

## THE FUTURE OF EU RESEARCH & DEVELOPMENT POLICY:

**“SHARE TODAY TO WIN TOMORROW”**



REPORT OF A HIGH LEVEL CONFERENCE HELD BY SCOTLAND EUROPA, THE  
SCOTTISH GOVERNMENT AND ERRIN.

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## Executive summary

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On 3 December 2009, Scotland Europa and the Scottish Government EU Office, in partnership with ERRIN (European Regional Research Network) hosted a high level event to consider and debate the future, strategic direction of Europe's Research and Development (R&D) policy agenda. This was intended to contribute to current discussions concerning the Eighth Framework Programme for Research (FP8). The event – "Share Today to Win Tomorrow" – brought together key level players from the research community and aimed to position collaborative R&D at the centre of Europe's sustainable economic growth, with a focus on increasing creativity and innovation. The event provided a platform for R&D players from across the EU to consider the potential of collaboration and synergies in improving the quality and outcomes of Europe's R&D policy in the years ahead. This event paper comes at a time of new EU developments, not least the proposed EU 2020 Strategy (as a successor to the Lisbon Strategy for Growth and Jobs) and the new European Commission, which took office in early February. Europe's new Commissioner responsible for R&D has already provided very strong signals of her proposed priorities for EU R&D policy, with a 'cross-cutting' role for innovation policy. These resonate with the key recommendations developed by the experts who attended this R&D event.

A key message from the event was that there is a perceived need to create a step-change in Europe's R&D 'culture', such that principles of good practice are able to permeate across the related disciplines and form part of the vision and practice of all players – from strategic policy level to 'grassroots', laboratory-based practitioners and technicians. However, this 'cultural change' cannot be confined to the R&D community. It is necessary for R&D policy and practice to be integrated across the EU policy spectrum and to form part of how EU citizens define their place in the world. European R&D policy can only become embedded in European 'culture' when its function is recognised as relevant, necessary and a key contributor to Europe's future economic success.

Recommendations are interlinked and have been grouped under five key headings:

- 1) **Redefine EU R&D policy agenda** - Set a clearer rationale for prioritising how R&D policy will address global challenges through a more 'distinctly European' angle. Understanding market failure should guide this activity as should a stronger focus on inter-disciplinary research. Encourage more strategic co-ordination of Europe's R&D agenda to allow the EU to speak with "one voice" at international R&D fora;
- 2) **Improve EU R&D effectiveness** - Define how Europe seeks to achieve the balance of addressing "undirected" and "directed" R&D. Make greater in-roads to developing common R&D measurement methodologies and reviewing current research ranking mechanisms. Generate more opportunities for joined-up discussion between academia, companies and policy makers. Address the EU's R&D 'cultural' problem of seeking out research opportunities with apparent, immediate pay-back, in favour of investment for longer-term benefit;
- 3) **Improve EU R&D governance structures** – Europe's perceived R&D 'silo mentality' should be tackled by simplifying R&D policy structures at all levels and replacing these with new and holistic governance structures. R&D policy direction should be guided by both EU and national level strategic priorities, taking account of local level activity. Improved co-operation agreements between the various EU research infrastructures are necessary;
- 4) **Better communicate the EU's R&D policy with Europe's citizens** - Improve Europe's approach to promoting the value of R&D, through improving citizens' general awareness of, and engagement in the R&D policy agenda. Address the perceived 'distance' between European citizens and actual R&D activity and the myth of science being far-removed from the reality of citizens' daily lives; and
- 5) **Improve international R&D co-operation** -Encourage R&D collaborations between the EU and other international regions or countries with similar societal challenges. Better support non-EU neighbours to engage in EU research. The EU should invest more in understanding the research agendas of the international community and the related circumstances and challenges they face. Developing greater policy alignment between the EU's Aid and R&D policy agendas will contribute greatly to promoting EU R&D as a key mechanism for EU action in developing countries.

## Overview of the event

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The event was chaired by Scotland's Chief Scientific Adviser, Professor Anne Glover. The following three, core themes dominated the event discussion:

- 1) Shaping the future – specific research priorities versus tackling global challenges;
- 2) Joining the dots? – specific public-private strategies to facilitate EU innovative R&D support mechanisms; and
- 3) Sustaining development – the EU as a leading R&D global player.

The event structure was based on two, key elements:

- Presentations from a range of stakeholders who provided stimulus and examples of collaborative and innovative R&D policy, structures and practice. These stakeholders brought both regional and 'global' perspectives, since their 'local' practice was heavily influenced by EU and global level policy, collaborations and networks; and
- Break-out sessions which allowed participants to discuss the event's core themes (see below) and bring 'new and fresh thinking' to the R&D policy portfolio.

Further opportunities to contribute to this paper were offered during the event (through 'ideas boards' which allowed participants to note salient issues and ideas which were not discussed in the break-out sessions) and after the event (through the opportunity to send written comments by email).

A core theme which was reiterated during the event was the perceived need to 'widen the net' of Europe's R&D policy and practice, such that it retains and develops a genuinely inclusive, interactive and multi-disciplinary character. This is the route to innovation and the trigger for global success (see on page 5).

This paper brings together key themes and suggestions from the event and has shaped these as proposed recommendations for consideration at policy level. It is hoped that these recommendations will contribute to Europe's R&D policy agenda debate and stimulate further discussion.

## Key Messages from the speakers

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Presentations brought together local and global perspectives of the R&D policy agenda. Many of the issues highlighted during presentations were reiterated by participants during the break-out, discussion sessions. These messages are noted below.

The presentations demonstrated that cutting-edge practice in the **areas of science, engineering and technology are often governed by very similar, over-arching principles**. There was a strong recognition of how collaboration across disciplines (i.e. multi-disciplinary approaches to R&D) often provides the route to creativity and innovation. However, it was felt that there is a need for us to better promote across Europe that these disciplines are not the sole domain of specialists in the R&D community. The pursuit of new ideas and innovative developments requires interaction and collaborations across many disciplines. Europe's track record in innovation can only be improved when this concept is better understood. All speakers pointed to the need to **increase efforts to engage EU citizens in the R&D community** – not as technical specialists, but as the focus for directing the nature of Europe's R&D policy. Even in specialist, collaborative R&D communities, there is a need to engage with the 'grass-roots' needs of ordinary citizens and to make the disciplines and the outputs of R&D efforts more accessible to Europe's people.

Presenters also painted a vision of **Europe showcasing its distinctiveness in R&D**. Achieving this requires significant investment and enhanced efforts across the R&D community, from policy to practitioner levels. These include **Europe acting as a magnet for world-leading R&D staff and students** and to take heed of the many successful examples of this already in place across Europe. The **Research Pooling** concept is making significant in-roads across Europe in establishing new forms of collaboration and bringing together specialists to generate new dialogue and ideas. A **'global outlook'** can best be achieved by creating opportunities for knowledge sharing and exploitation, such as shared professorships. A **new paradigm of the 'clustering' concept** was said to be emerging, largely defined by the virtual nature of collaborations. Europe requires to enhance efforts on all fronts, in order to retain and improve its global positioning in relation to R&D success and to demonstrate its distinctiveness.

The challenges which face the EU R&D community include how to achieve the **balance of competitive and collaborative R&D policy and practice**, and the need for related **incentives** for the R&D community to develop approaches to achieving this balance. It was also noted that a **step-change is required in innovation capacity**. This assumes that an underpinning 'package of resources' is in place to meet this challenge (such as physical infrastructures and access to financing and expertise). While much of this infrastructure already exists or is being addressed by EU policy, it is perceived to be disparately located and not well-known or understood. This is perpetuated by a **perceived lack of alignment between the strategic R&D frameworks of regions, Member States and the EU**. **Improved strategic co-ordination of Europe's R&D policy agenda is imperative for the R&D community to strengthen R&D activity and overall effectiveness.**

### Theme 1: Shaping the Future – Specific Research Priorities Versus Tackling Global Challenges

The context of this discussion group was based on debating how Europe should address its ‘Grand Challenges’ (including climate change, energy and water supply, public health, ageing societies and changes in the world economy). Global developments in R&D have unleashed new opportunities for ground-breaking frontier research, with paradigm shifts in innovation. This environment implies a need for improved governance structures and processes between regions, Member States and the EU, as well as at each of the different policy levels.

The points made in the Overview section above have particular relevance to Theme 1, since this theme focused on how Europe’s R&D policy might be defined and directed in the future. Event participants were particularly concerned that the shaping of this agenda should be governed by ‘need’ as defined on a European and global scale, while linked to agreed global challenges.

Key recommendations noted were:

- 1) **Address the myriad of R&D policy structures at EU, national and local levels through new and holistic governance structures** - a perceived ‘silo mentality’ is believed to exist as a consequence of different structures which operate at Member State, regional, local and even cluster level. Improved connectivity and interactivity across these structures should assist in conveying clear messages and coherent direction for R&D priorities. Within this setting, there is also a need for re-positioning of ‘bottom-up’ structures and settings (i.e. connecting the local dimension of R&D activity more effectively with other levels). There was also a call for having in place structures and processes which allow for a balance between ‘top-down’ directing of R&D policy with ‘bottom-up’ decision making – i.e. R&D policy direction should be guided by both EU and national level strategic priorities while taking account of local level capacity, activity and ‘intelligence’ concerning future R&D needs;
- 2) **Improve Europe’s approach to promoting the value of R&D, through improving citizens’ general awareness of, and engagement with the R&D policy agenda** – this relates to addressing the perceived ‘distance’ between European citizens and the actual activity of the various R&D platforms across Europe. Improved connectivity and interactivity across these structures should assist in conveying clear messages and coherent direction for R&D priorities. Participants voiced support for improved communication which addressed the myth of science being far-removed from the reality of citizens’ daily lives. It was suggested that social scientists have a greater role to play in bridging this gap. Greater consideration is needed in defining that role;
- 3) **Improve Europe’s general awareness of, and engagement in the R&D policy agenda, through improved interaction** – participants called for a greater policy focus on bringing together scientists and ordinary citizens to create new forms of dialogue and new stimulus for innovation, concerning the direction of the work of scientists. It was suggested that ‘user-driven design’ and ‘living labs’ are good examples of how this interaction can create new thinking and provide an effective setting for such dialogue to take place;
- 4) **Set a clearer rationale for determining and prioritising how R&D policy will address global challenges** – participants noted that Europe’s approach to addressing global challenges requires a more ‘distinctly European’ angle. This requires to be led by an overarching set of EU policy principles / guidelines, setting out how Europe has defined and determined which global challenges it intends to address. The mechanisms for such collective decision making should be improved and made clear to all players. Understanding market failure should guide this activity and inter-disciplinary research should be promoted as a key route to addressing global challenges;
- 5) **Define and communicate how Europe seeks to achieve the balance of addressing undirected and directed R&D** – addressing global challenges is best tackled with a combination of directed and undirected research. There needs to be sufficient scope for both channels of research to be exploited. Europe should present a clearer and bolder agenda for

its approach to undirected and directed research. Stakeholders should be clear on the routes, mechanisms and incentives involved in these separate strands of R&D.

## **Theme 2: National public private strategies to facilitate EU innovative R&D Support Mechanisms**

The context of this discussion group was based on debating how and if major societal challenges should be addressed following a joined-up approach at the European level. The Commission proposes that Europe's Member States define common objectives and join forces for research and innovation to take place on major societal challenges such as food safety, human and environmental health, climate change or energy. This approach - better known as Joint Programming Initiatives (JPIs) - should be underway throughout 2010. These will be on a voluntary basis and need not involve all Member States in each specific initiative, but the partners engaged must provide the required critical mass of resources.

85% of European public research funding is spent nationally without any transnational collaboration between programmes or competition between researchers from the different Member States. Only 15% is co-ordinated at the EU level (such as FPs - Framework Programmes; EUREKA – European network to support market-oriented R&D and innovation; COST – network for European co-operation in science and technical research; and CERN – European organisation for nuclear research). National programmes often duplicate each other unnecessarily and might lack the scope and depth required to make a significant impact on major challenges.

Experts felt that JPIs could be an interesting tool to foster innovative mechanisms to fund R&D based on a more co-ordinated private public partnership approach. The element of the national dimension could be substantial in boosting the participation of Small and Medium-sized Enterprise (SMEs) in accessing R&D funding.

Key recommendations noted were:

- 1) **Co-operation agreements between various EU research infrastructures at the EU and national level require improved co-ordination and structures** – there was general agreement on the absolute need to boost international co-operation across disciplines and sectors. Such research teams do not necessarily need to belong to the same scientific environment and domain. Indeed, the injection of new thinking across disciplinary settings was deemed to be very effective in triggering innovative and ground-breaking ideas. Nevertheless barriers persist when it comes to accessing EU research infrastructures. Better long-term agreement should be fostered across such infrastructures (including centres and European Universities) to facilitate access, mobility, transfer of results and a better management of intellectual property (IP) ownership, generation, protection and exploitation. SMEs require to be better engaged in such activity and could play a unique role in acting as potential developers in the exploitation phase, in a context of fair royalties share. SMEs will benefit from this approach only if a significant administrative and financial simplification process is agreed and put in place;
- 2) **More support for sharing of best practices initiatives based on common measurement methodologies** - ground-breaking research is normally derived from a reliable evidence base of key results. A better communication system is therefore necessary to share knowledge and best practices at the EU level and beyond. But a general lack of vertical and linear congruence in agreeing common measurement methodologies leads too often to self-evaluation, based on non-standardised approaches. This affects the credibility of evaluation and further perpetuates the 'silo mentality' referred to earlier. A wider discussion at the European level should be supported to review current research ranking mechanisms, and to view such activity as crucial to Europe's wider efforts in revitalising its R&D policy agenda;
- 3) **International co-operation beyond Europe should be considered when approaching JPIs** – co-operation and mobility without boundaries is a key success factor in supporting excellence and talents. Nevertheless more should be done to support the mobility of PIs

(Principal Investigators). Incentives for PIs' career development (such as European, and international awards and prizes, as well as better pension packages) should be taken into account to support the mobility of researchers who have already established themselves as senior investigators in the public and private sectors. International prizes could also play a key role in attracting funding from the private sector;

- 4) **Increase support for virtual regional co-operation mechanisms** – travel costs (even when reduced by low-cost air companies) impact significantly on research resources, both in terms of finances and time. The need for on-going collaborations could be better addressed by the setting up of more co-ordinated mechanisms of virtual regional co-operation (virtual mobility based on 3D visual data transfer and reproduction). This approach could also better support engagement of regional excellence across Europe for joint actions and R&D priorities drafting; and
- 5) **Provide more opportunities at the EU level for improved strategic co-operation between academia, companies and policy makers** – frontier research is high risk and enhanced synergy is necessary between the different actors of the triple helix approach (research, policy makers and companies). Joined-up discussion tables could be launched at the European level to develop incentive for excellence and local initiatives, with real and direct benefits to citizens. More focus on 'individuals' rather than on the institution is requested and could be further developed in identifying advanced support mechanisms, with the aim of EU leadership in global R&D.

### **Theme 3: Sustaining Development – the EU as a Leading R&D Global Player**

The context of this discussion group was based on ideas for improving joint European research. With 85% of European public research funding at the national level, this indicates the size of the challenge when considering transnational activity. A key challenge for the EU is to provide greater stimulus for transnational research activity and so reduce unnecessary duplication and lack of linked intelligence which occurs through lack of research collaboration.

Three, core areas were examined in-depth with corresponding suggestions and recommendation for more collaborative approaches to R&D:

- 1) **Approaches to international R&D co-operation to maintain EU leadership and excellence** – in keeping with Theme 1 recommendations, it was noted that the basis for International Research Programmes should stem from societal problems. In addition, participants recommended that the EU could place significantly more research focus on the relationship between ICT, urbanisation and rural problems. Partnerships and collaborations should be considered with EU and non-EU countries with similar challenges – for example, the ageing population in Japan. In addition, the ERA should be strengthened to take greater account of the ease of collaboration with neighbouring countries. Despite a range of EU mechanisms to enable such collaboration, experience still demonstrates that many non-EU neighbours find it difficult to engage in European R&D. In addition, R&D programmes should take account of regional differences which would allow for greater exploration of research problems and allow different R&D leadership approaches to develop;
- 2) **Europe's R&D engagement with multi-lateral organisations (such as the UN, WHO and IPCC)** – more efforts are required for the EU to speak with 'one voice' at international R&D platforms. This matters for both profile and results. More strategic engagement with multi-lateral organisations will allow for better co-ordination of responses at an EU level. Europe also needs to better engage with and understand R&D practices across other regions of the world. This will improve both EU influence and R&D partnership working. In addition, EU researchers require greater insight into and awareness of the circumstances and challenges facing other regions of the world on a daily basis. This will allow for more focused research efforts to address such problems (e.g. the \$100 laptop concept). Greater debate and discussion is required to demonstrate the value of mutuality of benefits from R&D. This is even more important when 'trading off' potential immediate benefits for longer-term gain.

The European research community requires a stronger grasp of this concept in order to change culture and practice. More strategic efforts to align the EU R&D agenda with the EU's Aid policy agenda will offer greater impetus in 'connecting' EU researchers to international R&D platforms. In so doing, the EU's R&D agenda can be transformed into a powerful mechanism and a key means of aid provision in developing countries; and

- 3) Addressing the EU's mobility challenges for the R&D community** – Europe's research community still needs to be persuaded of the benefits of Europe's 'Fifth Freedom' (of knowledge) and how this can work as an extremely powerful lever when integrated with the free flow of people (i.e. researchers). The concept of 'Fortress Europe' should be consigned to a bygone era of R&D and one which is no longer appropriate if the EU's research community wishes to develop its role on an international platform. The agenda governing Intellectual Property (including EU patents) acts as a serious obstacle to attracting international researchers to Europe. This must be addressed. Incentives for mobility for European and international researchers should consider financial benefits in the form of administrative and tax relief, as well as offering stipends. The restrictions which govern mobility schemes have tended to suppress their true potential. These should be reviewed with a view to making mobility a more attractive option for researchers within and beyond the EU.

## Summary of Key Messages and Recommendations

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The following provides a summary of the key recommendations from this event. These have been grouped under five headings which are, themselves, linked to each other. These five themes are recommended as key priorities for action in taking forward Europe's R&D policy agenda:

- 1) **Redefine Europe's R&D policy agenda** - Set a clearer rationale for determining and prioritising how R&D policy will address global challenges through a more 'distinctly European' angle, guided by an overarching set of EU principles / guidelines. Understanding market failure should guide this activity as should a stronger focus on inter-disciplinary research. Define Europe's international research agenda with direct linkages to addressing societal problems. Encourage more strategic co-ordination of Europe's R&D agenda such that the EU can speak with 'one voice' at international R&D fora. Increase support for virtual regional co-operation mechanisms and improve engagement of regional excellence across Europe for joint actions and R&D priorities drafting;
- 2) **Improve Europe's R&D effectiveness** - Define and communicate how Europe seeks to achieve the balance of addressing undirected and directed R&D by developing a clearer and bolder agenda for its approach in this area, with greater emphasis on the routes, mechanisms and incentives involved in these separate strands of R&D. There is also a need to make greater in-roads to developing common R&D measurement methodologies and reviewing current research ranking mechanisms. In addition, more opportunities are required, at the EU level, for joined-up discussion tables between academia, companies and policy makers. This triple helix approach is a key factor in facilitating frontier research, which is high risk and requires improved synergy. There is a clear need to address the EU's R&D 'cultural' problem of seeking out research opportunities with apparent, immediate pay-back, in favour of investment for longer-term benefit. This requires a strategic review of EU policy incentives;
- 3) **Improve Europe's R&D governance structures** – There is a pressing need to address Europe's perceived R&D 'silo mentality' by simplifying the myriad of R&D policy structures at EU, national and local levels and replacing these with new and holistic governance structures. In addition, R&D policy direction should be guided by both EU and national level strategic priorities while taking account of local level capacity, activity and 'intelligence' concerning future R&D needs. There is also a need to improve co-operation agreements between the various EU research infrastructures and waive access barriers by focusing on mobility and the IP agenda;
- 4) **Better communicate the EU's R&D policy with Europe's citizens** - Improve Europe's approach to promoting the value of R&D, through improving citizens' general awareness of, and engagement in the R&D policy agenda. There is a need to address the perceived 'distance' between European citizens and actual R&D activity. There is also a need to address the myth of science being far-removed from the reality of citizens' daily lives. A stronger policy focus is required to bring together scientists and ordinary citizens to re-define the work of scientists e.g. through 'user-driven design' and 'living labs';
- 5) **Improve international R&D co-operation** - International co-operation should be considered when approaching JPIs. Central to this is the need to support the mobility of PIs. There is a need to encourage R&D collaborations between the EU and other international regions or countries with similar societal challenges. Efforts should be focused on making greater in-roads to setting up the conditions and support for non-EU neighbours to engage in EU research. The EU should also invest more in understanding the research agendas of the international community and the related circumstances and challenges they face. Developing greater policy alignment between the EU's Aid and R&D policy agendas will contribute greatly to promoting EU R&D as a key mechanism for EU action in developing countries.

## Conclusions

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It is hoped that the recommendations from this event will provide a useful contribution to the early development of the future EU R&D policy development. Recent developments at the EU level – including the new European Commission and the forthcoming EU 2020 Strategy – offer new opportunities to highlight the value of Europe’s R&D policy agenda. On a very positive note, many of the issues emphasised by the EU’s new Commissioner for Research, Innovation and Science - Máire Geoghegan-Quinn – resonate with the key recommendations developed by the experts who attended this R&D event. These include the commitment to address innovation barriers and develop an EU innovation research culture, as well as simplifying administrative and financial framework programme procedures. Europe’s R&D direction provides a key lever to support Europe in its quest to optimise “green”, economic growth and to foster new approaches to innovation. With the current, on-going pressures on public finances, the EU must find ways to position its R&D agenda with a new level of priority, in order to further develop infrastructures and engage stakeholders in new and sustainable ways.

Scotland Europa will continue to work with members and wider Scottish stakeholders to shape the FP8 agenda. As part of the ERRIN FP8 task force we are currently leading on an initiative to bring together 45 regions across the EU, which are particularly active in the R&D and Innovation sector. We are keen to take these recommendations forward through our work with other EU partners and work at the EU level to provide a more synergetic and comprehensive contribution. We are also keen to share thoughts and ideas with other partners engaged in the process and would welcome ideas, comments and contribution on those views already expressed in the paper.

## Contributing Stakeholders

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Centre for Research in Biochemistry and Molecular Biology- Nanomedicine  
CITAndalucía  
Delegation of the Basque Country in Brussels  
Delegation of the Rhone-Alps in Brussels  
East Midlands in Europe  
Edinburgh Beltane  
Edinburgh Research and Innovation Limited  
Emilia-Romagna Region, Brussels Office  
ENEA Brussels Office  
Euresearch  
European Office of Cyprus  
Europe for Business  
ERRIN – European Regions Research and Innovation Network  
ERRIN – FP8 Task Force  
Flemish government  
Highlands & Islands European Office  
Helsinki EU Office  
Ile-de-France Europe  
League of European Research Universities  
Liaison Agency Flanders Europe  
Medicon Valley Alliance  
Moverim Consulting  
Oficina del Gobierno de Cantabria en Bruselas  
Politecnico di Torino  
Primatus Ecofinance  
Region of Lombardy  
Science Business  
Scottish Funding Council  
Scottish Government  
Scotland Europa  
Scottish Informatics and Computer Science Alliance  
South East England Development Agency  
South West UK Brussels Office  
Spanish Office of Science and Technology  
Strathclyde University  
Stavanger Region European Office  
Swisscore  
UHI Millennium Institute – University of Highlands and Islands  
UK Research Office  
University of Edinburgh  
Universities Scotland  
Università degli studi di Padova  
Università degli Studi di Udine  
University of Twente  
Welsh Higher Education Brussels  
Westfinland  
West Midlands in Europe

The European Commission DG Research was represented and contributed to the event

For comments, new ideas and additional contributions please contact [luca.polizzi@scotent.co.uk](mailto:luca.polizzi@scotent.co.uk)