensity we observed that there is, in general, a positive correlation between this variable and participation in ERA-NETs. The vast majority of European countries follow the same trend. However, data on R&D intensity reveals that, as a group, the Nordic countries (with the exception of Norway) present a distinct pattern that is different from the rest of the European nations, with lower than expected levels of participation for countries with such high R&D intensities. In general terms, the long history of cooperation in R&D and innovation in the Nordic region may partially explain this, but it is difficult to conclude from this analysis that existing Nordic R&D cooperation is a substitute for, rather than a supplement to, collaboration at a wider level.

#### Participant dimension

- A total of 38 institutions act as coordinators, being the great majority programmes managers at national level. The involvement of regional stakeholders as coordinators is marginal.
- The coordinators of all of the FP7 and ERA-NETs Plus actions originate from only 11 countries. The distribution of the coordinators among countries follows a pattern similar to the country participation itself: Germany and France are clearly the most active countries and especially significant is the case of the small countries (Austria, The Netherlands and Finland). Despite its high rate of participation, UK and Spain's role as coordinators is very small

#### Thematic dimension

- The most relevant thematic priorities are "nanosciences and nanotechnologies" (15% of the total ERA-NETs), "food, agriculture and fisheries" (13%) and "health" and "environment", which represent around 10% each. The areas of "space" and "security" are not currently being covered by any ERA-NET.
- All types of research (basic, applied and pre-competitive) are performed through ERA-NETs, but applied research is a clear priority.
- The main target groups eligible for funding of the joint activities (mainly joint calls) developed by the networks are Higher Education Institutions (HEIs) and Public Research Organisations (PROs). Although. private companies' involvement in research is essential for the exploitation and commercialisation of research results, they seem to be less predominant as target groups eligible as beneficiaries of the joint activities of the ERA-NETs.

#### Joint activities of the networks

- The networks generate a wide range of tangible and intangible outputs (e.g. mutual learning, cooperation agreements, joint calls, join programmes, training activities, etc.). In line with the level of importance of the strategic objectives mentioned before, the design and implementation of joint calls are clearly the most relevant joint activities of the networks.
- A total number of 42 joint calls have been already completed and 47 are planned for the future. The data available show that the great majority of the running ERA-NETs have completed or planned at least one joint call. Only 10% of the networks analysed do not have any joint call active or planned.

• The fields of nanosciences and transport are clearly the most active in launching joint calls. In general terms, there is a positive correlation between the distribution of ERA-NETs by research fields and the number joint calls launched. Annexes

## Annex I. List of indicators to characterise ERA-NETs and their joint activities

	INDICATOR	EXPLANATION	
	GENERAL DESCRIPTION OF THE NETWORK		
1	General description of the ERA-NET and its goals	Brief description of the ERA-NET	
2	Duration of the network (months)	Start date and end date	
3	Continuation of a previous ERA-NET	Please select one of the following options: No; Yes (Which one(s)?.	
	Rate of the importance of the strategic objectives of the network	Rate each of the following objectives from 1 to 5 (being 5 = Very Important ; 4 = Important ; 3 = Moderately Important ; 2 = Of Little Importance; 1 = Unimportant)	
		Exchange of information and good practices	
		Definition of common research agendas	
4		Coordination of national programmes	
		Implementation of joint calls	
		Implementation of joint research programmes	
		Other. Please specify.	
5	Existence of links with other transnational collaboration activities (e.g. Joint Technology Initiatives, Article 185 projects or other ERA- NETs)?	Please select one of the following options: No; Yes. Which one (s)?	

	GEOGRAPHICAL DIMENSION		
6	Number of countries involved in the network	Size of the ERA-NET by number of countries participating	
7	Average of countries involved in the active ERA-NETs	Average size of the ERA-Nets	
8	Total number of ERA-NETs by country	Distinguishing between Member States, Associated Countries and Third Countries	
9	Total number of ERA-NETs by country as a percentage of the total active ERA-NETs	distinguishing between Member States, Associated Countries and Third Countries	
10	Total number of ERA-NETs by country in relation to country R&D intensity	distinguishing between Member States, Associated Countries and Third Countries	
11	Total funds invested in joint calls by country (in Euros)		
PARTICIPANT DIMENSION		CIPANT DIMENSION	
12	Total Number of organisations involved in the ERA-NETs		
	Profile of the organisations involved	International organisation	
		National Ministry or Department with responsibilities for distributing funds to Research Agencies or Councils	
13		National Ministry or Department with responsibilities for distributing funds directly to researchers	
		National Agency or Council with responsibilities for distributing funds directly to researchers	
		Regional organisation	
		Other. Please specify.	
14	Role of organisation in the ERA-NET	Distinguishing between coordinator, partner, observer, and other.	
15	Total number of joint calls by organisation		
16	Budget initially reserved for the joint call by organisation (in Euros).		
17	Budget actually committed to projects by organisation (in Euros).		

	THEMATIC DIMENSION		
18	Main research priorities of the ERA-NET	Description of the research priorities of the ERA-NET (key words)	
		No specific thematic focus	
		ICT	
		Biotechnology	
		Nanosciences and nanotechnologies	
		Materials	
		Socio-economics sciences and humanities	
		Health	
		Food, agriculture and fisheries	
19	Type of research fields covered by the ERA-NET	Energy	
		Industrial production	
		Services	
		Transport	
		Environment (including climate change)	
		Space	
		Security and Defence	
		Government and social relations	
		Other. Please specify.	

	THEMATIC DIMENSION		
		Basic research	
20	Type of research covered by the ERA-NET	Applied research	
20		Pre-competitive research	
		Other. Please specify.	
		Higher Education Institutions (HEIs)	
	Type of target groups eligible for funding of the joint activities developed by the ERA-NETs	Public Research Organisations (PROs)	
21		Private and Semi-private Research and Technology Organisations (RTOs)	
41		Small and Medium Enterprises (SMEs)	
		Large Corporations	
		Others. Please specify.	
		A focus on a specific scientific or technological domain (e.g. nanotechnology, chemistry)	
	Focus of the ERA-NET	A focus on an industry sector (e.g. transport, food production, etc.)	
22		A focus on a specific policy issue area (e.g., Water, climate change, etc.)	
		A focus on a particular region (e.g Mediterranean, Balkan etc.)	
		Other. Please specify.	

	THEMATIC DIMENSION		
		Thematic Priority of the ERA-NET :	
		None e.g. a 'horizontal' ERA-NET not specifically linked to any of the Thematic Priorities	
		Health	
		Food, agriculture and fisheries	
		Information and communication technologies	
23	FP7 Thematic Priorities	Nanosciences, nanotechnologies, materials and new production technologies	
		Energy	
		Environment (including climate change)	
		Transport (including aeronautics)	
		Socio-economic sciences and humanities	
		Space	
		Security	

	JOINT ACTIVITIES DEVELOPED BY THE NETWORK		
		Coordination or clustering of ongoing nationally funded research projects with similar projects	
		in other countries	
		Work on benchmarking	
		The definition of common schemes for monitoring	
		The definition of common schemes for ex-post evaluation and impact assessment	
		The definition of common strategic agendas	
		The establishment of common, multinational proposal evaluation procedures	
		The establishment of cooperation agreements or arrangements	
24	Type of joint activities undertaken by the ERA-NET and rate of		
24	importance of each of them	Joint training activities	
		Personnel exchange	
		The mutual opening of research facilities or laboratories	
		The mutual opening of research factures of faboratories	
		researchers in other countries)	
		Mutual learning	
		Design of joint calls	
		Implementation of joint calls	
l			
		Design of joint R&D programmes	
		Implementation of joint R&D programmes	
		Other. Please specify.	
		JOINT CALLS	
25	Number of joint calls completed		
26	Number of joint calls planned for the future (if applicable)		

	JOINT CALLS	
28	Type of joint call	Open call with no fixed deadlines for the submission of proposals
20		Joint call with specific deadlines, e.g. for the submission of proposals.
	Process of the joint calls with specific deadlines	How many stages has the joint call? Please select one option:
30		One-stage process. Please provide:
		Two-stage process (Stage 1: e.g. submission of pre-proposal; Stage 2: submission of full proposal).
31	Call management process	The call management process is centralised
01		The call management process is decentralised
	Type of evaluation process of proposals received	About the level of decentralisation/centralisation of the process:
		The proposal evaluation process is centralised
		The proposal evaluation process is decentralised
		About the evaluation criteria:
		The proposal evaluation criteria are common across all countries
32		The proposal evaluation criteria are country specific
		About the evaluation committee:
		Proposals are evaluated internally by the staff of ERA-NET organisations
		Proposals are evaluated by external experts from those countries involved in the ERA-NET
		Proposals are evaluated by external experts from countries other than those involved in the ERA- NET
33	Average number of experts involved in reviewing each proposal	
34	Total number of proposals submitted (in each stage, if applicable)	
35	Total number of successful proposals (in each stage, if applicable)	

	JOINT CALLS	
	Mechanisms to follow-up projects funded through the joint call	There are no follow-up mechanisms
		There are separate national mechanisms in place to monitor financial expenditure
36		There are separate national mechanisms in place to monitor technical progress
		There are joint mechanisms in place to monitor financial expenditure
		There are joint mechanisms in place to monitor technical progress
		No specific thematic focus
		ICT
		Biotechnology
		Nanosciences and nanotechnologies
		Materials
		Socio-economics sciences and humanities
		Health
		Food, agriculture and fisheries
37	Research fields covered by the joint call	Energy
		Industrial production
		Services
		Transport
		Environment (including climate change)
		Space
		Security and defence
		Government and social relations
		Other. Please specify.

		JOINT CALLS
	Type of research	Basic research
38		Applied research
50		Pre-competitive research
		Other. Please specify.
	Target groups eligible for funds in the joint call	Higher Education Institutions (HEIs)
		Public Research Organisations (PROs)
39		Private and Semi-private Research and Technology Organisations (RTOs)
	- angeo groups engine for thirds in the Jours end	Small and Medium Enterprises (SMEs)
		Large Corporations
		Others. Please specify.
40	Public funds initially reserved for the joint call	
41	Public funding requested for all submitted proposals	
42	Total proposed cost of all submitted proposals	
43	Public funding actually committed to projects	
44	Total proposed cost of all selected projects	
		Common pot
45	Funding mode of the joint call	Virtual pot
		Mixed mode. Please specify.
		Other. Please specify.
46	Total number of projects funded	
47	Number of projects funded in relation to the total number of proposals received	
48	Total number of organisations involved in the joint call	
49	Average of organisations involved in the joint call	

		JOINT CALLS
		Addressing global issues
		Developing common administrative procedures
		Access to expertise from different countries
50	Rationale for addressing a topic via a transnational call	Addressing specific geographical issues
		Reducing administrative overheads
		Addressing specific scientific and technological issues
		Addressing specific policy issues
		Others. Please specify.

## Annex II. ERA-NETs included in the first data collection exercise

FRAMEWORK PROGRAMME	ACRONYM	ERA-NET FULL NAME
FP6	IWRM.Net-CA	Towards a European-wide exchange Network for improving dissemination of Integrated Water Resources Management research outcomes
FP6	MariFish	Coordination of European Marine Fisheries Research
FP6	MATERA	ERA-NET Materials
FP6	NET-BIOME	Networking tropical and subtropical Biodiversity research in OuterMost regions and territories of Europe in support of sustainable development
FP6	NEURON	Network of European Funding for Neuroscience Research
FP6	PathoGenoMics	Trans-European cooperation and coordination of genome sequencing and functional genomics of human-pathogenic microorganisms
FP6	SPLASH - EUWI ERA-NET	European Water Initiative - ERA-NET: Coordination of Member state research programmes in water science and technology for the developing world
FP7	AERTOs	Associated European Research and Technology Organisations
FP7	AirTN - FP 7	Aeronautics ERA-Net as one of the key enablers of the prosperous development of Aeronautics in Europe
FP7	ARIMNet	Coordination of Agricultural Research in the Mediterranean
FP7	ASPERA-2	Deepening and Broadening of Astroparticle Physics European Coordination
FP7	BS-ERA.NET	Networking on Science and Technology in the Black Sea Region
FP7	CORNET II	Collective Research ERA-NET II
FP7	EMIDA	Coordination of European Research on Emerging and Major Infectious Diseases of Livestock
FP7	ENR2	ERA-NET ROAD II
FP7	ERA.Net RUS	Linking Russia to the ERA: Coordination of Member State /Associated Countries S&T

FRAMEWORK PROGRAMME	ACRONYM	ERA-NET FULL NAME
FP7	ERA-AGE 2	ERA-AGE Extension
FP7	ERACOBUILD	Strategic Networking of RDI Programmes in Construction and Operation of Buildings
FP7	ERA-ENVHEALTH	Coordination of national environment and health research programmes - Environment and Health ERA-NET
FP7	ERA-IB	Towards an ERA in Industrial Biotechnology
FP7	ERA-Instruments	Infrastructure Funding in the life sciences
FP7	ERA-NET TRANSPORT II	ERA-NET Transport II
FP7	EraSME2	ERA-NET on National and Regional Programmes to Promote Innovation Networking and Cooperation between SMEs and Research Organisations, Phase 2
FP7	ERNEST	European Research Network on Sustainable Tourism
FP7	EUROCOURSE	Europe against Cancer: Optimisation of the Use of Registries for Scientific Excellence in research
FP7	EuroNanoMed	European network of trans-national collaborative RTD projects in the field of NANOMEDicine
FP7	EUROTRANSBIO (ETB-PRO)	European programme for TRANS-national R&D&I. cooperations of BIOtech SMEs
FP7	HERA JRP	Humanities in the European Research Area - Joint Research Programme
FP7	ICT-AGRI	Coordination of European Research within ICT and Robotics in Agriculture and related Environmental Issues
FP7	KORANET	KOReAn Scientific cooperation Network with the European Research Area (ERA)
FP7	LEAD ERA	Lead Market European research Area network
FP7	MNT-ERA.NET II	Micro and Nano Technologies for a highly competitive European industry
FP7	NET-HERITAGE	European network on Research Programme applied to the Protection of Tangible Cultural Heritage
FP7	New INDIGO	Initiative for the Development and Integration of Indian and European Research

FRAMEWORK PROGRAMME	ACRONYM	ERA-NET FULL NAME
FP7	NuPNET	ERA-NET for Nuclear Physics infrastructures
FP7	RURAGRI	Facing sustainability: new relationships between rural areas and agriculture in Europe
FP7	SEERA-EI	South East European Research Area for eInfrastructures
FP7	SmartGrids	SmartGrids ERA-NET
FP7	WoodWisdom-Net 2	Networking and Integration of National Programmes in the Area of Wood Material Science and Engineering in the Forest-Based Value Chains
EraNETplus	BONUS+	Call for research projects within the Joint Baltic Sea Research Programme
EraNETplus	ERASysBio+	The consolidation of systems biology research - stimulating the widespread adoption of systems approaches in biomedicine, biotechnology, and agri-food
EraNETplus	iMERA-Plus	Implementing Metrology in the European Research Area - Plus
EraNETplus	MATERA+	ERA-NET PLUS on Materials Research
EraNETplus	NanoSci-E+	Transnational call for collaborative proposals in basic nanoscience research
EraNETplus	NORFACE Plus	NORFACE Transnational Programme on Migration in Europe
EraNETplus	PIANO+	ERA-NET-PLUS on photonics-based internet access networks of the future
EraNETplus	SEE-ERA.NET Plus	South East European ERA-NET Plus; joint call for European Research projects in September 2009 in order to enhance the integration of the Western Balkan Countries into the European Research Area

**European Commission** 

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#### Abstract

This report provides a first mapping of the active ERA-NETs as well as a battery of indicators to characterise the transnational networks. It has been produced as part of NETWATCH (http://netwatch.jrc.ec.europa.eu), a main aim of which is the development and implementation of an analytical framework for transnational R&D collaboration at European level.

This mapping provides a snap-shot of the ERA-NET landscape at the time of the analysis and involves collecting information along a range of dimensions that 'characterise' ERA-NETs (e.g. number of countries involved, joint activities developed, thematic coverage, etc.).

The data collection for the first mapping exercise was carried out by JRC-IPTS between October 2009 and January 2010. It was organised through an online questionnaire that was sent to the coordinators of the running ERA-NETs via the NETWATCH information platform.

The scope of the mapping includes data from a total of 47 active ERA-NETs, from which: 32 are FP7 ERA-NETs; 8 are ERA-NETs Plus, and 7 are FP6 ERA-NETs (running at least until the end of 2010).

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