

Reviewing options for further integration of AR and ARD towards a new policy framework

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Introduction

The development of sustainable agriculture¹ and food systems emphasises the need for European nations to change consumption habits and production models, pursuing principles of inclusive green economy. **Agricultural Research (AR)** focuses on national or international needs within added value for member states and/or Europe whereas **Agricultural Research for Development (ARD)** is dedicated to collaboration with and in developing countries working towards the Millennium Development Goals. However, AR and ARD are interlinked due to the global scale of many of the challenges including issues such as climate change and food and nutrition security. The transition towards a sustainable agriculture and food system is supported by research, innovation and knowledge exchange, and will benefit from a joint strategy on how to achieve these objectives. International cooperation at the level of global challenges will reduce fragmentation and promote efficiency of research investments. Support and encouragement is needed for countries to align their policies at national and international level aiming at greater impact on global challenges.

One of the recommendations of an earlier Task Force² was the establishment of a Joint EIARD SCAR Strategic Working Group. This has been achieved and the group is now called **ARCH** - European Agricultural Research towards greater impact on global CHallenges.

A sub-group under ARCH has reviewed the recommendations of this Task Force, and in addition updated and reviewed outcomes of earlier ARCH studies involving several member states in which the main type of AR and ARD policy principles and linkages between the two were studied.

This paper targets policy makers and decision makers at national and European Commission levels, and presents the main lessons learnt and indicates a way towards a new policy framework. It will be used in further work to be carried out by ARCH members.

1. Analysis of National and European agricultural policies

Policy and principles of AR and ARD

Although not always explicitly mentioned in their national strategies, many countries do address the general need for maintaining a robust research base and remaining attractive partners for cooperation with other countries, universities and funders. Themes in AR include the challenges of sustainable agriculture, sustainable land use, soil fertility, climate change,

¹ In this document, agriculture includes fisheries and forestry

² SCAR / EIARD / ERA ARD Task force produced a report: "Improving the contribution of European Agricultural Research to Agricultural Research for Development." 2012

the management of plant and animal diseases, energy security and others, in short: trends in 'green growth' from producer to consumer. AR is not only important for the maintenance, but also for the further development of the national agri-food sectors. This way, for instance, Ireland's government policy aims to *'develop the agri-food sector as a dynamic, consumer-focused, future-oriented industry, which avails of new opportunities in expanding international markets for high quality, safe and naturally produced products. The development of an agriculture sector which is internationally competitive is crucially important.'* All countries recognise the need for a sustainable supply of sufficient, affordable, nutritious and safe food. The agri-food sector delivering this service is often an important co-investor in research. In Finland, 2/3 of the AR funding comes from the private sector. In the Netherlands, an increasing share of agricultural research and innovation consists of public-private partnerships: research institutes and consortia of companies collaborate to promote export opportunities. Agricultural Research is, thus, strongly considered to be a valid instrument to boost national economic growth.

AR themes often overlap with those of development policies. Agriculture and food and nutrition security are high on both, the development and the AR agenda as effective tools towards economic development and poverty reduction. Intensification of productivity and combating malnutrition are part of food security policies. Other overlapping issues are the sustainable use of natural resources in relation with political conflicts. Effective contribution to these aims often requires the development of new knowledge and technology to support evidence-based policies and stimulate innovation, in conjunction with the need for efficient knowledge transfer and capacity strengthening. Co-investments with the European private sector are not yet as common in ARD as they are in AR. Only a few countries have a policy on (national) private sector involvement.

Despite a general focus on knowledge dissemination, only a few countries have made their international activities freely accessible on the internet. Finland has opened access to all international projects on the internet (Finceal³), and the UK has a very advanced system with search options for international projects, activities and events (DFID's R4D⁴). Other countries have funder portals or research institute portals, but a structured overview is often lacking.

Generally, AR institutions collaborate with research institutions in OECD countries; collaboration which has been established mainly on the basis of scientific excellence and complementarities between research teams, and not so much on the basis of geostrategic priorities. This contrasts with ARD institutions which have often established clear geostrategic priorities for collaboration with developing countries. Most European countries also have this regional focus when development cooperation is included. Sub-Saharan Africa and Asia are often identified, but some European Mediterranean countries (e.g. Italy) tend to cooperate with North Africa, whereas Spain and Finland have substantial relations with Latin America. However, the geographical focus of internationally oriented AR (non-ODA, directed towards mutual benefits) partly overlaps with that of ARD. Increasingly, AR institutions are looking for partnerships with 'the South'. This indicates that there is room for a better alignment of research activities in the same geographical areas between funders when aiming at partnerships with mutual benefits.

Country case studies, originally included in the Task Force Paper referred to in the introduction, were updated in 2014 and can be found at <http://www.ard->

³ see

http://www.unipid.fi/en/page/157/developing_finnish_science_technology_and_innovation_cooperation_between_europe_africa_and_the_lac_region/

⁴ see <http://r4d.dfid.gov.uk/>

europe.org/index.php?id=441. A brief summary of these case studies is included in the Annex to this paper.

2. Successful strategies linking AR and ARD

Coordination

Certainly of great importance are the increased exchange on research policy matters, and the sharing of information between member states and across the various stakeholder groups. The joint ARCH and AKIS workshop held in June 2014 was an important event producing a shared agenda of recommendations for alignment⁵. The resulting policy brief proposes to understand research as part of an innovation system, with European Innovation Partnerships (EIPs) and participatory research processes as two sides of the same coin. The 4th SCAR Foresight Study will also build on the contributions of the respective Strategic Working Groups, and the integrated approach of AR-ARD policy will be covered by ARCH. In fact, ARCH understands its role as being the inter-service group between the different Directorate Generals of the European Commission involved, in line with the recommendation by the first Task Force on AR-ARD in 2008⁶. So, at the European level, the debate on integration of research, agriculture and development policies has become more widely accepted. Whilst the exchange between the DGs involved has now become more common practice, the communication with stakeholders outside the Commission has yet to be improved.

National coordination mechanisms to link AR and ARD are of varied nature in different member states, and range from informal consultations of relevant stakeholders - often organised on an ad-hoc basis ahead of decisions about major policy or financing - to contractual collaboration as funding partners in programmes of shared interest. In this context, France may be credited with a highly developed system of coordination mechanisms. CRAI⁷ is the interface between the French research institutions and the international agricultural research system, of which the CGIAR is a component.

Several examples are provided in the annex to this paper showing where parts of ministries outside development also fund ARD programmes. This illustrates the importance of political and scientific cooperation and the growing application of a whole-of-government approach to agriculture and food production, especially where external action is involved. It also lists examples of large AR initiatives being complemented by funding and expertise within development departments. Practice shows that cooperation among different funders is facilitated when one research agency has the lead, and individual responsibilities and rules for cooperation are clearly defined from the start.

Thematic focus

Most countries have a policy focus on international food security, and AR priorities are also increasingly focussing on food security. Nevertheless, the spectrum of specific topics still remains very broad. Some countries link their international activities to areas of national excellence. Finland is taking such an approach by focussing on those areas of cooperation where the partner countries' demands and the Finnish resources converge to create added value for both parties (e.g. agroforestry, biofuels). Similarly, the Netherlands focus on sustainable intensification mainly in livestock, nutrition and the seed sector. Following this rationale, Austria, Switzerland and Estonia, countries with a focus on organic agriculture,

⁵ see <http://www.ard-europe.org/index.php?id=441>

⁶ Fostering complementarities & synergies between European agricultural research for Europe and for Developing & Emerging Economy Countries. Report from a SCAR, EIARD & ERA-ARD Task Force, October 2008.

⁷ Commission de la Recherche Agricole Internationale

could have a focus on organic agriculture and family farming, whereas Norway might determine aquaculture as a priority sector.

Global cooperation

The CGIAR consortium group with 15 research centres around the world is an important ARD player, and its annual budget continues to increase. Funders focus now more on impact pathways rather than solely on research excellence. Multidisciplinary approaches are favoured and gender balance is in focus. Country support to CGIAR is implemented in many different ways. Finland supports the CGIAR consortium not only through core funding, but also through bilateral programmes implemented in cooperation with Finnish research institutes and universities. The Netherlands supply core funding to a limited number of CGIAR Research Programmes (CRPs) and the Consortium. Austria funds selected institutes, and France supports the CGIAR not only through limited core funding, but more significantly through the secondment of over 25 full time scientists, hosted within the CGIAR facilities.

At the European level, linkages of joint initiatives (e.g. ERA-Net projects) with global players are still the exception rather than the rule. A positive example in this regard is the Joint Programming Initiative on Agriculture, Food Security and Climate Change (JPI-FACCE), working on a joint programme for sustainable agriculture, food security and climate change in Europe, but which is linked to a CGIAR research programme - Climate Change, Agriculture and Food Security (CCAFS), and the Global Research Alliance on Agricultural Greenhouse Gases (GRA). In July 2013, JPI-FACCE and the Belmont Forum launched a joint call on food security and land use change⁸. In addition, the BiodivERsA ERA Net and JPI-FACCE launched a joint call for projects on promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services. There is likely to be scope for more complimentary activities and mutual added value with the current pilot examples of collaboration serving as models or even catalysts on how to set up long-term strategic cooperation. The CGIAR system is increasingly open for collaboration with external partners. A debate with SCAR and EIARD on how to proceed, and how to align AR and ARD policy instruments is appropriate and is highly recommended.

Multi-annual academic partnerships between institutions in the North and in the South are conducted with a focus on strengthening institutional capacities in education, research and management, primarily in the partner countries in the South. However, there is an increasing awareness that the donor countries in the North also benefit from such collaboration. While most of the partnerships are between individual research institutions, new funding mechanisms facilitate collaboration between diverse partners within one programme, thereby managing to concentrate efforts within the geographic priority regions. An interesting example is the Ibero-American INIA system⁹ which was formalised in 2003 with the establishment of a core action group formed by the INIAs of Spain and Portugal, and those of 12 Ibero-American countries. Their activities are mainly focused on the development and implementation of strategic projects of common interest to the participating countries. Institutional strengthening of the INIAs and training of research and management staff are also part of the agenda.

Institutional links

In Europe, numerous institutions have the potential for linking AR and ARD. Synergies are indeed becoming more evident, as Member States and representatives of Candidate Countries and Associated Countries have been involved in FP7 and now in Horizon2020 and

⁸ http://www.esrc.ac.uk/funding-and-guidance/funding-opportunities/27118/Belmont_Forum_and_FACCEJPI_Food_Security_and_Landuse_Change.aspx

⁹ Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria = National Institute for Agronomic Research

take part in advising the EC on coordination of AR activities through SCAR. Increased awareness of the partner's contextual situation in the programming of research activities, and the use of innovative approaches in implementation may lead to quick wins, when working with developing countries. For instance, a current call in Horizon2020 on Family Farming¹⁰ is looking into comparisons of smallholder structures in Europe, Africa and Asia, in terms of achieving sustainable FNS. This provides an opportunity to promote mutual learning and to close the gap between research and innovation in different continents. Links between Europe and developing countries are less common under Pillar 1 (Excellent research) of Horizon 2020. However, the joint use of research infrastructures (ESFRI¹¹) corresponding to long-term needs is, in principle, open to cooperation with partners outside Europe. Within ESFRI, AnaEE¹² supports scientists in their analysis, assessment and forecasting of the impact of climate and other global changes on ecosystems services for societies. Their recent stakeholder meeting (October 2014) was organised around global food security, climate change and international cooperation.

EURAGRI is another European initiative, in which the European agricultural research community and their funders informally exchange ideas. EURAGRI's unique niche is found in more or less non-political mutual learning processes, through the organisation of events including an annual conference. Their influence on policy makers is informal. EURAGRI can also cover international cooperation outside the EU, as demonstrated by the theme of their 2014 conference which addressed North-South partnerships.

On the ARD side, AGRINATURA, the network of research and education institutions can also influence the agenda on integrating AR and ARD through the organisation of thematic events. At national level, several member states provide a platform to promote the exchange of ideas. The German 'Tropentag' is not limited to German players, but is open to all and was organised jointly with the Czech Republic in 2014. The theme was very much on mutual interest: Bridging the gap between increasing knowledge and decreasing resources.

Whilst AR and ARD institutions are generally well organised, they remain separate organisations in conducting their business, and thus, in terms of global issues, may work on the same issues without being aware of duplication. There is ample room for alignment of these institutions, if appropriate policies provide the necessary incentives. At the global level, traditionally, quite a few institutions set the agenda for ARD. One authoritative body is the Global Forum on Agricultural Research (GFAR), supported by regional fora in all continents. CGIAR is the global consortium of 15 research institutes for ARD. GFAR and CGIAR are connected by the Global Conference on ARD (GCARD). By establishing GCARD, both institutions have aligned their stakeholder meetings since 2010. GFAR and CGIAR aim at coordinating ARD. However, they are linked to the more recent initiative of G20, which endorsed the first Meeting of Agricultural Chief Scientists (MACS) in 2012, with the goal of identifying global research priorities and targets, and facilitating collaboration between public and private sector organisations in the key areas most likely to drive sustainable productivity gains. MACS is, thus, an institutional arrangement aiming to promote collective action from G20 countries and international organisations, and is potentially a bridge between AR and ARD.

Besides GFAR and CGIAR, other partners are FAO, OECD and IFAD. The third MACS (Brisbane, 2014) reaffirmed their support for the Global Research Collaboration Platforms (GRCPs). MACS is based on voluntarily agreements: by sharing information on national

¹⁰ Sub call of: H2020-SFS-2014-2015 "Small farms but global markets: the role of small and family farms in food and nutrition security"

¹¹ European Strategy Forum on Research Infrastructures

¹² Analysis and Experimentation on Ecosystems

research priorities, encompassing agricultural productivity and sustainability. Some members¹³ will conduct a pilot project to map and compare their research priorities and establish information sharing mechanisms. They, thus, recommend all aspects of sustainable intensification, including knowledge exchange systems through open data access. MACS emphasises the significance of public-private sector research collaboration and investment as critical drivers of innovation. Although G20 has a “Business Engagement Group”, a representative of private sector research is not yet represented in MACS. The World Economic Forum envisages a transformation of agriculture through collaboration¹⁴. This initiative engages leaders of business, government, civil society, farmers’ organisations, development partners and other groups to work together to achieve sustainable agricultural growth. The initiative, called “New Vision for Agriculture”, works at the global level with the G8 and G20, and facilitates national-level partnerships in 14 countries in Africa, Asia and Latin America.

Analysing the overview of the various institutions, the predominant image is that there are a lot of initiatives on food security including research and capacity building at the international level. Some overlap only in theory, others are connected through more or less formally agreed partnerships. In fact, individual researchers may act in various initiatives and as such alignment is achieved at an individual level through personal involvement. The same may hold for policy-makers. These relationships contribute to the tendency to align and integrate research in policy fora. For instance, the Alliance on Climate-Smart Agriculture, launched at the UN General Assembly Climate Summit in September 2014, addresses policies and research on climate change mitigation and adaptation at a global level. The Climate-Smart Agriculture approach is designed to identify and operationalise sustainable agricultural development within the explicit parameters of climate change. It is composed of three main pillars: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gases emissions where possible. As an example, the United States is dealing with the challenges of climate change on American soil, as well as abroad through its development programs including President Obama's flagship food security program: Feed the Future.¹⁵ The European-African partnership on research and food security might be a comparable flagship programme in the near future. This partnership is currently under construction, but offers great potential for institutional alignment.

3. Challenges

Fragmentation of Responsibilities

Already in 2008, the first SCAR-EIARD-ERA-ARD Task Force mentioned the difference in responsibilities of ministries for agriculture, research and development as a barrier for cooperation. In 2014, this is still the case for a majority of countries. Employing a whole of government approach¹⁶ may be an effective tool to overcome such fragmentation and create opportunities which provide mutual benefits and thus foster coherence. It is necessary to point out, how the strategic goals of each ministry can be met via policy coordination and

¹³ UK, Canada, Italy, France, Japan, EU, Australia, Argentina, US, Germany, Spain (from: COMMUNIQUÉ of the Third Meeting of G20 Agricultural Chief Scientists)

¹⁴ <http://www.weforum.org/issues/agriculture-and-food-security>

¹⁵ <http://blogs.state.gov/stories/2014/07/17/alliance-climate-smart-agriculture-triple-win#sthash.NjwBTyYl.dpuf>

¹⁶ OECD 2006. WHOLE OF GOVERNMENT APPROACHES TO FRAGILE STATES. (DAC GUIDELINES AND REFERENCE SERIES), p.7ff explains that “successful development in a fragile environment depends, at least in part, on well sequenced and coherent progress across the different (political, security, economic, administrative, etc.) domains Working effectively across these domains requires donor countries to adopt a ‘whole-of-government’ approach (WGA),”

collaborative funding, and how the elimination of duplication will increase the efficiency of investments. In addition to the current division of responsibilities, different funding schemes, i.e. bilateral versus multilateral, and project versus program funding, as well as competitive calls versus institutional support present a major administrative barrier to joint funding. While this diversity of approaches may provide opportunities to address specific demands, it also bears the dangers of inefficient use of resources, especially if proper coordination is lacking. In fact, a combination of funding schemes may address a wider diversity of societal needs, but only when the financial instruments are precisely matched to the technical issues at hand.

Need for Coordination

At national level, the coordination mechanisms between the ministries coordinating AR and ARD differ widely. As indicated above, some countries have clear coordinating mechanisms, others do not. While awareness has been raised for integrated research on related themes, the ministries concerned need to be convinced that cooperation activities will neither diminish their competences (even if they are not the lead partner), nor their budgets. European collaboration such as SCAR, EIARD and ARCH etc. is an important driving force to foster the collaboration and coordination, also at national level, by providing analysis and information on best practices, innovative approaches and encouraging results among member states and institutions. At European level, commonalities between AR and ARD are increasingly communicated between the various DGs (e.g. DEVCO, RTD and AGRI), and spontaneous ad hoc joint initiatives have been launched, e.g. on cooperation in the Mediterranean region. New opportunities may be found in global alliances on food and nutrition, climate change and the access to and sustainable use of natural resources including land, water and genetic diversity.

Finding the Intersection

In the case of AR, strategic planning of research is focused on national interests, but AR may include elements of international cooperation which address trans-boundary and global issues (e.g. African swine fever). In the case of ARD, the strategic objectives of research planning are priority issues in the partner country or region, and often aim for development impact of scientific progress. While ARD may, therefore, be primarily focussed on local issues, this does not preclude trans-boundary and global issues being addressed as well (see example above).

Joining resources with the private sector

Global risks related to agriculture, food and the environment are estimated very high. In fact, the Global Risks Report 2013 (World Economic Forum) mentions in their Top 10 the global risk of water supply crises, failures in climate change adaptation, rising greenhouse gases, volatility in food prices, and food shortage. These risks interact with economic development and cannot be tackled by national governments alone. Involvement of the private sector (industry, foundations etc.) is, therefore, needed and happens already in some countries either in AR (e.g. Finland) or in ARD (e.g. Germany) or both (The Netherlands). However, dealing with a diversity of private sector involvement, from multinationals to SMEs, in Europe and developing countries, and taking into account all possible conflicts of interest, these kinds of collaboration have to be developed carefully.

Enhancing the role of Science in Innovation

AR in developed countries focuses mainly on scientific progress and academic excellence, and the transformation of results into marketable products is left to the private sector. In developing countries, the private sector is less developed and not yet ready to fulfil this role. Therefore, ARD has to also consider issues of knowledge transfer and innovation processes along the whole value chain, in order to mobilise the entire potential of research results in the

respective countries. In this way, exchanging views between AR and ARD may promote the uptake of new knowledge and information by farmers and decision-makers in low-income countries.

Sustainability of partnerships

In the past, equal scientific involvement of all parties (including parties from developing countries) proved to be successful in scientific cooperation and should be aimed for. Mutual exchange of experiences will also foster cooperation, and increase the chances for any partnership to last beyond a given funding period. This is important since project funding generally aims at short-term results, whereas changes in behaviour or practices require long-term commitment by all partners.

4. The way forward

It has been widely recognised that current societal challenges require global research efforts. This is why AR and ARD increasingly overlap in themes. The integration will also be reflected in the Sustainable Development Goals (SDGs), to be launched in 2015. Cooperating on SDGs can open the door to scientists from various continents working for impact. The contribution of research is likely to be increased if partnerships and alliances are improved and strengthened. Cooperation does in fact not always happen spontaneously and often depends on specific bilateral or even personal contacts. Institutional or funding barriers or simply not knowing (and trusting) each other prevents a more comprehensive approach and hampers impact. Appropriate government policies can induce effective partnerships in which the competencies of both partners reinforce each other. On the basis of current best practices, various aspects on the way forward are proposed.

1. AR and ARD coordination at the national level

Ensuring the ARD representatives regularly participate in SCAR meetings, and similarly AR representatives participating in EIARD meetings will encourage mutual awareness and linkages between AR and ARD at the national level.

Stimulants for integrated research programmes on global challenges can be introduced in current national call procedures, for instance by including planning for mandatory mutual benefits for both Europe and outside Europe and rewarding inclusion of mutual scientific and societal benefits.

New models of **cooperation** have to be identified for national policy makers and researchers to help close the lab-to-farm-gap. Examples which may be used include the ERC “Synergy” or “Proof of Concept” grants, or the EIT’S KICs¹⁷ which bring together research, education and business to respond to long-term societal challenges. “Foodbest” is a European consortium working to promote innovation and entrepreneurship in Food across Europe and aiming to boost the European food sector through innovation and knowledge-based improvements. Innovation in practice is about smart combinations of local and 'external' knowledge creation. Innovation brokers have to be part of the knowledge system.

ARCH should be able to provide links which to existing platforms, networks, groups, and organisations in order to promote their achievements and to continue their dissemination. This would provide a concrete step to overcome the eternal problem of short-term funding, and successful initiatives dying off, as soon as the funding stops. The preparation of the Portal of Portals - Agricultural Research for Global Challenges (<http://www.ard-europe.org/>) can be considered a good starting point, for developing a joint approach for AR and ARD.

¹⁷ Knowledge and Innovation Communities http://ec.europa.eu/eit/h_kics_en.htm

2. Programming research at the intersection between AR and ARD

ARCH has made a thorough study of the AR and ARD Intersection¹⁸. Now, strategic studies are needed to incorporate the options of European and global policy commitments (MDGs, Joint Africa- EU strategy, H2020, CAP, CAADP, etc.) requiring technological and socio-economic research, and to point to ways, how these may coincide with national policy objectives, and how options can be used to promote the European contribution to a sustainable global economic development.

New funding opportunities are often a significant driver of research. However, it may not always be “new money” that is needed. “Different funds” may become available, if innovative approaches are adopted and combined AR and ARD approach is used. A large amount of ARD funding supports the initiatives led by CGIAR. This is paralleled by the funding of national and EU programmes on comparable challenges (both AR and ARD). Complementing these national and international programmes could be facilitated at country level. In addition to complementing funds from joint DG DEVCO and Horizon 2020 programmes, it would improve European leadership, coordination and influence. In this respect, the recent launch of DG DEVCO's new strategy, in which joint action with DG Research and Innovation is aimed for, is a good basis for integrated approaches and should be accurately monitored. Similarly, the sharing of experiences at country level in joint programming of AR and ARD can provide valuable lessons learnt.

Despite an overlap in themes and tools, the research infrastructures needed for implementation still remain separated. Current efforts (for instance ESFRI, AnaEE) are theoretically open for researchers outside Europe, but this kind of cooperation is uncommon. In addition, current JPIs (such as FACCE) have excellent international knowledge hubs which are potentially interesting for developing countries, but aside from PAEPARD's efforts, there is not much exchange yet. This could be improved by **further alignment of EU policies and programmes** on research and development.

Joint calls between various member states can be promoted as a means to consolidate experience gained via ERA-Net and similar projects, pointing out the added value for national policy goals, and the leveraging effects that can be gleaned from such collaboration for national expertise. These added benefits can be increased, if the spectrum of such calls is addressing wider issues, such as the creation of an enabling environment to bring research results to the market. Box 1 gives an example of “ERAfrica”, an ERAnet project with joint contributions from both Europe and Africa.

Sharing good practices remains essential for making progress. An easy way to do this is to organise a European conference presenting good practices that will lead to the establishment of a body/group that promotes, collects and consolidates the achievements of former and on-going initiatives. Similarly, side-events can be prepared at international conferences that point out the overlap in national AR-ARD agendas of different continents/countries.

¹⁸ See <http://www.ard-europe.org/index.php?id=441>

Box 1:

ERAfrica, an African-European initiative on research, innovation and capacity building (see <http://www.erafrica.eu>)

In response to the global shift in economic balance between DCs and DEECs, and Africa's growing interest in research activities that are financed in line with Africa's own strategies and priorities, the ERAfrica project may be cited as an example for an innovative partnership, overcoming budgetary constraints. The ERAfrica consortium brings together 16 institutions¹ from the two continents to define jointly the priorities and fields in which they decide to collectively invest. All parties participate in the decision-making on an equal basis, irrespective of the amount of their financial contribution. It supports cooperative activities in three thematic fields - renewable energies, interfacing challenges (challenges of common interest) and "new ideas". Each financed project involves at least four countries, two European and two African. The project is financed out of a common fund with five African countries alone contributing almost half of the total funds.

Increased mobility of researchers between countries (North-South, North-North, and South-South) is needed to learn from each other's experiences about integrating AR and ARD. The impact of research will benefit from specialists that could be 'loaned' out to other institutions on a temporary or partial basis. This does not necessarily imply physical displacement, but rather defining a contribution to a particular activity. It also promotes the mutual learning process. Therefore, a concrete scheme of how such mobility could be implemented has to be devised (standardised costs and mechanisms, delegated officials, administrative training courses open to other member states, etc.) An advocacy paper soliciting support for this new mobility scheme can be discussed in (a.o.) SCAR and EIARD.

3. Multi-stakeholder partnerships in Research and Innovation

Enlarging partnerships beyond the research community to become multi-stakeholder must include NGOs as well as the private sector. It is recommended to establish contact with existing PPPs (Public Private Partnerships) in related fields, to exchange views, gather best practices and disseminate them. Currently, PPPs are well developed in AR in some countries and have a more dominant role in Horizon2020 whereas experience with PPPs in ARD in and with developing countries is still limited and not well documented. Multi-stakeholder partnerships are often viewed as essential for innovation to be successful and reach end users, and must address issues of knowledge transfer and innovation processes along the whole value chain, in order to mobilise the entire potential of the research results. A gap-analysis should be developed in order to guide multi-stakeholder involvement in research on global issues and to develop concrete models of establishing Public Private Partnerships.

4. Long term commitment for sustainable partnerships

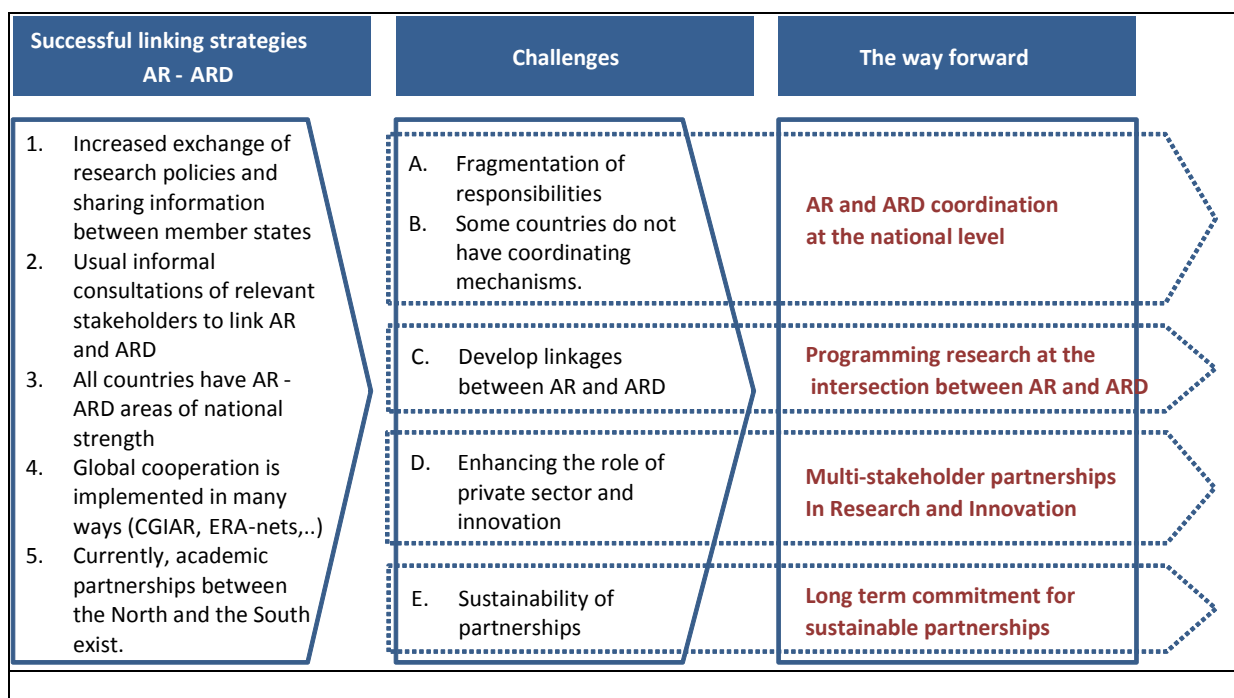
Cooperation at programme or project level is time-bound whereas the changes needed to adequately provide solutions to global challenges require long term commitment. Evaluation of impact of research has a time lag which is often longer than the duration of projects and even programmes. Therefore, we recommend establishing protocols facilitating long-term sustainable partnerships. This also includes activities to be maintained after the end of the project period such as making research data available, accessible and usable on an unrestricted use worldwide basis. Current developments in data sharing such as the CIARD-GODAN¹⁹ initiative deserve our policy and institutional support across the public and private sector. Another example is the EU-Africa research partnership on food security (see Box 2).

¹⁹ CIARD is a global movement dedicated to open agricultural knowledge. GODAN is a G8 initiative on Global Open Data for Agriculture and Nutrition. Both joined forces since 2014.

Box2:

The EU-Africa expert group on science, technology and innovation
 Under the framework of the High Level Policy Dialogue EU-African Union, a joint expert group investigates the gaps and synergies in research for food security, sustainable intensification, nutrition and trade. Mutual benefits are aimed at, taking into account different demands along continents. This partnership is established in cooperation between DG RTD and DEVCO and accounts for an equal partnership at all levels.

Figure 1: A schematic overview of strategies and challenges to make progress in linking AR and ARD.



ANNEX: Brief Summary of ARCH Country Case Studies

Austria

Austrian policies for AR and ARD are separated between several ministries and agencies. One ministry²⁰ is the main funder of AR and implements the interventions according to the objectives specified in long-term (5 year) transdisciplinary programmes for three strategic key areas: living resources, living space and nutrition. International treaties and agreements along with twinning arrangements promote cross-border collaboration. Several ministries, universities and institutes, a government agency, a national commission and an international institute (IIASA) are involved in ARD, and they often enter into consortia to finance particular projects. Development policy is focussed on priority countries, located mainly in Sub-Saharan Africa, and to a lesser extent in Asia and Central America, and aims at reducing poverty, preserving the environment and safeguarding peace and human security. Most of the available AR budget²¹ is allocated via competitive calls, whether in the national or the international context.

Although there is some cooperation between the public organisations, overall strategic coordination or alignment is lacking. Activities are planned by individual institutes or ministries, and partnerships are often limited by contracts in time and financial responsibilities. Some ARD funding is contributed through AR councils (e.g. on plant and animal genetic resources).

Finland

Finnish AR is funded by several bodies, whereas ARD is mainly funded by one department (Ministry of Foreign Affairs) although the Academy of Finland also provides some funding for development research. AR and ARD funding schemes are separated. Integration is provided at the level of research programmes such as institutional cooperation between Finland and developing countries. Finland's AR aims at a considerable co-funding (2/3) by the private sector. ARD cooperation and capacity strengthening are formalised by twinning actions. Long-term partnerships have been established with specific countries in Africa and Asia. Food security is high on the development agenda. The country has tripled development cooperation funding allocated to agriculture since 2007.

AR and ARD interlink focusing on the green economy with the acknowledged need for Finland to change consumption habits and production models, briefly: sustainable development principles.

Government policies aim at new forms of cooperation next to bilateral and multilateral alliances. The activities focus on areas where a partner country needs and the resources and added value of Finland converge. There are joint programmes between Finnish universities and CGIAR. All Finnish international research activities are accessible through a transparent web based information databank (<http://www.unipid.fi/infobank/home/>) with information on Finnish projects in Africa, Latin America and the Caribbean.

Policies and funding of AR and ARD are separated, but inter-linkages occur in twinning programmes on capacity strengthening. In addition, the country links its national consumer and production behaviour with the global perspective, although it is not clear how this drives the AR or ARD agenda. The country has an ambitious policy on public private partnerships in AR. This could be a successful linkage strategy between AR and ARD.

France

²⁰ BMLFUW – Federal Ministry of Agriculture, Forestry, Environment and Water Management

²¹ after contribution to CGIAR

The government has reinforced mechanisms to strengthen national and international partnerships in AR and ARD, hence contributing to increased food security. A national body representing both public funders and providers of research – The French Commission for International Research (CRAI) - coordinates the national efforts on international agricultural research. Similarly, the national research and higher education institutions have joined forces on global challenges of food and environment (Agreenium) as well as stakeholders from France and abroad (joining the Agropolis association in Montpellier). Approximately 1:10 AR projects are internationally co-funded. These initiatives are of special importance for the coordination between INRA, the French AR institution, and CIRAD, the French ARD institution. Both INRA and CIRAD receive core funding from the French Ministry of Research. Additional project funding mechanisms (on a competitive basis between French based institutions) are provided by ANR, mostly for AR, and, for ARD, by AIRD (which ARD funding role could soon be passed onto the general development funding agency, AFD).

The government favours long term (5 years) collaboration between researchers of different institutes, both in the French context (Mixed Research Units) and in the international context (Partnership Platforms²²), with opportunities to connect fundamental and applied research. Besides, partnerships between France and countries within and outside Europe are set up to strengthen international relations on a long-term basis.

At national level, France is well organised in the coordination of international research, by bringing together funders and providers of international research, as well as the research and (higher) education institutions. In addition, national and international partners (CGIAR, Usda/Ars, Embrapa, and INTA etc.) in research meet each other on a common campus (Agropolis) and are supported by a Foundation. Beyond the core funding provided by the French ministry of research for both INRA and CIRAD, “project” funding of AR and ARD is separated. However, both agencies jointly manage transnational programmes between France and southern countries on the transition towards new agricultural production systems.

Germany

AR and ARD are spread between three federal ministries and their associated agencies. Although ARD is exclusively the policy of the Ministry Economic Co-operation and Development, two other ministries (Education and Research, and Food and Agriculture) fund both AR and ARD. The Ministry for Economic Co-operation and Development follows thematically the 15 consortium research programs (CRP) of the CGIAR. The Ministry of Education and Research has designed a transparent policy strategy on internationalisation of science and global research cooperation. In its national research strategy “Bioeconomy 2030” global food security, sustainable agricultural production, healthy and safe food, but also the whole value chain of the bio-economy as well as soil fertility and climate change are core elements. The elements are similar to those of the other ministries. The Ministry of Agriculture has recently launched a new funding instrument (Research Cooperation for Global Food Security) to increase the contribution of Germany’s agricultural research sector for ARD by fostering long-term partnerships between agricultural research institutions in Germany and in developing countries especially in Africa. The Ministry of Economic Co-operation and Development funds ARD through project funding in line with the CRP of the CGIAR, attributed funding to CGIAR centres and AVRDC and *icipe* for plant genetic resources and policy research, and by secondment of European personnel and personnel from developing countries to international agricultural research centres. Geographical focus of the German government is on Africa. The Ministry of Education and Research politically underlines German – African cooperation through research projects in its “The Africa

²² Partnership Platforms are set up by diverse STI institutions which agree to pool resources (especially HR), in the long term (at least 5 years), on a common development challenge and in a given location, through a jointly defined research and innovation agenda and under shared governance. CIRAD is currently involved in 21 Partnership Platforms in Africa, South East Asia and Latin America.

Strategy 2014-2018 – Africa as a partner in education and research”. Projects in Latin America and Asia are, however, also supported by Germany.

AR and ARD are spread between three federal ministries and their associated agencies. Although ARD is exclusively the policy of the Ministry of Development, two other ministries (Research and Food & Agriculture) fund both AR and ARD. The Ministry of Research has designed a transparent policy strategy on internationalisation and global research cooperation. The elements are similar to those of the other ministries: global sustainable food supply, soil fertility, climate change, bio economy. The Ministry of Agriculture funds bilateral cooperation between German and African researchers, whereas the Ministry of Development funds ARD through core grants to (mainly) CGIAR centres and by secondment of German researchers to international research centres. Geographical focus of the German government is on Africa.

Joint funding of the different ministries does occur in some cases, for example the joint funding initiative “Securing the global food supply”. Linkages are already in place through an inter-ministerial committee on research, but could be developed further. In fact, through the writing of a joint paper on AR-ARD policy, the policies of the three ministries were successfully integrated and the exercise has been experienced as a good step towards better national coordination.

Considering European policy, two ministries are active in SCAR and one in EIARD. On a global scale, Germany is a member of the G7 and contributes actively to the G7 international conference, particularly on open data for agriculture.

Ministries and agencies overlap in thematic focus. Some coordination between the ministries is already in place, but should be developed further. Although general policy alignment occurs at ministerial level, shared strategies on AR/ARD alignment are lacking as well as a better coordination of the different funding mechanisms for ARD. Opportunities for further integration are likely because of shared themes. Therefore, shared funding activities should be aimed for. In the past, scientifically equal involvement of all parties proved to be successful in scientific cooperation. Transparent funding processes and exchange of experiences are beneficial for better coordination and cooperation.

Ireland

Several ministries and agencies provide funding for AR on the basis of competitive bidding and core grants. The Ministry of Agriculture is the main funder and TEAGASC-The Agriculture and Food Development Authority is the principal agency responsible for implementation. ARD is managed by Irish Aid through CGIAR funding and bilateral programmes. The government aims at an internationally competitive Irish agricultural sector, and has also adopted the elimination of hunger and the development of resilient food systems as a cornerstone of foreign policy, with agricultural productivity, malnutrition and political leadership as the main actions. Linkages between AR and ARD are provided by the set-up of knowledge transfer programmes. The fact that one state agency, TEAGASC, provides both AR and ARD facilitates this knowledge transfer.

In Ireland, development aid uses a “whole-of-government” approach and global food security is one of the key drivers. Irish Aid works closely with other departments and agencies. Alignment is high on the agenda, also motivated by significant resource constraints. A Memorandum of Understanding between the TEAGASC and Irish Aid will reinforce this linkage. Clear criteria have been set up that must be met for programmes on research and knowledge transfer.

AR and ARD are well aligned, in policy as well as research provision. The basis is a “whole-of-government” policy on global food systems.

Italy

Two ministries (briefly: agriculture and research & education) and 15 regions deal with AR programming. The Ministry of Agriculture has intensified its involvement in European research cooperation and launched bilateral AR calls jointly with the Ministry of Foreign Affairs. With specific countries outside Europe, Memoranda of Understanding have been signed. Private funding is also available for AR.

Agriculture is a priority for development policy, too. Hence, Italy participates in the Tropical Agricultural Platform (G20) and aims at regional partnerships that collaborate with the Italian research system. The Ministry of Development Cooperation provides the contribution to ARD through CGIAR (both to the core budget and specific programmes). In addition, ARD is funded through the contribution to international centres located in Italy and to UN agencies.

Linkages between AR and ARD are found at programme and project level. For instance, AR councils are responsible for international research on plant genetic resources. An interdepartmental group is in the process of a partnership with Sub-Saharan Africa, aiming at private sector development in agriculture. Research centres on international cooperation in Italy are involved. Last but not least, AR and ARD researchers work together on perspectives for food security, preparing for the Expo Milan 2015. In this context, a knowledge network has been established with around 1000 members and an international technology platform to share ideas. The geographical focus is to the Euro-Mediterranean region.

Although the main funding for AR and ARD is separated, with quite a few funders of AR including the private sector, and mainly one for ARD, Italy focuses on linkages between the two at programme and project level. Some ARD funding is already contributed through AR councils (e.g. on plant genetic resources). Linkages are stimulated by political developments such as G20-TAP and events like the World Expo Milan 2015.

The Netherlands

The majority of AR funding is conducted by the Ministry of Agriculture. The agricultural sector is an important co-investor of AR; together with research institutes, companies create public-private partnerships to promote export opportunities including knowledge transfer. International collaboration is part of the agenda and projects support sustainable intensification along the entire value chain, also in developing countries. Agriculture together with food and nutrition security is a priority for the Ministry of Development cooperation as well. In fact, these ministries have released a joint policy paper on food security and cooperate with research institutes and the private sector (both in the Netherlands and developing countries). The government's motivation is twofold: 1. Contributing to the MDGs and 2. Strengthening of the Dutch agro sector. The Food and Business Knowledge Platform connects key representatives of the government, agricultural knowledge institutions and the private sector. This platform facilitates joint decision making on strategic and applied research. The strategy is to align national and international efforts to create robust programmes and leverage resources. Whereas international cooperation in ARD is focused on a selected number of low-income partner countries (majority in Sub-Saharan Africa), middle-income and emerging economies are also on the list of AR. Agricultural counsellors and food security experts in the embassies are important actors in facilitating partnerships.

Funding is managed through both competitive calls and core funding. In the case of ARD, projects with partner countries are competitive and demand driven. The CGIAR funding is a core grant. The Netherlands focuses on international research cooperation through a mix of bilateral, European and multilateral facilities. Some activities are particularly focused on coordination, such as the Global Research Alliance on Agricultural Greenhouse Gases and an example of a successful link between AR and ARD.

Despite separate funding mechanisms, the joint policy paper on food security of two ministers (Aid-Trade and Agriculture) is a sound basis for integrating AR and ARD. Alignment between the various international instruments is yet an option (such as CGIAR and national research programmes).

Spain

Two ministries (Economic Affairs and Agriculture) are involved in AR funding. Considering ARD, the main funding comes from the Ministry of Foreign Affairs, but also from the other two ministries. Collaboration between institutions is on the basis of projects. Spain contributes to CGIAR through INIA, the research institute for agriculture and food research. Under this umbrella, a Ph.D. student programme has been set up with one CGIAR institute in collaboration with international research institutes and Spanish universities. Paving the way for ARD cooperation was an extra outcome of this programme. Geographical focus is on Latin America followed by the Maghreb (N.W. Africa) and the Middle East. The two most important international thematic focus areas are water, soil & environment and plant production. An inter-ministerial programme on capacity training in Latin America and Spain supports linkages between AR and ARD. The calls are competitive. Funding has recently been a problem due to financial constraints. At national level, there is no coordination in the overlapping area of AR and ARD. The development funds have a preference towards supporting rural development rather than promoting science and technology as such.

There is no interdepartmental coordination on international research. However, the national research institute for international cooperation has obviously good connections with universities through joint Ph.D. programmes.

United Kingdom

In the UK, Government Departments and Research Councils fund AR, e.g. Defra (Department for Environment, Food and Rural Affairs) and BBSRC (Biotechnology and Biological Sciences Research Council). The main public organisations funding ARD are DFID (Department for International Development) and BBSRC.

All these organisations have policies and strategies relating to research. Defra's Evidence Strategy "Making the most of our evidence: A strategy for Defra and its network" sets out how Defra's evidence needs will be prioritised to help grow the rural economy, improve the environment and safeguard animal and plant health. BBSRC's Strategic Plan "The Age of Bioscience" sets out a vision to lead world-class 21st century bioscience, promoting innovation in the bioeconomy, and realising benefits for society within and beyond the UK. DFID's overall aim is to reduce poverty in developing countries, in particular through achieving the Millennium Development Goals. Its objectives support the CGIAR, to which it is an important contributor. Funding of new research is accompanied by increased support for building capacity and bringing research into use. The geographic focus is Africa and Asia.

Various mechanisms bring funders of research together to enable the coordination of activities, which may include both AR and ARD. The UK Global Food Security Programme brings together the food related research interests across Government and the Research Councils in a whole systems research approach, covering both the consumer and producer perspectives. The UK Strategy for Agricultural Technologies sets out how Government, the research community and the food and farming industry are working together to build on the strengths of the UK agricultural technologies sector as a whole. DFID contributes to this programme in supporting the transfer of technology and new products to developing countries.

DFID and BBSRC jointly fund several programmes to help tackle major global challenges such as the impact of climate change, food security and the threat of disease e.g. on sustainable crop production for international development, combating infectious diseases of

livestock, and aquaculture for food security. These aim to forge productive partnerships between UK researchers and developing countries. DFID funded research for development can be found at <http://r4d.dfid.gov.uk/>.

EC

Despite different target groups of DG for Research and Innovation (DG RTD) and DG Development Cooperation (DG DEVCO), the research policy goals of the EC instruments supporting AR and ARD largely overlap. Horizon2020 (DG AGRI and DG RTD) and the Food Security Thematic Programme (DG DEVCO) both address societal challenges such as climate change, food security, ecologically efficient intensification of agriculture. They also both promote knowledge exchange and the uptake of research results, by bringing together science, industry and other stakeholders in particular through the European Innovation Partnership "Agricultural Productivity and Sustainability". All DGs aim at research driving smart, sustainable and inclusive growth. Differences between the two policies are found in goals and funding strategies. Horizon 2020 aims at a competitive European Research Area to create a genuine single market for knowledge, research and innovation, also partly open to partners from other countries or continents and private sector companies. DG Devco uses strategic funding of certain ARD related institutes, organisations and centres (such as CGIAR, FARA), as a means of addressing poverty reduction and helping food insecure countries, mainly in Sub-Sahara Africa and South Asia. Interservice consultations between the DGs concerned are held on a regular basis and aiming at coordination and coherence between the two policies. However, joint programming does not yet take place as it would involve different instruments with quite different administrative procedures and timetables. Neither is there a joint policy on support of CGIAR institutes or comparable international research organisations in relation to Horizon2020 programmes. Synergy, integration or complementarity of programmes may occasionally occur, but is not yet an explicit operational aim. This is the area that could be enhanced at no great additional administrative costs.

Historically, there is strong cooperation between DG Agri and DG RTD. The Standing Committee on Agricultural Research (SCAR), originally under the responsibility of DG Agri, was transferred to DG RTD in 2004. SCAR members are high-level government delegates from Member States. SCAR advises the Commission in the field of the coordination of AR. Its scope has broadened over the years as agriculture must cope with new international and global challenges. SCAR aims at bringing together capacities and resources to adequately address all the research necessary to support policy on these trans-boundary issues. In recent years, SCAR has played an active role in shaping European agricultural research with its regular foresight studies and other activities such as the working of the Agricultural Knowledge and Innovation Systems, AKIS.

The European Initiative for ARD (EIARD) is a permanent, informal ARD policy coordination platform between the European Commission, EU Member States, Switzerland and Norway. EIARD's goal is to promote and implement coherent European policies at international, regional and sub-regional levels in order to increase the impact of ARD on poverty reduction, food security and sustainable management of natural resources in developing countries. Coordination on the support of CGIAR is the main topic for EIARD. The EIARD secretary is currently based in DG RTD which facilitates close linkages with the SCAR secretary located in the same DG. Joint activities have been organised in the past. Already in 2008, a SCAR-EIARD-ERA-ARD Task Force published a report on complementarities & synergies between the European Agricultural Research for Europe and for developing Countries. At that time, despite an increased mutual interest, coordination between AR and ARD in Europe was limited and weak. The task force identified research themes of common interest (agriculture and climate change, agriculture and energy, food security and safety). In 2012, the task force published a second study on improving the contribution of AR to ARD. It was concluded that Europe was changing rapidly regarding AR-ARD linkages and some case studies illustrated

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the different research policies of some member states. Inter-institutional learning was recommended. The ARCH studies provide an update and extension of their work.

The ERA-ARD projects (2007-2013) were funded by DG RTD, but aimed at improved European coordination in cooperation with developing countries, addressing global issues, selected via a demand-driven prioritisation process by beneficiary countries, such as sustainable intensification of production, and biofuels. The implementation of this project was supported by representatives from regional fora under GFAR who provided advice. The funding of joint projects was, however, relatively small.

The Strategic Working Group on Agricultural Research for Global Challenges (ARCH) works jointly under the auspices of SCAR and EIARD and is exploring the policy strategies of Member States and EC for integration of AR and ARD.