Programme on Innovation, Higher Education and Research for Development
IHERD

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It includes extracts and analysis from a number of IHERD reports, including the Report on funding mechanisms and modalities (Jacob, 2013), the report on Centre of Excellence as a tool for capacity building (Hellström, 2013), the report on Effectiveness of research and innovation management at policy and institutional levels in Cambodia, Malaysia, Thailand and Vietnam (Olsson and Meek eds., 2013), the report on Governance of higher education, research and innovation in Ghana, Kenya and Uganda (Jowi ed., 2013) and the Issues Papers prepared for OECD/IHERD, notably Innovation and research policy for development (Jacob, 2011) and Higher education governance and institutional management (Meek, 2011).

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Executive summary

The OECD has carried out a study on *The evolving path for strengthening research and innovation policy for development*, as a part of the OECD project on Higher Education and Research for Development (IHERD), which is financed by the Swedish International Development Cooperation Agency (Sida).

This report identifies the implications that the knowledge economy has had on research and innovation policy in developing countries. Within this it discusses how the existence of the knowledge economy has resulted in attempts to integrate higher education and research systems into macroeconomic policies to stimulate technological renewal (research and innovation policy). While the connection between higher education and innovation is critical for social and economic development, there is little knowledge on organisational practices and conditions under which research is produced.

Furthermore, the report examines the issues of capacity building in higher education and research and presents strategic areas to build capacity in research and innovation policy, drawing on the findings of a number of IHERD studies (Jacob, 2011, 2013, Hellström, 2013 and Olsson and Meek eds., 2013).

The following chapter provides an overview of the different types of funding mechanisms that are applied in developing countries. The most commonly used funding mechanisms are block grants predominantly concentrated on agriculture and health in a few public research institutions. There are, however, other emerging funding instruments that have the potential to strengthen developing countries’ capacity to implement research and innovation policies (Jacob, 2013). These include centres of excellence on the national level and access to global research through the participation in meta instruments, that is funding instruments that coordinate research funders across national borders (Hellström, 2013, Jacob, 2013).

The report then gives an overview of key opportunities and challenges that developing countries are facing in the advance of research universities. This part provides an overview of key areas requiring attention in the area of leadership and management of research and innovation policies (Olsson and Meek eds., 2013).

The subsequent chapter looks at the key focus of the report, exploring the current role of development assistance in addressing capacity-building needs for designing and implementing research and innovation policy. This is done by providing an overview of the history of development assistance to research, identifying the development assistance agencies, reviewing the
objectives and the governance of development assistance and its implications for higher education and research. This part shows that development assistance can be broadly grouped into four categories:

- Funding that supports countries’ ability to design and implement research policy
- Funding that supports research as a component of addressing specific socio-economic objectives
- Funding to basic research relevant for development
- Commissioned research to inform development assistance policies and programmes

Based on the results of a questionnaire survey on *development assistance to research* undertaken during 2012, and other IHERD studies (Jowi ed. 2013 and Jacob, 2011), this report finds that there is great variety and mix across funders with some placing a greater priority on research than others. Overall however, it is difficult to get a full picture of the research funding landscape in development assistance because of the lack of definition of what research encapsulates.

Finally opportunities and challenges of providing development assistance for research are identified and possible future action points are suggestions for developing countries and development assistance organisations to build research and innovation capacities.
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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>BRICS</td>
<td>Brazil, Russia, India, China and South Africa</td>
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<td>CoE</td>
<td>Centre of excellence</td>
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<td>DAC</td>
<td>Development Assistance Committee</td>
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<td>EC</td>
<td>European Commission</td>
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<td>ERA-NET</td>
<td>European Union instrument for coordinating and structuring the European</td>
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<td></td>
<td>Research Area</td>
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<td>EU</td>
<td>European Union</td>
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<td>GBAORD</td>
<td>Governmental budgetary allocations or outlays to research and development</td>
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<td>GOVERD</td>
<td>Government intramural expenditure on R&amp;D</td>
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<td>GCF</td>
<td>Green Climate Fund</td>
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<td>IFIs</td>
<td>International Financial Institutions</td>
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<td>IHERD</td>
<td>Higher Education and Research for Development</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IPCC</td>
<td>Panel on Climate Change</td>
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<td>IRD</td>
<td>Institute for Research and Development</td>
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<td>Meta instruments</td>
<td>Funding instrument instruments used for the purpose of coordinating</td>
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<td></td>
<td>research and innovation investments transnationally</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MAVC</td>
<td>Making All Voices Count</td>
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<td>NESTA</td>
<td>National Endowment for Science Technology and the Arts</td>
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<td>ODA</td>
<td>Official Development Assistance</td>
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<td>PAU</td>
<td>Pan-African University</td>
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<td>PhD</td>
<td>Doctor of Philosophy</td>
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<td>PRSP</td>
<td>Poverty Reduction Strategy Papers</td>
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<td>R&amp;D</td>
<td>Research and development</td>
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<td>S&amp;T</td>
<td>Science and technology</td>
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<td>STI</td>
<td>Science Technology and Innovation</td>
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<td>R&amp;I</td>
<td>Research and Innovation</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>DFID</td>
<td>Department for International Development</td>
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<td>Sida</td>
<td>Swedish International Development Assistance Agency</td>
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<td>IDRC</td>
<td>International Development Research Centre</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organisation</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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1. Introduction

This synthesis report aims to situate development assistance for research in the broader political and funding context and suggests strategic options that developing countries and development assistance donors can apply if aiming to strengthen developing countries’ ability to design and implement research and innovation policy.

This reports draws on the results from OECD/IHERD reports that have been commissioned as a part of the OECD project on Innovation, Higher Education and Research for Development (IHERD), financed by the Swedish International Development Cooperation Agency (Sida). These are:

- Report on funding mechanisms and modalities (Jacob, 2013),
- Centre of Excellence as a tool for capacity building (Hellström, 2013),
- Effectiveness of research and innovation management at policy and institutional levels in Cambodia, Malaysia, Thailand and Vietnam (Olsson and Meek eds., 2013)
- Governance of higher education and research policy: Comparative Analysis of Ghana, Kenya, Uganda (James Jowi ed., 2013)
- Issues Papers prepared for OECD/IHERD, notably Innovation and research policy (Jacob, 2011) and Higher education governance and institutional management (Meek, 2011)

In addition, the result of cooperation with the Society for Research into Higher Education, which resulted in a special issue in Studies in Higher Education on the theme “Research Universities: Networking the knowledge economy” has also contributed to this report.

This synthesis report is structured in the following way:

- Identifies the implications that the knowledge economy has had on research and innovation policy in developing countries
- Provides an overview of the different types of funding mechanisms that are applied in developing countries and shows the potential of emerging funding instruments in developing countries
- Presents an overview of key policy imperatives for building research universities in developing countries
- Gives an overview of the current role that development assistance plays in addressing capacity-building needs for designing and implementing research and innovation policy.
- Provides conclusions and recommends strategic options for developing countries and donors in providing development assistance for research and innovation policy.

The first part of this report provides insights on the implications that the knowledge economy has had on research and innovation policy in developing countries. Furthermore it gives our definition of capacity building in higher education and research and present strategic areas for building capacity in research and innovation policy. This part draws on the following reports: Issues Paper on Research and innovation Policy (Jacob, 2011), Report on research funding instruments and modalities (Jacob, 2013), Centre of Excellence as a tool for capacity-building (Hellström, 2013) and
The second part of this report provides an overview of the different types of funding mechanisms that are applied in developing countries and shows the potential of emerging funding instruments in developing countries. It reviews the most common funding mechanisms and shows the potential of centres of excellence as a funding mechanism for developing countries. Moreover, it provides an overview of the potential policy implications derived from the increased application of meta-instruments for developing countries. This part draws on the Report on research funding instruments and modalities (Jacob, 2013) and the report on Centre of Excellence as a tool for capacity-building (Hellström, 2013).

The subsequent section of this report gives insight on the influence of globalisation on universities in developing countries and provides an overview of key challenges with regard to institutional leadership and management in universities. This draws on the report on Effectiveness of research and innovation management at policy and institutional levels in Cambodia, Malaysia, Thailand and Vietnam (Olsson and Meek eds., 2013), the Special Issue: Research universities: Networking the knowledge economy, Studies in Higher Education and the Issues paper on Higher education governance and institutional management (Meek 2011).

Thereafter, the report gives an overview of the current and potential role that development assistance can play in addressing capacity-building needs for designing and implementing research and innovation policy at institutional and policy levels. This is done by providing an overview of the history of development assistance to research, identifying the development assistance agencies, reviewing the objectives and the governance of development assistance and its implications for higher education. It draws on the report on Higher education and research policy: Comparative Analysis of Ghana, Kenya, Uganda (Jowi ed., 2013) and the Special Issues paper on Research and Innovation Policy (Jacob, 2011) and a survey that the OECD/IHERD carried out during 2012 called the Landscape of development assistance to research.

Finally, opportunities and challenges of providing development assistance for research are identified and recommendations are made on possible points of action for developing countries and development assistance organisations to build research and innovation capacities.
2. Research and innovation policy as means for realising the knowledge economy?

Implications of the knowledge economy on research and innovation policy

The introduction of the knowledge economy has had qualitative implications for the way in which countries pursue economic development planning. One of the more significant consequences has been the attempt to integrate higher education and research systems into macroeconomic policies to stimulate technological renewal (research and innovation policy). During the past 20 years, the general trend has been to combine research and innovation in the same policy package. Research and innovation policy now differs radically from previous generations of science and technology policy in three key respects that resonate well with the needs of low and middle-income countries. These are that it:

- emphasises the need for universities and other public research providers to pursue research agendas that are anchored in the needs of the society which they inhabit
- promotes public-private partnerships as a key mechanism for achieving linkages between the economy and higher education and research
- embraces a system perspective.

The systems approach has resulted in a switch from policy instruments geared to support particular firms and technologies towards policies designed to foster ‘the conditions necessary for innovation’, an approach that has to some extent been accentuated by the financial crisis. Some of the concrete policy measures that arise from this approach include: building and maintaining infrastructures of innovation; agglomeration and network economies; the mobilisation of social as well as economic sources of flexibility and entrepreneurialism (Hay, 2004; Hirsch, 1991).

The system approach has been fruitful for both policy and sciences but it has also proven challenging for policymakers since they need to understand the prerequisites and context in which policies for innovation are being implemented. The connection between higher education and innovation is a critical linkage on which there is little knowledge and understanding as it has traditionally been a “black box” where it was thought that funders needed to know little of the details of the organisational practices and conditions under which research was produced. The shift from a linear to a system perspective and the corollary interest in increased steering has meant that research funding principals need to know more about agent organisations in order to design effective funding mechanisms.

For low income countries in the very early development stages, the focus on innovation systems has been exacerbated by the fact that many lack the necessary institutional apparatus for the model to be a relevant point of departure for planning and designing policies. The result has been a somewhat strange situation in which systems metaphors and models are employed to describe settings where the ambition to develop a system is only now emerging.
Capacity-building in higher education and research- what does that include?

There is no single definition of capacity building in both research and higher education. Over the years however a general understanding has developed whereby “capacity is [the] ability of individuals, organisations and systems to perform appropriate functions efficiently, effectively and sustainably” (UNESCO, 2005). In the development context this has come to define the way individuals, groups, institutions and societies strengthen their ability to perform core functions, solve problems and formulate and achieve objectives on the one hand, and to understand and deal with their development needs in a broad context and sustainable manner on the other hand (UNESCO, 2005; UNDP, 1997).

Capacity building in the research and higher education sector is crucial to all other sectors in that society (Bloom and Canning, 2005, Meek et al., 2009). This is an important point in the context of developing countries since public investments in research is often torn between (at least) two main goals; scientific goals, usually expressed as a desire to achieve international recognition and academic standing in branches of science, and social goals, which denote the aspiration to strengthen industrial capacity, educate the national workforce, including its leaders and decision makers, and address national challenges (Meek et al., 2009). This simple duality however is confounded by the argument that scientific capacity is a social goal and a key component of sustainable development and general social and institutional capacity building in developing countries. For example, Kearney (2009) outlines seven values that stem from research investments that may lead to social and economic capacity benefits:

- Contacts with international research
- Provision of local analysis and advice
- Identification of relevant research agendas
- Critical thinking in higher education
- Evidence-based criticism and debate for policy making
- Capacity to train future generations of researchers
- Stimulation of national innovation systems

The typical situation of developing countries is that research capacity is centralised at the larger higher education institutions, which are often the engines of local knowledge development and natural leaders of their own evolving academic systems. They then assume responsibility for fostering the national commitment to research, promoting a culture of inquiry, developing the capacity to utilise international research results, and assuring the acquisition of research skills. The business sector, especially in low-income countries, plays an insignificant role in these processes.

National and international research institutes and laboratories are other important research performers in developing countries. They typically conduct research in sectors that are considered priorities such as agriculture and health. The missions vary but they usually include applied research in specific niches, technology transfer and technology commercialisation and competence development of industry and policy makers. Other research performers include both governmental and non-governmental organisations.
Potential areas for improvement in research and innovation policy in developing countries

The content of research and innovation policy varies across countries but it always includes at least three components:

- A set of measures for stimulating and funding capacity development in science and technology
- Instruments for funding and steering research and development as well as promoting linkages between R&D and strategic needs of the nation state
- Mechanisms for improving the effectiveness of the innovation environment at the sectoral and firm level.

Many low-income countries have not prioritised investments in research and higher education. As a consequence they have weak research infrastructure, few academic researchers and performers and a heavy reliance on foreign funding for research. Governance is often centralised and evaluations are not tied to research performance.

There are also many developing countries with legacies of political and social instability. These legacies often mean that there are “sensitive topics” on which research is not generally encouraged. This implies that the identification of knowledge and skills gaps for research and innovation policies by universities, funding agencies and policy makers in developing countries cannot be completely de-contextualised from the political and social reality of the developing countries concerned.

A review of the literature reveals that the two strongest areas of research activity and funding in developing countries are agriculture and health, with transport and energy forming close seconds. These are also the areas with the most publicly available data. All four areas have high concentration of development cooperation funding. Digging deeper behind this general picture reveals a world of differences among developing countries, in particular in countries that have come a bit further in the development of their research capacities. Brazil for instance devotes 1.08% of its GDP to research of which 0.59 is governmental budgetary allocations or outlays to research and development (GBAORD), South Africa spends less than 1%, of which 0.39 is GBAORD and India provides 0.71% of which 0.47% is GBAORD.\(^1\) The variation in the level of public funding of R&D among the aforementioned countries is in no way a predictor of the capacity of the individual country to use R&D to achieve economic growth. Furthermore, high public investment in R&D is not a goal in itself but is best regarded as an investment in infrastructure for the knowledge base of the economy. There are however, other qualitative aspects related to the governance of R&D that may lead to improving the performance of developing countries, including:

- Strengthening the linkages between policy formulations and ambitions expressed in strategic documents and national development planning. There is thus the potential to encourage governments and leaders of research and innovation to translate policy ambitions into focused plans of action;
- Addressing the defragmentation and imbalance of the governance structure of research and innovation, including improved coordination between governmental agencies providing

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support for research and innovation. There is great potential to improve the effectiveness of national funding, budgeting and accountability mechanisms as these relate to research and innovation;

- Increasing the commitment and understanding amongst policy-makers about the critical linkages between national development and research and innovation. There is great potential to invest more heavily in capacity building and expand opportunities for research in public research institutions, in particular in research universities;
- Strengthening the knowledge and skills of policy-makers so they can adopt an evidence-based approach to research and innovation policy that is guided by strategic considerations;
- Strengthening the knowledge amongst policy makers and institutions about global research trends, policy settings and funding arrangements affecting research and innovation management and performance;
- Strengthening the knowledge amongst policy makers so that they appreciate the importance of institutional autonomy thus allowing universities to make a significant contribution to research and innovation;
- Committing to a national research ethics framework once countries develop their research capacities.
3. Types of funding mechanisms in developing countries to support research

The following is a discussion on funding instruments that can be implemented by governments in developing countries to encourage research systems within their country. This is differentiated from the discussion further in this paper on the types of funding mechanisms that donor countries utilise to encourage the development of research systems in developing countries. Similar mechanisms can be used, however there is a broader range of mechanisms at the donors’ disposal.

Competitive and non-competitive funding mechanisms for research

Most middle and low income countries use block grants (i.e. direct institutional allocations), although there are indications that this is changing. Block grants are the cheapest form of allocation and have the advantage of allowing better institutional planning. They also allow institutional autonomy for research performers and may function as a necessary corrective to steering. This corrective is functional as it is difficult for planners to foresee all kinds of research competences that may be required in the future. The block grant is also a good instrument for promoting bottom-up input. The initial logic underlying science policy dictated that competitively allocated funding would focus on strategic priorities, collaboration and so on, while block grant funding would be used to promote capacity building and basic research (Weinberg, 1963, 1964; Rahm et al., 2000; Stokes, 1997; Guston and Kenniston, 1994; Jacob and Hellström, 2012). This logic also fitted with the linear model of innovation that was the dominant orthodoxy. Many industrially developed countries have, however, reduced the portion of R&D funding allocated in this fashion for a number of reasons. Chief among these is the desire to increase the capacity to steer research funding more directly and to couple public research to specific societal objectives. Some countries have chosen to retain direct institutional allocations, but to make some portions of this funding performance sensitive. Thus far, most of these seem directed at increasing publication output as, despite the prevalence of rhetoric about relevance and social impact, bibliometric measures still dominate impact evaluations of research (Bozeman and Sarewitz, 2011;).

For countries with little or no publishing tradition this may prove an important investment, as increasing publication counts is a necessary prerequisite for accessing international networks. Issues such as access to large research infrastructures are also in part determined by scientific performance, thus some focus on scientific performance is necessary (OECD, 2001, 2010b). This should not, however, be confused with increasing the social accountability of science. In fact, there is reason to believe that integration into international markets for science may be best pursued selectively and not promoted as a country-wide strategy. One rationale for this is that, in many instances, the focus on publication in international journals and excellence comes at the expense of research on local issues. This trade-off may be observed in all countries, but resource constraints

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2 India has been very successful in leveraging access to scientific infrastructure in other countries as a means to building national capacity. This success was in part based on a combination of investments in local capacity development and the use of bilateral and internationalisation schemes (see Ramamurthy, 2011).
may imply that it is more intensely felt in middle and low income countries (Chataway et al., 2007; Leach and Waldman, 2009).

Allocation of research funding in a competitive based approach has several advantages for the principal (research agency, ministry, etc.). Chief among these is that it allows the funding allocations for research to be targeted at specific objectives in a way that direct institutional allocations cannot always achieve. Another is that since the peer review system is the usual mode of evaluation, the focus on competitive allocation, other things being equal, should lead to improved performance. The reasoning is that scientists need to compete with each other to attract funding. Two good examples of this are Russia and South Africa, both of whom are using competitive based funding to revitalise their respective scientific base. In both cases large grants targeted to excellent individuals and open to nationals and foreign scientists are used. The European Union has a similar approach which is run by the European Research Council. Although this grant is focused on basic science, it is not exclusively designed for this type of research.

These awards are necessarily large because they are aimed at top performers globally and need to include the possibility of relocating key team members, equipment, etc. While this is becoming an increasingly popular instrument as it offers several possibilities for fast forwarding capacity development, it may very well be beyond the reach of the poorest countries unless they are willing to restrict themselves to a few key areas of investment. Furthermore, many countries may fear that even if they invest in such a scheme, they may risk losing such personnel to a higher bidder in the next round. This is always a risk and to which there are no magic solutions. However, this type of investment is simultaneously strategic and pragmatic; the funding agency invests in a top researcher who will create a team which includes locals, this team must be provided with the conditions which would make all or some of them willing to stay. The more investments one makes, the less vulnerable future investments will be as capacity increases. In other words, the traditional prerequisites for capacity building remain even at this level of investment. Finally, here as with other areas of competitive funding, one needs to have fairly well developed local competence to be able to identify and evaluate potential candidates.

Research funding is becoming more globalised and with this has come an increasing degree of isomorphism at the level of practices and institutions. Centres of excellence are a good example of this and are undoubtedly the preferred instrument at the present time. While the centre of excellence instrument is unmatched for building capacity in a specific area, not all competences can or should be fostered in this fashion. For some types of infrastructural competences, such as research to support evidence-based policymaking, it may be both cheaper and wiser to build some of these competences regionally rather than nationally.

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3 The South African Research Chair scheme and the Russian mega grants. The Russian award is about 360 000 EUR for a period of two years with the possibility of extension for another two years.

4 European Research Council Advanced and Junior investigator awards.
Centre of excellence as a strategic funding mechanism for research and innovation?

Centre of excellence (CoEs) is, for the purpose of this report, described as a funding mechanism supporting organisational environments that strive for and succeed in developing high standards of conduct in a field of research, innovation or learning on the national level. They are often highly attractive of R&D investments and talent in their field. Therefore they also possess a high degree of absorptive and generative capacity in terms of new knowledge, which they ideally distribute and utilise in the form of new capacity in their field, be it research results, innovations or talent.

CoE funding instrument has been adopted by governments in many parts of the world, including some emerging economies such as India and South Africa. Since the objectives of CoEs converge with many of the objectives that less resourced developing countries have set up to achieve, OECD has carried out a study as a part of IHERD to review the extent to which they have the potential to build research capacity in strategic areas in developing countries that are currently building up their R&D capacity.

This study indicates that CoEs are typically geographically concentrated and focused on high potential or growth areas in science and industry, but they may also be virtual or distributed and consist of a network of cooperative partners with a coordinating centre. In terms of size, the operational definitions employed by some funders locate CoEs in the spectrum from the local R&D group up to semi-cohesive triple-helix networks on the regional level consisting of hundreds of researchers (Hellström, 2010).

Most CoE schemes converge on a number of academic and socio-economic goals, a common division being between Centre schemes that are largely intended to generate scientific excellence, those whose purpose it is to stimulate technological innovation in a sector, and those with more general social objectives, including policy support or regional development (Aksnes et al., 2012). In addition some CoEs are geared towards educational or learning goals. These are normally dealt with separately, but are increasingly part of the CoE framework, and should in any event be considered relevant to the developing country context. Common for all CoEs, regardless of strategic orientation, is the notion of excellence, and the particular requirements that come with that label. We will refer to some of these dimensions as objectives in this context since they are often also used to evaluate centre progress, high research quality and productivity, resource attraction and concentration, international visibility and attractiveness (including staff recruitment), and organisational robustness (good governance) (Orr et al., 2011; Aksnes et al, 2012). These are higher order criteria, and the strategic goals, be they in innovation or other social impacts, are expected to be furthered by these more general forms of excellence.

Based on case studies from six different countries, including Australia, Canada, India, New Zealand\(^5\), South Africa and Sweden, there are clear indications that, across the schemes and types, there is an

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\(^5\) The New Zealand case study was not commissioned by OECD but was an integrated part of Tomas Hellström’s research. Thus, results from this study is only summarised in the synthesis report.
emphasis on human resource development for the science and HEI system, as opposed to the traditional publication-output oriented emphasis of project funding. There is also a clear indication that these schemes require the professionalization of the research organisation (including funders) that may ultimately stimulate the research system as a whole away from piecemeal non-directed funding towards capacity for priority setting and more systematic evaluations of the research effort. All these are key research development capacities.

The results from the case studies indicate that CoEs may be an instrument for capacity building in so far as they have the potential to realise capacity for human resource development, enhance organisational capacity and create institutional and legal frameworks in the research and higher education field and also contribute to socio-economic objectives. It was also reasoned that the consolidation of resources does not necessarily imply a choice between a scientific and a social agenda, but could instead act to bridge these.

Finally, and perhaps most importantly for a national system that lacks critical mass in any one field of inquiry, the CoE approach, with its emphasis on resource concentration and inter-disciplinarity, addresses the three main challenges including dilution and redirection of possible resourcing for research; challenges posed by the rapid expansion of higher education to meet increasing demand, and fragmentation of research oriented action. The schemes reviewed here indeed suggest, both in terms of their strategic ambitions and impacts, that creating critical mass in research in a smaller number of carefully selected areas, can be done through the CoE approach.

The importance of meta instruments for developing countries

The term 'meta instruments' refers to instruments used for the purpose of coordinating research and innovation investments transnationally, thus in this report use of the term indicates that they are instruments for coordinating instruments. This differs from instruments that form the main focus of this report in two ways. The first is that the target group for meta instruments are research funders as opposed to research performing organisations. Secondly, meta instruments typically include a portfolio of research funding instruments. Some examples of meta instruments are:

- Canadian Networks of Centres of Excellence, an instrument for coordinating CoEs
- International Opportunities Fund, a Belmont Forum Initiative intended to promote multilateral collaboration and funding of research on global environmental change, this initiative is open to developing countries
- ERA-NETs, the European Union instrument for coordinating and structuring the European Research Area
- Joint Programming, the EU initiative for coordinating research calls in specific areas across national member states. This initiative is similar to the International Opportunities Fund but includes several different types of research areas.

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Meta instruments are worth the attention of developing countries for a number of reasons, the most significant of which shall be briefly outlined here. The first is that meta instruments represent the state of the art in research funding. They are indicative of a trend in national research funding towards facilitating global collaboration and promoting the conduct of research and innovation in open global networks. This trend does not provide a route past structural obstacles such as intellectual property, incommensurability at the level of national regulation etc. but it does increase collaboration and facilitate the transfer of knowledge across research systems. The high level of participation of emerging economies such as Brazil, India and South Africa in these types of arrangements is one way in which the research funding landscapes in these countries differ from those of developing economies.

A second characteristic of meta instruments which makes them attractive for developing countries is that they represent a learning opportunity through the exchange of knowledge between research councils *qua* collaborators rather than as aid recipient and donor. Thirdly, meta instruments provide a networking mechanism for research funders that is closely coupled with the science system. This opens up possibilities for research funders to share databases on review committees, calls, etc. This in turn increases the capacity of the funder on a national level.

Lastly, the collaboration embedded in meta instruments may constitute an important strategic step in accessing and/or widening extant research networks and networks of research funders. Access to research networks provides benefits which are well outlined elsewhere and so are not covered here, however it is the potential for policy learning that meta-instruments provides for middle and low income countries that is significant in this respect. In some cases, developing countries may want to create similar constellations at the regional level as a complement to their participation in more global networks. Many of the existing regional platforms in Latin America, Asia and Africa may be used to replicate these types of exercises.

Two important examples of meta instruments are ERA-Nets and joint programming. Both of these examples are taken from the European Union programmes and are open for third party and candidate country participation. ERA-Nets and Joint Programming Initiatives are intended to promote the development of transnational and joint strategies and/or programmes. This includes, amongst other things, common calls for proposals and transnational evaluation, dissemination and funding of research activities.

ERA-Nets include at least four dimensions:
- Systematic exchange of information & best practices
- Strategic activities
- Implementation of joint activities
- Transnational research activities

ERA-Nets are open to member states, associated states and candidate countries. Each ERA-Net must have at least 3 member or associated states of which at least two are member or candidate
associate states. ERA-Nets are open to developing countries if they partner with EU member countries. Additionally, the applicants must be:

- public bodies responsible for financing or managing research activities carried out at the national or regional level;
- other national or regional organisations that finance or manage such research activities;
- bodies operating at the European level that include as part of their mission the pan-European coordination of nationally-funded research.

Thus a key requirement for participation is that there is some type of research funding agency structure in the participant country. Most, but not all, middle and low-income countries have some type of basic research funding agency structure. A perusal of the current ERA-Nets reveals that there is already some emerging country participation notably Taiwan, Brazil and India. More importantly, some emerging economies have developed their own versions of ERA-Nets which are South-South in their orientation. These collaborations are interesting developments and should be monitored by both developing and developed countries as they represent enormous opportunities for innovation and creativity.

The objective of joint programming is to increase the value of relevant national and EU R&D funding through concerted and joint planning, implementation and evaluation of national research programmes". Extant joint programming initiatives focus on issues such as agriculture and land use, urban development, water and anti-microbial resistance among others. The strategic importance of these themes for middle and low income countries cannot be over-emphasised. Moreover, these areas have long been identified as prerequisites for innovation (Hall et al., 2001).

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4. Development of research universities in developing countries

A global outlook

Tertiary education has become a major industry worldwide through a dramatic expansion, with more than 200 million students, 40,000 post-secondary institutions and billions spent on the higher education enterprise. Today most countries have a range of academic institutions with different missions and the presence of the private sector within the higher education landscape has become an established reality. Expansion has brought diversity of purpose. Certain higher education institutions address the growing demand for access, both from national populations and international students. Others, notably research universities, align academic research to national economic growth and social development, thereby linking up to the national and global knowledge economy.

Research universities stand at the pinnacle of academic systems everywhere. They are central to a nation’s capacity both for research and advanced education. Furthermore, depending on their quality and resources, they are part of the new global knowledge economy and can attain “world-class” status. Top research universities in industrialised countries (often referred to as the Super RUs) usually dominate the global ranking tables. In contrast, their counterparts in middle and low-income countries have, if anything, more important missions because they are the engines of local knowledge development and natural leaders of their own evolving academic systems. As these systems become increasingly complex and the need to nurture knowledge networks for research grows ever more essential, the success of these institutions becomes more crucial for national development policy.

Since many universities now operate with multi-billion dollar budgets, their sheer scale requires highly competent leaders and managers. For research universities which aspire to be world-class in their performance, leadership presents special challenges in the present context of the knowledge economy. This role requires persons of exceptional talent whose responsibilities are multi-faceted, inter alia: defining a mission for the institution and its creative strategy for change in an evolving social context, responding to policy opportunities, protecting scholarship for quality research, encouraging bold experimentation in teaching and learning, forging alliances with stakeholders, spearheading fund-raising efforts and communicating the institution’s activities to concerned partners. This leadership agenda is realised through efficient and effective management strategies which clearly demonstrate the institution’s contribution to local and international development (Kearney and Yelland, 2010). However, although excellence in leadership and management assure good governance, two other components are also necessary, namely gifted faculty and students and solid resources. When all three conditions are present, an institution is equipped to perform at the best possible level so to enjoy “world-class” status (Salmi, 2009).

Globalisation, increasing international mobility and rapid technological change, while creating significant social benefits on a worldwide scale, also present significant challenges for developing
countries. For example, the cost of commercialisation of research products can be prohibitive in situations where an expensive bureaucracy is required to protect patents and to fend off counter-claims of ownership by well-funded global rivals; ‘brain drain’ can quickly whittle away many of the immediate benefits of years of public investment in building a reserve of highly trained researchers; and rapid technological change means that even keeping up with contemporary research in laboratory-based and technological fields requires on-going and ever-increasing expenditure on new items of equipment. These costs are difficult to sustain for developing economies.

Against the backdrop of these changes, management of R&D and innovation has emerged as a specialised area within both funding agencies and higher education institutions, creating two critical target groups for capacity-building for developing countries. Key areas include; managing funds, liaising with funding bodies, project planning, implementation, monitoring and evaluation, as well as publications, research dissemination and, in some cases, commercialisation.

The professionalization of higher education administrations has affected finance, student admission, building and grounds management - particularly in countries where there have already been substantial increases in institutional autonomy and changes to the governance arrangements within institutions (OECD, 2008). Moreover, higher education institutions are becoming increasingly dependent on research regarding the higher education system as a whole, (e.g. to help them better understand the external environment) in order to construct relevant strategic plans (stay in the game).

Today, leaders of research do not only have the responsibility for developing and implementing research policy at the institutional level, they also play a key role in ensuring that the researchers themselves have adequate skills in areas such as research grant writing, grant management, project planning, research team leadership, research student supervision, writing for publication, ethics, research dissemination and in some cases commercialisation.

In a strong institution, governance and management roles and boundaries will be clearly defined and respected and processes will be transparent. This ensures clear lines of accountability. The most important structural issue concerns where overall responsibility for the institution lies. In more devolved systems, responsibility lies with the Board or Council, which sets the broad parameters for the managers and ensures there is a good management structure. In centralised state-controlled systems, the Board or Council will be weak if it exists at all. Shifting to a more devolved system is likely to be a staged process, involving building the capacity of the institution’s managers.

The challenge for development is to build the skills and expertise of the research and innovation leaders and managers to help them ensure that the scarce research resources available to institutions are effectively deployed and managed, that is, adapted to the local policy context.
Leadership and management of public research institutions in developing countries

There are three levels in the overall coordination structures of higher education systems and institutions: ‘the overall system, the institution and the academic community’. The characteristics of these levels combine in different ways including three distinct or ‘ideal types’ of coordination based on state, market or academic authority. These broad coordination structures ‘define the role of institutional leaders, academic senates, individual faculty, central administration, and external stakeholders’. Over the last couple of decades, the global trend has been to shift away from state or academic authority towards that of the market. However, public research institutions cannot be successfully managed like other organisations. They remain professional bureaucracies, and managers and leaders violate basic academic norms and values at their peril.

In terms of leadership and management of higher education institutions in the context of developing countries some key features need attention:

- **Management of R&I**: There are differences between developing countries’ commitment to research. Some countries have adopted strategies of designating particular public universities to be research-intensive, which have also been given access to significantly larger amounts of public funding to support their research-intensiveness. For example in Malaysia and Thailand, increased resource allocation to research has had the effect of internal management structures to drive and support a research agenda being developed.

- **Leadership’s awareness of R&I settings**: In more developed research environments in developing countries, policy makers and institutional leaders tend to engage collaboratively with the task of assessing trends, reviewing policies and determining funding allocations. There is an emphasis on the use of committees through which multiple stakeholders can contribute to the discussion of R&I settings. A similar level of collaboration is not evident in countries with weaker research environments such as Vietnam and Cambodia. This also means that decisions are more often based on assumptions, values and personal experiences, than on systematically collected data.

- **Institutional governance of R&I**: With greater institutional autonomy and more research funding, research-intensive universities are in a better position to establish institutional governance and management systems that enable them to engage meaningfully in long-term planning, to make staffing appointments that support a research culture, to reward research achievements, and to implement policies and processes in support of a research culture and ethos. In countries that do not provide autonomy and appropriate resource allocations, these progresses are much more slow.

- **Establishing a research culture and ethos**: Universities in developing countries that have higher levels of commitment to research are surprisingly not better equipped to support the development of a research culture and ethos. One challenge that remains is to boost this
culture in all public universities. In contrast, in other developing countries with weaker research universities it is harder to develop a research culture, not least because university lecturers receive low levels of salaries. To supplement their income, academic staff members from public universities often take second jobs teaching at private universities, teach in in-service and other non-regular programs, or undertake paid after-hours tutoring for students. There is little or no time for research, which is much less financially rewarding.

- **Organisational structure:** Public universities in developing countries usually have organisational structures to support the leadership of research. Typically, these involve the appointment of a member of the institution’s executive team to provide leadership of the research agenda. This position is supported structurally by other appointments across faculties and schools, and administratively by functional departments. In less research intensive universities, effects of these arrangements are however significantly constrained by limited funds.

- **Research management and administration:** Research-intensive universities in developing countries are not much better resourced for establishing research management and administration systems than less resourced universities, such as in Vietnam or Cambodia.

- **Commercialisation of R&I:** There is increasing pressure on public universities and research institutes to commercialise research. Offices for the commercialisation of research products are being established in many universities, making it a mainstream activity. However, in research-intensive universities in particular, there is the need for more up-skilling of academic staff members so that they become aware of the possibilities for commercialisation and are better able to master the relevant procedures.

- **Management of research personnel:** Structures and processes for the management of research personnel are becoming well established in some of the more research-intensive universities in developing countries. Models being developed in these universities are impacting on other universities in the same country. A distinctive characteristic of these models is the emphasis placed on research publications and success in obtaining research grants as foundations for career progression. In some less research intensive universities, a research culture is slowly becoming established, and management processes are placing more emphasis on research productivity. However, in countries like Cambodia, the research culture in universities is not yet strong enough for these developments.

- **Management of research students:** The mechanisms for supporting research students often exist and many universities have research student support offices that, to varying degrees, provide administrative, mentoring and training support. The level of support varies across universities and countries.

- **Development of research leadership:** Differences across countries are evident. The pathway to research leadership in Malaysia and Thailand are similar to those in most developed
countries – the accumulation of research experience, publishing success and success in obtaining research funds. The pathway to senior research leadership in countries with weaker research culture is different. For example, in Vietnam, the requirements for institutional leadership are the same across all areas of university life: nomination by the institutional Communist Party Committee to attend an advanced political theory program conducted by the Party, successful completion of a public administration program conducted by a National Institute of Politics and Public Administration, followed by success in obtaining a passing grade in a Senior Staff Testing Program. Vietnam’s Confucian legacy is evident in its attachment to the importance of an examination to attain high office, but so too is the extent of political control exercised by the Party. As noted in the country case study there may, therefore, be research managers in Vietnam who have never undertaken any formal research management training, and who may not have even been screened for personal qualities and behaviours that research managers usually require to be effective.
5. Potential roles for development assistance in research and innovation policy

Overview of development assistance to research

Against the background of the current funding landscape of research and innovation and the current gaps in research and innovation policy implementation, what is the potential role that development assistance can play?

Historical overview

Development assistance to higher education and research was first initiated in the 1950s and 1960s under the lead of the U.S and European countries. The European countries focused initially on Latin America but support was subsequently also provided to Africa and Asia partly due to their colonial history. The U.S provided support to research and higher education as a mechanism to counter communist influence whereas the Nordic countries that did not have a colonial past provided support to higher education as a part of national building projects with a specific focus on the newly independent African countries (Hydén, 2010)

In the early years of development assistance to higher education and research support was provided to three main areas:

- Research infrastructure (such as university buildings, laboratories and other necessary equipment)
- Technical assistance (provision of academic staff with the largest contingents from America and UK)
- Scholarships for students to study at American and European universities, including the Soviet Union.

In the 1980s funders of development assistance did not prioritise support to higher education and research because they were seen as expensive investment paths providing benefits to a small, privileged group of people. During this time, many developing countries were led by military administrations, which did not favour academic freedom and autonomy. Governments subsequently cut funding to higher education and research. In parallel, the World Bank, followed by the international donor community, took the view that only primary education could serve as a driver of broad social development. This view was expressed at the Jomtien World Conference on Education for All (1990) and the 2000 World Education Forum on Basic Education in Dakar. This resulted in sharp cuts to higher education and research, with the World Bank’s investment in higher education dropping to its lowest level in 2001 (Jowi, 2013).

During the same period, under the leadership of James Wolfensohn, the World Bank started to change its approach by launching itself as the “knowledge bank” in response to the emergence of the knowledge economy which is characterised by increased investments in knowledge industries.
across the world, including higher education and advanced training. The 1998 World Development Report was titled *Knowledge and Development* and in 2000 the World Bank published a report together with UNESCO arguing that higher education in developing countries needed more attention, because even if investments would not guarantee rapid development, sustained progress was impossible without it. Even if the effects of this new direction were not immediate, the foundations for increased funding to higher education and research were provided for in the context of the emerging knowledge economy (Jowi, 2013).

Last year the World Bank launched itself as a “Solutions bank” under the leadership of Jim Yong Kim, indicating its intention to move away from banking and loans to the provision of advice and technical assistance to donors and developing countries. This should be viewed against the changing nature of the capital market, which has had the long-term effect of decreasing the demand for loans from the World Bank.  

In addition to this overall landscape, new actors are emerging in the support to research and higher education in developing counties, previously only a concern of Western funders. The shift in the global economy and increased wealth creation in Asia and the Gulf countries open up the possibilities of investment from new sources. At this stage it appears that the new funders predominantly focus on research infrastructure, which has to a large extent been ignored by traditional donors, but is of high importance especially in Africa where the research infrastructure is under-developed. China is also becoming increasingly active by offering fellowships for scientists to come to Chinese universities for a specific time. The Republic of Korea is also an emerging donor in this area (Hydén, 2010).

**What are the development assistance agencies?**

**Overall picture**

It is possible to distinguish between two different types of development assistance (ODA) actors:

- *Bilateral agencies*, including governmental agencies that have the mandate to channel funds to developing countries.
- *Multilateral organisations* that provide development assistance. These organisations have specific mandates directed by international treaties or conventions that member governments have signed.

The largest bilateral agencies are situated in North America, Europe and Japan, such as USAID and DFID. The European Commission’s ODA agencies are also considered bilateral because they support countries that are not members of the European Union. The biggest share of development assistance is directed towards governments in developing countries.

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The term multilateral organisation refers to those institutions that belong to the United Nations (UN), the governance of which follows the principal of one vote per country. It is important to note that the World Bank and the regional development banks, including the Inter-American Development Bank, African Development Bank, and Asian Development Bank are technically a part of the UN system but are governed by weighted shares held by member states. They offer loans and technical assistance for development purposes. These are called International Financial Institutions (IFIs). The World Bank and the International Monetary Fund (IMF) are also referred to as Bretton Woods Institutions. However, the IMF is not directly involved in development; rather its purpose is to promote international monetary cooperation.

**Who is supporting research in development assistance?**

An overall picture of development assistance for research is missing. Research often does not figure as one specific sector in development assistance. Instead, research is predominantly located in aid budgets under education, or in the case where the organisation has little focus on research, it is categorised according to the sector that the research is conducted in, for example agriculture. For this reason, it is not possible to retrieve data on the major donors of research in the OECD DAC statistics.

However, attempts have been made to rank donor’s support to research. A study conducted by the Overseas Development Institute in 2007 indicates that the Bill and Melinda Gates Foundation was the largest funder to development research in 2006, followed by USAID, European Union, IRD, DFID, Wellcome Trust, Sida, Medical Research Council UK, IDRC and World Bank. This highlights the variety in funders for research, with foundations, national governments, multilateral organisations and research councils all present in the top ten funders.

Regardless of the lack of data, the volume of development assistance for research is not a sufficient indicator for drawing a full picture of the landscape of development assistance. The first obvious obstacle is that a general definition on what is considered to be support to research is missing. The consequence of this approach is that the classification of projects as research can vary across organisations. For example some donors include research-like activities that are commissioned by the donor, and others do not. Expenditure is also likely to be a poor indicator of the volume and quality of research produced given the huge variation in the costs of employing researchers in different countries, and the extent to which researcher’s overhead and other costs are covered by other sources of funds.

Based on a review of foreign assistance for research (Annex 1) we have differentiated donors of research from a qualitative perspective. Development assistance providers could largely be split into four different groups; those who predominantly support countries’ ability to design and implement research and innovation policy, those who predominantly support research as a component of addressing specific socio-economic objectives, those who predominantly provide aid for basic research that is relevant for development, and those who commission research to inform
development assistance policies and programmes. Although a research funder may target a range of these objectives, as they are not mutually exclusive, they have been grouped according to the objective that is most predominant.

Over the years the World Bank has had an interest in promoting science and technology for development but several analyses during the 1990s and early 2000 criticised it for lacking a systemic policy framework and organisational capacity for promoting science and technology (Dahlman, 1995). Between 1980 and 2004, the World Bank lent USD 8.6 billion to support science and technology through 647 projects. At this time approximately one in 50 of the Bank's lending projects was principally concerned with improving capacities in science and technology (Crawford et al., 2006). Furthermore, World Bank support to science and technology in the higher education sectors has been limited for decades and predominantly targeted at middle-income countries (Watson et al., 2003). However, the global landscape has shifted and the World Bank has gradually changed its approach, now recognising the importance of capacity building in science, technology and innovation for achieving the MDGs and reducing poverty (World Bank, 2007).

Likewise, the International Development Banks have for the most part supported research as one component of larger projects or as technical assistance. However, there are signs that this approach is also shifting. For example, in 2008 the African Development Bank issued a Strategy for Higher Education and Technology that was aimed at accelerating sustainable economic growth through capacity development and strengthening science and technology in African countries (AfDB, 2008). Another important donor that shapes the agenda for development assistance to research is the European Commission. The European Development Fund (EDF) is one of the core European instruments for providing technical and financial assistance to developing countries and the 10th EDF (2008-2013) has increased the importance of science and research. The total indicative budget for science and research of the 10th EDF intra-ACP programme (2008-2013) is €130 million which represents a large increase compared to the 9th EDF intra-ACP programme which allocated €76.35 million for science and research (EC, 2008-2013).⁹

Objectives and governance of development assistance and its implications on higher education and research

Over the last decade two global policy frameworks have been important for shaping development assistance, including:

- Millennium Development Goals (MDGs)
- Paris Declaration on Aid Effectiveness

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The Millennium Development Goals (MDGs) were officially adopted at the Millennium Summit of the United Nations in 2000 with the target date set at 2015. The MDGs have directed aid priorities during the past decade, ranging from eradicating extreme poverty and hunger, to ensuring environmental sustainability, to developing a global partnership for development. After 2015, the Millennium Development Goals (MDGs) will be replaced by Sustainable development goals, which will build upon the MDGs.  

Prior to the adoption of the MDGs, development assistant actors had commenced a process to decide upon ways that both donors of development assistance and recipients could become more effective. In 2005 the Paris Declaration on Aid Effectiveness was adopted marking the first coordinated approach between donors and recipients to agree on a set of measurable and time-bound commitments for making aid more effective. All OECD Development Assistance Committee (DAC) members are committed to implementing these principles, having reiterated their commitments in 2008 at the Third High Level Forum in Accra. At the Fourth High Level Forum on Aid Effectiveness in Busan in 2011 all new comers to development assistance were encouraged to follow the same principles outlined in Paris and Accra.

**Implications on policies and resources allocation**

It is difficult to assess the extent to which the existence of the MDGs has affected resource allocation by donors. It is clear however, that the proportion of aid directed to the productive sector (not directly covered by the MDGs) has fallen, and the proportion to social sectors (well-covered by the MDGs) has risen. The relative emphasis on universal basic education may have been stimulated by the MDGs at the expense of tertiary education and vocational training (Manning, 2010).

Countries have agreed to principles aimed at delivering better development assistance as a result of the influence of the Paris Agenda on policy. The level of implementation depends however on a number of factors. Chief amongst these are the policy objectives of development assistance, which also influence the way in which the responsibilities for policy and implementation are constructed. For instance, the responsibility for policy and implementation varies considerably across countries, ranging from concentrated systems where a single ministry or agency is responsible for both policy and implementation, to fragmented systems, with many institutions and ministries. Countries that have relatively concentrated systems are Australia, Ireland, Luxembourg, the UK and Nordic countries. In contrast France, Germany, Greece, Japan, Portugal and the US have fairly fragmented systems. In the US for example, 27 public institutions are involved in development cooperation, 11 in Japan; and in Portugal 16 central government ministries and various municipalities (OECD, 2011b).

Principles and actions agreed upon in the Paris Agenda are:

- concentrating efforts to priority countries, sectors and programmes,

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• decentralisation of development assistance administration to recipient countries
• increased focus on result orientation and
• increased predictability of aid flows

However, all these principles have to be viewed against the policy and implementation structure of development in the donor country. This results in the level of implementation varying greatly across agencies.

The overall trend in development assistance is to support fewer but bigger projects to reduce transaction costs. This helps development assistance agencies align with country priorities and improve co-ordination with other donors. DAC members are also starting to avoid stand-alone projects, ensuring that projects are closely linked to larger programmes. At the same time some DAC members argue that the commitment of increasing aid volumes to meet international commitments makes it difficult to focus on a few low-income countries and specific sectors and programmes due to their limited capacity to absorb large volumes of aid (OECD, 2011b).

Another trend that can be observed in DAC donors, in particular the UK and US, is that they are placing greater emphasis on grassroots initiatives and civil society organisations in addition to the support provided to governments. However, the overall tendency seems not to be to re-establish a strong focus on the role of higher education institutions and public research organisations (OECD, 2011b).

**Implications of the overall framework on higher education and research**

Although the MDGs and the Paris Agenda have not paid specific attention to the importance of higher education, research and innovation, there are a number of indirect factors that can potentially have implications on the relative importance of higher education and research for the future.

First, it is increasingly being recognised that there is a need to strengthen the quality of basic education. This requires by necessity that teachers are well educated, which is in turn dependent on the ability of the higher education system to deliver high quality education for teachers. This also requires sufficiently skilled staff at the higher education institutions.

Second, the increased push towards evidence-based policy making and the call for demonstrating results, has in some cases had the effect of creating the requirement that programmes in development assistance be underpinned by scientific evidence. This is the case in DFID who has integrated assessment into all funding mechanisms. This approach requires that research has already been carried out on key policy issues in different local contexts, in turn requiring that resources are provided to research relevant to development.

Third, against the backdrop of the increasing effects of climate change, the academic community has been called upon to provide the world with a clear scientific view on the current state of knowledge
in climate change and its potential environmental and socio-economic impacts. The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for this work. Because of its scientific and intergovernmental nature, the IPCC provides rigorous and balanced scientific information to decision makers and by endorsing the IPCC reports, governments acknowledge the authority of their scientific content. In 2010 the Green Climate Fund (GCF) was established as an operating entity of the financial mechanism of the United Nations Framework Convention on Climate Change. The GCF is founded as a mechanism to transfer money from the developed to the developing world in order to assist developing countries with adaptation and mitigation practises to counter climate change, which will require the involvement of the scientific community, not least from developing countries. The objective is to raise $100 billion a year by 2020. To kick-start environmental projects, a Fast Start Funding of the GCF was agreed, encompassing $30 billion for the period 2010-2012.12

Fourth, most developing countries have started to integrate research and innovation policies into their economic development planning in addition to key elements addressed in the MDGs. The effect of this dual track of priorities on development assistance is yet to be seen. There is the potential to integrate efforts to strengthen countries’ higher education, research and innovation capacities in the Poverty Reduction Strategy Papers (PRSP), which constitute the key strategic documents for setting the priorities for funders in development assistance, including the World Bank and bilateral and multilateral development assistance agencies (Meek et al, 2009).

Objectives, funding and evaluation mechanisms in development assistance to research

Objectives of funding research in development assistance

The support in development assistance can be broadly grouped into four categories:
- Funding that supports countries’ ability to design and implement research policy
- Funding that supports research as a component of addressing specific socio-economic objectives
- Funding to basic research relevant for development
- Commissioned research to inform development assistance policies and programmes

The following examples delve into what could be included in these broad funding objectives and discuss the development assistance actors that utilise each.

Support to strengthen countries’ ability to design and implement research policy: One of the key challenges for higher education institutions in developing countries is to increase the number of qualified academic staff with PhDs at the speed required to meet the demands of expanding a higher education system that delivers quality education at the same time as developing a critical mass of academic researchers that can reproduce research capacity. Many developing countries have weak research institutions and are not able to build the necessary capacity on their own, thus

12 http://gcfund.net/home.html
requiring support from outside. However, it has proven to be increasingly difficult to recruit and attract academic researchers for assignments that require them to support local capacity building in developing countries. There are many reasons for this but most importantly, scientists are increasingly assessed on the basis of their scientific performance and are thus reluctant to commit to engagements that may impede their own performance. Engaging in unequal partnerships with the aim of building local research capacity in a developing county may not be a preferred career choice for many scientists, however there is no magic solution to this challenge.

In addition to increasing the number of people with PhDs there are a number of other objectives that donors in development assistance aim to address in the support to countries that are building up their research capacity. Some examples include:

- Expanding the opportunities to conduct research for established researchers
- Accessing scientific journals at a reduced price
- Reforming administrative systems within universities and public research institutions
- Strengthening research infrastructure such as libraries and laboratories
- Supporting Ministries, including research funding organisations to strengthen their capacity to administer and manage research funding
- Strengthening the leadership and management of public research organisations
- The provision of technical assistance for reforming governmental agencies and research organisations
- Initiatives directed at supporting the dissemination and use of research
- Improving countries capacity to gather data relevant for STI

Typically, the support measures strengthening governance and research infrastructure are underpinned by the objectives and strategies set up by governments and research institutions.

This first group applies to funders that undertake a more holistic approach often including a variety of funding instruments targeting the governmental level, research institutions, non-governmental organisations and individuals. Examples of these countries include Sweden, Norway and Canada.

**Funding to research as a component of addressing specific socio-economic objectives:** Achieving this objective involves an integrated approach in which research makes up one component of a larger development programme aiming to address specific development goals such as the MDGs. Research that is integrated as one component in a wider programme aiming to achieve specific socio-economic objectives that does not consider scientific achievements or achievements related to institutional capacity building as justifiable results in themselves, is not likely to contribute to strengthening recipient countries’ ability to design and implement research policy. Nevertheless, these funding mechanisms could be important for individual academic researchers that need to supplement their income with consultancy work because the remuneration is too low in their universities. In some cases, participation in projects and programmes of this nature could also provide access to the international community, depending on how the assignments are constructed. One example of this approach is the Grand Challenge for Development initiative set up by the US. One of the grand challenges identified is called “Making All
Voices Count (MAVC)", with an initial funding of USD 45 million over four years to support innovative ideas that improve citizens’ engagement with governments. One of the support windows is directed at promoting research to build an evidence base around available applications.

Policymakers’ increased focus on linking investments in higher education and research to economic development and innovation opens up possibilities for new approaches and funding mechanisms supporting development. The African Union has recently, with the support of the World Bank, launched two initiatives; the Centre of Excellence Initiative in Central and West Africa and the Pan-African University. In addition, the African Union has initiated the African Research Grant, which should be seen as the first step towards the establishment of an African Research Framework Programme.

Common to all these initiatives is that they support applied research of relevance to development and that they should link closely to regional economic development. To link research to innovation is however a demanding task and the fact that many developing countries have weak research capacity has implications on the effectiveness of this approach, at least at the country or regional level. It may be worthwhile to study some of the policy lessons that OECD countries have gained from the last thirty years of experimentation and implementation of innovation policies. One of the lessons in this regard is that the road from the laboratory to the market or the intended beneficiary is one that has to be populated with several support points to ensure that the result arrives at the intended destination. Furthermore, practise in developed countries shows that moving results from the laboratory to the market is best done at the national rather than regional level. This suggests that regional funding instruments addressing the link between research and innovation need to be accompanied by national commitments to have the intended effect (Woods et. al 2013).

**Funding to basic research relevant for development:** Funders in development assistance apply different approaches to support basic research relevant for development. Some issues open calls in cooperation jointly with other research funding organisations such as the Medical Research Council UK and Australian Centre for International Agricultural Research. Others establish institutes or laboratories such as IRD in France. Common for all however is that funding is directed to well established research organisations and scholars. One challenge of this funding objective is to decide what is relevant to development. This is not clearly established and since many of the world’s challenges are global in nature, more and more research funded by other sources is relevant for development. This is particularly demonstrated by the increased application of Meta instruments referred to earlier in this report.

To achieve this objective funders often apply competitive funding mechanisms to support individual researchers or research groups located in research organisations. Development assistance actors frequently cooperate with national funding organisations, including research councils, or support specific research organisations. Examples include; Finland, France, Portugal, UK.

**Commissioned research to inform development assistance policies and programmes:** This funding mechanism is often applied by bilateral and multilateral organisations, frequently with the
organisation in question undertaking the research. Usually, the purpose is to inform key policy challenges in specific sectors and find ways to address these with the view to design and implement more effective development assistance programmes. Common funding mechanisms are competitive grants for specific time-bound assignments, technical assistance and country reviews. Examples of organisations applying this approach are UN organisations, regional development banks and Ireland.

**Funding mechanisms for research as a part of development assistance**

Financing science and research has traditionally been treated as a rather uncomplicated matter amongst R&D funders and partners in development assistance alike. Against the increased call for efficiency and transparency, it is likely that competitive funding mechanisms in development assistance will be applied to support research. A number of countries are already in the process of increasing the portion of competitive funding within their funding mechanisms. This in turn requires a better understanding of the advantages and disadvantages of different types of funding instruments and modalities and the relationship between them.

The type of funding instrument used is also an important aspect of research assistance for a number of reasons including that a great deal of extra costs can be incurred if the instrument and purpose are mismatched. The degree of freedom for steering research funding and for coupling public research to specific societal goals is also affected.

There are a number of funding instruments that are applied in development assistance to support research, the most commonly used are:

- **Scholarships** (stipends): Funding to support the completion of a university level qualification (Bachelors, Master, PhD or post Doctorate).

- **Programme/project based**: Projects have well defined target groups and usually require that the recipient give a detailed account of objectives, potential results and beneficiaries as well as a time frame. This category also refers to what is typically referred to as a programme; a portfolio of projects grouped together under one theme and conducted by a collaborating group of actors. Research funders may use the term to describe either a group of projects that they are administering under one heading or to describe a group of projects from the recipient perspective.

- **Core/block funding**: funding provided to an organisation allowing it to support its own strategic plans and objectives with few specific requirements.

- **Technical Assistance**: the provision of expertise and training (OECD, DAC 2012).

- **Loans and guarantees**: transfers for which repayment is required. Only loans with maturities of over one year are included in DAC statistics. To be qualified as ODA, loans must be concessional in character and have a grant element of at least 25 per cent (OECD, 2008). Guarantees are when an
organisation provides assurance of a minimum purchase price for an innovation or supports access to loans by reducing risk.

**Centre of excellence**: Larger and longer term funding to support excellence within an established entity (see section 3.2)

The target groups for development assistance include:

**Individuals**: incorporates funding to students, researchers operating independently and in some cases lecturers. It can also refer to students from the donor country receiving a scholarship to study development in their home country.

**Consortia**: the pooling of funds and management amongst a group of researchers or funders

**Organisational support**: incorporates universities, public, independent and private institutes and foundations. The organisational level can refer to anything from institutional management to research grants being offered to the institution. Further work breaking down this category would be beneficial.

**Policy level**: refers to programmes targeting the government or ministerial level. These generally aim to build capacity within the ministry, rather than impacting upon institutional management across organisations.

**Multilateral/International Level**: any funding directed to an organisation, institute or consortium that crosses over national boundaries

It appears that donors that aim to support recipient countries’ ability to design and implement research and innovation policy often apply a mix of funding instruments and typically support a mixed group of actors.

On the other hand, donors in development assistance that predominantly support research as an integrated component typically apply project/programme support and/or technical assistance. The target group varies but could include governments, multilaterals, civil society organisations, and consortia of a mixed set of actors.

Donors that predominantly support the advancement of basic research relevant for development provide support through competitive scholarships and project/programme support. Support often targets individual researchers located at research institutions.

**Assessment processes of research in development assistance and its implication on relevance and excellence**

Research landscapes in developing countries vary considerably in terms of the organisational set up for research. There is reason to believe that it is important to cultivate a mix of two traits with
respect to research performing organisations; that there is some degree of co-location of research tasks and that there is at least some diversity in the types of research organisations. The co-location issue is critical as the best available evidence suggests that excellent basic research capacity is dependent on a variety of stimuli and problems. In addition, applied research quickly runs into quality problems if kept distinct from basic research (Nedeva, 2012). Thus, facilitating contact between basic and applied science, commissioned corporate research and publicly funded basic research is necessary to maintain excellence.

The implementation of funding instruments for research by development assistance donors varies greatly across countries. This is partly dependent on the overall aid infrastructure of research and the research landscape in the recipient country.

In countries where development assistance is integrated in a centralised development agency, it is more likely that the assessment process follows the general assessment criteria of the organisation. Typically, these will focus on aspects such as expected outcomes, relevance, effectiveness, feasibility and sustainability. In contrast, in cases where research is delegated to a national research council or a research implementing organisation, it is more likely that the emphasis is on scientific quality, including key features such as the definition of the scientific problem, the significance of the project for the research field, the research design, the composition of the research groups and research results. Naturally, a hybrid of these various approaches exists and is deployed differently across countries and institutions.

While different assessment criteria is not a problem in itself, it does create the risk that in cases where the relative emphasis is directed towards general development goals, scientists may get the impression that relevance is more important than scientific quality. As a funder, it may be useful to try to maintain the link between relevance and scientific quality as much as possible in order to reduce the risk that funding is seen as creating two-track research capacity: relevance and excellence. In Sweden a recent change has been to move towards strengthening the scientific quality of Swedish development research by delegating the responsibility of management and implementation to the Swedish Research Council.

**Evaluation of the support to research**

Evaluation of research has always been a contested area. Peer review is the oldest and most well respected form of review for research. However, it is not unproblematic and newcomers to the funding research should note that there are several complex issues with direct implications for practice. Additionally, evaluation methods, like instruments have a range of modalities for implementation, such as design of review committees.  

13 [http://vrdirect.vr.se/](http://vrdirect.vr.se/) (Criteria from the VR application system)

14 [http://www.sidaresearch.se/media/8266/guidelines%20for%20applying%20organisations.pdf](http://www.sidaresearch.se/media/8266/guidelines%20for%20applying%20organisations.pdf)

A commonly used approach for assessing, monitoring and evaluating projects and programmes in development assistance is the application of a method called result based management. This method is practiced across the different areas of development assistance and includes key concepts such as objectives, indicators to measure outcomes/impact and outputs/activities. While this is likely to be a useful instrument in many cases, the question is to what extent it is an appropriate instrument for assessing and monitoring all types of support instruments for research. For example, funding mechanisms supporting basic research and those supporting research infrastructure are very different in character and might need different assessment processes.
6. Opportunities and challenges for support to research and innovation policy in developing countries

Conclusions

The governance of public R&D has become more difficult because while research financing remains for the most part national, research is being conducted in increasingly transnational and global networks. There are indications that cutting edge research is best conceptualised not in terms of national research systems but in terms of research spaces which are transnational and virtual in character (Nedeva, 2010). This insight only heightens the importance and urgency of the need for national investments as the most robust research results available from research and innovation policy studies tell us that a strong and well performing national system is:

- a prerequisite for entry and participation in these newly emerging transnational research spaces and
- the most reliable means of promoting economic growth and innovation.

In the context of low income countries, being situated at the early stage of building research capacity necessitates a primary focus on acquiring the critical mass of S&T personnel required to meet the most immediate local needs such as the production of students, etc. Given the paucity of resources available in these settings, many capacity building efforts will have to depend on donor input to some extent, however it should be emphasised that this is an unsustainable route.

It is important that low-income countries take ownership of capacity building efforts through defining goals and investing their own resources. This report clearly shows that it is risky to rely too heavily on development assistance. One of the main reasons for this is that priorities set in development assistance are dependent on donor country political priorities which can change over time or misalign with individual country priorities. From this overview it is also clear that there are very few holistic funders that apply funding mechanisms that support a country's ability to design and implement research and innovation policy. Furthermore, research funding in development assistance is fragmented and has a strong bias towards scholarships. While scholarships are an important funding mechanism they are not enough to build national research capacity. Moreover, in times of weak financial recovery and increased pressure to demonstrate tangible results, support to research, a long-term commitment, might be perceived as being too high risk as results are not immediate and the effect on poverty reduction is difficult to derive.

On the other hand, many developing countries now recognise the importance of innovation, higher education and research for development. Most countries have policies and strategies that have been integrated into their economic development plans. However, there seems to be a gap between policy intentions and the capacity to implement them. This presents an opportunity for developing countries and donors to address these gaps through bilateral and multilateral cooperation.

Moreover, it is evident that in many developing countries there is an urgent need to raise the quality of basic education. To do this countries need strong higher education institutions, an area
that both developing countries and donors in development assistance can address. Lastly, the effects of climate change are affecting many developing countries. World leaders have called upon the academic research community to find ways to address these. If developing countries are expected to contribute nationally and internationally, they need to strengthen their own scientific base. This provides an opportunity for joint actions and collaborations across borders.

**Further reflections on an action agenda**

Developing a critical mass of researchers is a long-term commitment for nations and requires investments over a considerable period of time. An overview of literature and the case studies commissioned as a part of the OECD/IHERD programme shows that most developing countries have committed to strengthening their research and innovation capacities.

Despite great variations across different developing countries and the differences in political undertakings, it appears that in general a large number of developing countries are committed to developing their R&I capacity.

This synthesis report points to a number of strategies that developing countries can adopt to increase their capacity to design and implement research and innovation policies, including:

- Policy makers in general need to become better informed about the national importance of making a stronger commitment to research and innovation (R&I) by investing more heavily in capacity building and the expansion of opportunities for research in universities.
- Governments in developing countries need to increase the resource allocation to research and/or strengthen the coherence of public research funding to improve efficiency across the system.
- Policy makers and institutional leaders need to become better informed about global research trends, policy settings and funding arrangements affecting R&I management.
- Policy makers need to be assisted in developing skills in creating R&I policies that are evidence-based and informed by strategic considerations.
- Research funding organisations should consider applying a mix of funding instruments and modalities that are both competitive and non-competitive.
- Exploring the possibility of applying a funding mechanism supporting centres of excellence as an instrument for pooling resources at the national level.
- Encouraging national funding organisations to participate in transnational funding initiatives (Meta instruments).
- Policy makers need to develop an appreciation of the training needs of researchers in universities and research institutes, particularly when it comes to the process of commercialisation.
- Policy makers need to develop a better appreciation of how important institutional autonomy is to universities if universities are to be expected to make a significant contribution to R&I.
Research managers and administrators within universities and research institutes need more support for the development of knowledge and skills related to their responsibilities.

It seems that there is a need to strengthen the skills and knowledge across countries on how to design and implement research and innovation policy. This is an absolute requirement if governments and institutional leaders are required to take ownership and reform this highly complex policy area. Different approaches can be applied to achieve this objective. One way forward could, for example, be to develop knowledge and skills both for developing countries and donors on evidence-based approaches for implementing research and innovation policies. Because of the relatively small community of leaders and managers in research at the policy and institutional level it might be fruitful to initiate collaboration across regions.

A practical example on how to operate these efforts could be to develop certified executive training courses that have the objective of providing a structured overview of STI policy (theory and practice) and a structured forum for policy learning and exchange of ideas. These would target professionals in charge of research funding at the policy level and research leaders and managers at institutional levels. The courses would be comprised of a mix of lectures and exercises designed to put the course participants’ experiences, challenges and interests at the centre of the learning experience. So as to enhance accessibility and flexibility, a mixed mode of online and face-to-face delivery should be explored. In this fashion countries and donors would develop their own expertise and it would give the research leaders and managers access to a regional network of professionals in similar positions.
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Annex 1. Study on foreign assistance for research

Author: Natalie Cooke

Capacity building in the research and higher education sector is crucial for other sectors in that society (Bloom and Canning, 2005, Meek et al., 2009). This is an important point in the context of developing countries since public investment in research is often torn between (at least) two main goals; scientific goals, usually expressed as a desire to achieve international recognition and academic standing in branches of science, and social goals, which denote the aspiration to strengthen industrial capacity, educate the national workforce, including its leaders and decision makers, and address national challenges (Meek et al., 2009). This simple duality however is confounded by the argument that scientific capacity is a social goal and a key component of sustainable development and general social and institutional capacity building in developing countries.

Despite the importance of higher education and research for development, research is not a predominant aid funding sector, receiving only a small portion of ODA funding. There are many reasons for this, including that higher education, research and innovation have not been prioritised in Poverty reduction strategy papers. Both bilateral and multilateral donors focus on research for development, albeit to different extents depending on the organisation's overall foreign aid objectives. Within this, assistance for research can be split according to the targeted beneficiary. Knowledge on this allows one to determine the specific objective of research assistance. Furthermore, the funding mechanism utilised can affect the achievable objectives of the funding.

This study aims to map the landscape of foreign assistance for research, both bilateral and multilateral, by:

- assessing the objectives of foreign assistance for research,
- determining the targets and key beneficiaries of funding for research; and
- evaluating the funding mechanisms utilised by aid agencies for research funding.

This paper proceeds as follows:

- Discusses what development assistance for research is, in particular the difficulties related to measuring and defining research
- Explains the methodology used in the survey on bilateral donors and review of multilateral organisations and the definitions of different beneficiaries and funding mechanisms.
- Deliberates the objectives of aid donors in research and differentiates them accordingly
- Analyses bilateral and multilateral assistance for research according to target groups of funding and discusses the various funding mechanisms used to achieve this
- Explores the trends and gaps in development assistance to research of recent years according to target groups, location of recipient organisation and funding mechanisms, in particular scholarships and technical assistance
- Draws conclusions on the current landscape of development assistance and makes suggestions regarding future action
1. What is Development assistance for research?

Classifying aid to research is not an easy task. There is no generally accepted definition of development research and what it encapsulates. This makes it difficult to study foreign assistance for research and draw comparisons across funders, but also makes it difficult for countries to draw guidance from each other. The absence of an agreed definition, coupled with a lack of acknowledgement of research as an important area for development, has resulted in many bilateral organisations failing to include research as an independent sector or budget line. Rather, research is often located in aid budgets under education, or in cases where the organisation has little focus on research it is categorised according to the sector that the research is conducted in, for example agriculture, making it difficult to determine the exact amount of funding spent on research. This is particularly the case where assistance is decentralised across a number of government departments or public research institutes.

The problem is reiterated on the international level where research is not included in the World Bank, Asian Development Bank, African Development Bank or the OECD DAC statistics as a defined sector or thematic area. In addition, if the policies of multilateral organisations influence country policies as seen in some countries, the absence of a strong culture of utilising and encouraging research for development at the multilateral level can influence the extent to which research is incorporated in bilateral aid programmes.

Aid donors have different approaches for supporting research. Some are focused on supporting a countries' ability to design and implement research policy, while others support basic and applied research that is relevant for development, or commission research to inform development assistance policies. However, overall very few donors in development assistance apply a systemic approach to research funding which involves targeting a range of beneficiaries (individual researchers, organisations and policy makers) and utilising a variety of funding mechanisms, such as block funding and competitive funding.

One recent example of a donor that has utilised the systemic approach is the Australian Agency for International development (AusAID). AusAID has recently implemented a programme that targets the three beneficiaries in the Indonesian research system with the goal of Indonesia having the capacity to develop effective and socially accountable policies that meet priority development needs. The modelling of this programme is unique and acts as a strong example of a programme that targets all actors within the research system in a systemic way to build the system as a whole, rather than building capacity within one target group with the expectation that this group will impart their knowledge on other actors in the research system.
Box 1: Australia’s Knowledge Sector Programme

The Knowledge Sector Programme aims at using a whole-of system approach to build the capacity of the Indonesian research system. The programme will help Indonesia to develop its “knowledge sector” – the institutional landscape of government, private sector, and civil society organisations that provide research and analysis to support the development of public policy. It will work at both the national and sub-national levels in sequence, with a time frame of approximately 15 years.

The Programme will build capacity within the following four pillars; supply, demand, intermediaries and the enabling environment. It will do this through a mix of dialogue, analysis and investments in each area. An overarching governance structure will help shape and calibrate the programme to respond appropriately to changing appetites and opportunities for reform within each of the pillars. Furthermore, the Programme will not operate in isolation but sit within a broader program of AusAID support to building policy capacity in Indonesia.

The programme is structured as follows:

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A variety of funding mechanisms are utilised for the programme including core funding, programme assistance, linkages to the Australian Scholarship Programme and the possibility of the use of technical assistance.

Source: AusAID, 2012b
2. Methodology

Study of Bilateral Donors

The assessment of foreign assistance for research from bilateral donors was undertaken through a survey entitled ‘The landscape of development assistance in support of research and development in developing countries’ which selected OECD member countries were requested to complete. This survey looked at two key areas:

- the broader funding landscape of development assistance to research and development, which included questions on the amount of overall funding, support for capacity development and key objectives; and
- the target group and funding modality of support. Countries were required to select the beneficiaries of research assistance and the funding mechanisms used to target each.

This survey was sent to members of Ministries, Delegations and Higher Education specialists in 22 OECD countries. 8 completed surveys were received (Austria, Finland, France, Greece, Ireland, Japan, Portugal and Switzerland) and in-depth case studies were conducted on Sweden and Canada. Of the remaining countries, research has been undertaken on the research assistance strategies of 4 countries (Australia, Norway, United Kingdom and the United States). These countries were selected due to their size and the implementation of innovative research programmes. Thus results of the study are based on 14 countries. New Zealand also replied to the survey stating that research was not a focus of their aid programme and funding was minimal, thus they did not complete the survey.

Once results were collated, aid programmes were categorised according to the target group or beneficiary of the funding. The target groups used were: the individual level, consortia, the organisational level, the policy level and the international level. In addition, data was collected on the funding mechanisms used such as whether scholarships (stipends), programme/project based, core/block funding, technical assistance, loans and guarantees or centres of excellence were utilised. A further discussion on this can be found in the section ‘Assessing Donors’.

Categorisation of countries according to target groups and funding mechanisms is based on the second part of the survey. Where the country in question did not complete the survey, or responses were not clear, the OECD determined such groupings according to information on the country's foreign assistance website and/or evaluations or programme documents. In the case where funding benefitted two of the above groups both were considered targets.

Due to the short time span of this study countries have not been consulted to clarify the results shown, thus they do not purport to be definitive. However the study does give an indication of the types of research assistance provided and the funding instruments utilised. Furthermore, this survey is mainly concerned with development agencies. Some countries provided detailed information about activities funded by other ministries which were included in the results.
However, as this was not standard practice across all responses there is the possibility that results would change markedly if further information was collected.

**Study of Multilateral Donors**

A review of the Multilateral Organisations has also been undertaken with the aim of establishing the target groups and funding instruments. As none of the organisations studied have a designated sector or theme for research, key words were used to determine whether a project should be classified as falling under the category of foreign assistance for research. Three Multilateral organisations have been studied using their online database of projects; World Bank, Asian Development Bank and the African Development Bank. In each of these cases the search query ‘research’ was used. These results were further refined by selecting projects according to whether key terms are found in the title or objective (World Bank) or Project Outcome where the objectives are not listed (Asian Development Bank) as a proxy to determine whether research is a key priority of the project. The key terms are:

- Research
- Higher education/tertiary education
- Innovation policy
- Science and Technology policy
- Knowledge
- Laboratory
- Centre of Excellence
- Post-graduate
- Graduates
- University

Only programmes that were operational as at May 2013 and which started after January 2005 were considered. Relevant projects were placed in a database and studied to assess the final aim of the funding- whether it aims at improving research capacity or policy in the developing country, or whether it involved conducting an independent study on a societal goal.

**Assessing donors**

As two different methods were used to assess countries and multilaterals the results should not be compared too closely. The aim of this study is not to determine the ‘best’ organisation; rather it is to get an understanding of the landscape of assistance for research.

Research assistance provided by bilateral and multilateral donors was categorised according to a number of factors. These factors were chosen to allow a study of the qualitative dimensions of the support for research. Firstly, all funding is split according to its location, whether it was located in an OECD country or a developing country. In all cases the location of the lead institution is used to indicate its location, for example if a programme involves a university in a developed country
partnering with a university in a developing country, the location of this programme will be determined by the university that receives the funding and acts as the coordinator. In the case of individuals, if a person from a developing country receives a scholarship to study in an OECD country this is classified as being located in the OECD country.

For both bilateral and multilateral donors funding was categorised as belonging to one of the following target groups;

**Individuals**: incorporates funding to students, researchers operating individually and in some cases teachers. It also refers to students from the donor countries receiving a scholarship to study development if considered to be ODA funding by the donor.

**Consortia**: the pooling of funds and management across a group of researchers or funders.

**Organisational level**: incorporates universities, public, independent and private institutes, centres of excellence, non-government organisations and foundations. The organisational level can refer to anything from institutional management to research grants being offered to the institution. Further work breaking down this category would be beneficial.

**Policy level**: refers to programmes targeting the ministerial level. These generally aim to build capacity within the ministry, rather than impacting upon institutional management across organisations.

**Multilateral/International Level**: any funding directed to an organisation, institute or consortium that crosses over national boundaries.

The type of funding instrument used is also an important aspect of research assistance for a number of reasons, including that a great deal of extra costs can be incurred if the instrument and purpose are mismatched. The degree of freedom for steering research funding and the ability to couple public research with specific societal goals is also affected (Jacob, 2013). The funding mechanisms have been categorised as follows:

**Scholarships** (stipends): Funding to support the completion of a university level qualification (Bachelors, Master, PhD or post Doctorate).

**Programme/project based**: Projects have well defined target groups and usually require that the recipient give a detailed account of objectives, potential results and beneficiaries as well as time frame. This category also includes what is typically referred to as a programme; a portfolio of projects grouped together under one theme and conducted by a collaborating group of actors. Research funders may use the term to describe either a group of projects that they are administering under one heading or to describe a group of projects from the recipient perspective.
**Core/block funding:** funding provided to an organisation allowing it to support its own strategic plans and objectives with few specific requirements.

**Technical Assistance:** the provision of expertise and training (OECD, DAC 2012).

**Loans and guarantees:** transfers for which repayment is required. Only loans with maturities of over one year are included in DAC statistics. To be qualified as ODA, loans must be concessional in character and have a grant element of at least 25 per cent (OECD, 2008). Guarantees are when an organisation provides assurance of a minimum purchase price for an innovation or supports access to loans by reducing risk.

**Centre of excellence:** Larger and longer term funding to support excellence within an institution (see Hellstrom, 2013).

If joint planning has been listed as the funding mechanism, it has been allocated to programme funding. Competitive calls and commissioned studies are split according to the type of funding used in each specific case, if unknown it has been allocated as programme funding. In the case of loans provided by multilateral organisations the conditions placed on such funding have not been considered. It is possible that these conditions have an impact on the outcome of the programme thus it is an area that could be further investigated in future studies.

There are a number of potential problems with the data collected, particularly in relation to the amount of spending on research. Some donors include research-like activities that are commissioned by the donor, and others do not, some donors account for building research capacity, while others exclude this category. In addition, some donors include activities targeted at the university level in general while others do not. Expenditure is also likely to be a poor indicator of the volume and quality of “research” produced given the huge variation in the costs of employing researchers in different countries, and the extent to which researcher’s overhead and other costs are covered by other sources of funds. Despite these issues, an effort has still been made to map assistance to research to act as a guide for aid agencies. Further in-depth studies of research assistance would be beneficial to increase the understanding of country and multilateral research strategies.
4. Objectives of development assistance for research

Support for research provided by development assistance agencies can be broadly grouped into four categories:

- Funding that supports countries' ability to design and implement research policy
- Funding that supports research as a component of addressing specific socio-economic objectives
- Funding to basic research relevant for development
- Commissioned research to inform development assistance policies and programmes

Based on the survey research donors have been qualitatively differentiated according which of the above objectives was predominantly targeted in their programmes.

The first group applies to funders that undertake a more systemic and holistic approach, often including a variety of funding instruments that target the policy level, research institutions, non-governmental organisations and individuals. Examples of these countries include Sweden, Norway and Canada. The second group involves an integrated approach in which research makes up one component of a larger development programme that aims to address specific development goals such as the MDGs. The World Bank is an example of this group. However, more and more initiatives are applying an integrated approach where research is one component. One example of this is the Grand Challenges for Development managed by USAID. 16

The third group, funders of basic research relevant for development, often applies competitive funding mechanisms to support individual researchers or research groups located in research organisations. Development assistance actors frequently cooperate with national funding organisations, including research councils, or support specific research organisations. Examples include; Finland, France, Portugal and UK. Finally, research commissioned to inform development assistance policies and programmes is a commonly applied mechanism amongst many development assistance organisations. Common funding mechanisms are competitive grants for specific time-bound assignments, technical assistance and country reviews. Examples of organisations applying this approach are UN organisations, regional development banks and Ireland.

It is important to note that these categories are not mutually exclusive and many funders cross a range of categories, however in many cases one of the above objectives is the priority.

16 http://www.usaid.gov/grandchallenges
5. Bilateral assistance for research

Results from the survey show that there is a large amount of variety in the amount of funding for research provided by countries. A slight increase in funding to research was evident over the period 2006-2011 across all countries. The largest spender on research was France, with the Institut de recherché pour le développement operating a budget of approximately €230 million. This amount does not include the amount that the Ministry of Foreign Affairs or the French Development Agency spends on research. Canada also has a significant research budget, with the annual revenue of the International Development Research Centre amounting to CAD 287.8m in 2011-2012. It is clear from this study that countries with the greatest focus on research for development have created research agencies that are separate from the countries aid agency, thus encouraging specialisation on this level.

The following discusses the focus of bilateral funding assistance according to target beneficiaries and funding mechanisms to draw a picture of the landscape of foreign assistance for research.

Individual Level

Many countries have traditionally had a strong focus on funding the individual level, particularly targeting students, but also individual researchers. However, the number of programmes and consequently the amount of funding on this level has decreased in recent years. Few countries now specifically target individuals in their research funding, the exception being scholarship funding for students which has decreased in importance, but is still a major area of research funding.

In many cases the decreased focus on the individual level is a result of a shift in country strategies that purport that it is more efficient to support the organisational level than the individual, as this has the potential to have a larger impact and will be more efficient at building national research capacity. Norway has merged two programmes to move capacity building beyond individual students and researchers to address the broader institutional environment. Norway argues that strategic investments in higher education and research in low and middle income countries pay off in the form of strong academic institutions and their resulting societal engagement. This in turn contributes to the development of country intellectual resources, competent workforces, visionary leaders, gender equality and human rights and in the long run to evidence based policies and decisions that enhance sustainable economic, social and environmental development (Norad, 2012).

The individual level has been difficult to assess within this study due to the organisation of contractual agreements. That is, even if funding is aimed at one specific researcher conducting a study, the agreement will often be between the individual’s employer and the donor, thus causing it to be included in the organisational level.
**Scholarships**

Where individuals are targeted it is frequently through the use of scholarships, with almost all aid programmes implementing this form of aid. Few countries target the Bachelor level, more common is the use of scholarships to target Masters and PhD students. A number of countries also target their own nationals through scholarship programmes for the study of development at the tertiary level. In addition, Sweden implements a number of programmes for Swedish students to complete an internship, undertake field work or an exchange programme in a developing country.\(^{17}\)

Individuals receive a large portion of funding from some providers through the use of scholarships. PhD students received on average 60% of France's IRD budget between 2006 and 2011. More significantly, during this time an average of 90% of Greece's ODA was allocated to scholarships on the Masters, PhD and Post-doctorate level, while in 2011 this figure was 99%. Considerable funding is also provided by Australia for scholarships with AusAID planning to spend AUD 425 million on scholarships and multi-sector training in 2013-14, approximately 36% of its funding for education.\(^ {18}\)

Most scholarship programmes take place within the donor country with the requirement that the student return to their home country for a certain time at the end of their degree. Some countries are moving away from such a model however, and placing a greater priority on providing scholarships for studies in the student's country or region. Norway has been particularly focussed on this, with studies taking place in Norway now a 'last resort' (Norad, 2007).

The shift away from individuals has also occurred in relation to scholarships. Many countries have reformed, downsized or completely abolished their scholarship programmes in recent years after reviewing their impact (OECD, 2012). In the review of the Austrian Scholarship program conducted in 2007, it was stated that:

> Though the scholarship programs are generally well and efficiently managed and can be further improved, the overall justification of scholarship programmes implemented in Austria as key instrument and backbone for the implementation of sector policy education and for pursuing international goals (MDGs etc), strategies or national priorities remains highly questionable

The Austrian Aid Agency heeded this advice and modified its assistance to have a greater focus on the institutional capacity building than on individuals. The Agency did however create a new mechanism to target students; joint degree programmes. Austria and the Netherlands are together implementing a joint degree programme with Kenya in Limnology and Wetland Management. This Masters programme is aimed at mid-career professionals and involves them studying at Egerton

\(^{17}\) [http://www.sida.se/English/Partners/Universities-and-research/Applying-for-research-support-do-you-qualify/Sida-sponsored-scholarships-for-students-and-teachers/](http://www.sida.se/English/Partners/Universities-and-research/Applying-for-research-support-do-you-qualify/Sida-sponsored-scholarships-for-students-and-teachers/)

University, the University of Natural Resources and Life Sciences, Vienna and UNESCO-IHE, Institute for Water Education, The Netherlands each for a period of four months, followed by 6 months of writing a thesis in one of the above countries or the student's home country. The aim of the joint studies is to utilise the comparative advantage of each respective university and with regards to studies in Kenya, to study this in a tropical, developing country context. Students from a number of countries in Africa are eligible for fellowships to complete the course, however it appears that these cannot be applied for prior to admission. It is unclear whether there is a quota system in place for the number of students from developing countries to be admitted to the course. If not, a further study on whether students from developing countries have equal access to the programme would be beneficial.

**Consortia**

Groups of individuals are very rarely targeted by aid agencies. This is likely due to the fact that most groups of individuals operate within a university or institute, thus the organisation appears to be the target, rather than the group of individuals.

Consortia are however frequently used to group organisations and funders on the international level which will be discussed below.

**Organisational Level**

Aid agencies frequently target the organisational level, particularly since the strategic shift towards building capacity on this level. Universities and public institutes are the most common recipients; with few countries lacking engagement with these organisations. A key trend is the targeting of organisations in the donor country, engaging them in development research or in leading research programmes in partnership with developing countries.

When only assessing funding to organisations located in developing countries, the most common target groups, universities and public research institutes, remains unchanged. Organisations in developing countries are frequently targeted by donors, however the value of funding and number of programmes targeting organisations appears to be much more significant in the OECD countries, reinforcing the bias towards OECD country institutions in the development context.

Of the universities in developing countries receiving foreign assistance, there are some that receive funding from a number of countries (Makerere University in Uganda, Egerton University in Kenya and Eduardo Mondlane University in Mozambique). Makerere University receives aid from many donors including Austria, Norway, Sweden and the United States. The United States supports Makerere University through the Development Lab: ResilientAfrica. Makerere will lead ResilientAfrica, an international partnership that will apply science and technology to improve the resilience of African communities against natural and political stresses. The programme involves uniting 20 African universities to form a network to empower African communities.19

these universities is with the aim of making some leading universities in the region. Public funding of a number of these universities is very low, lower per student than for other universities in their country. This suggests that the strong donor presence may be crowding out public investment in universities. Despite this, without the presence of aid funding these universities would not be able to reach the standards of excellence that they are aiming to achieve.

Most countries target organisations through the establishment of joint funding partnerships between organisations in the donor country and an organisation in the recipient country. These are often on a competitive basis, with funding applications required. In most cases the organisation in the donor country takes the lead. That is, they are in charge of the funding and take a lead role in the development of research structures, questions etc. In general the purpose of this is to ensure that the donor country plays a lead role in finding solutions to global problems and provides guidance for capacity building, while monitoring funding provided and increasing the publication rate of recipient universities.

A limited number of organisations have adjusted their strategies and have shifted the planning and funding of joint partnerships to the developing country partner organisation. In Norway’s NORHED programme, partnerships coordinated by the Norwegian institution are considered to be a last resort. Agreements are signed with and managed by a South-based institution on behalf of the partnership. Prior to this an assessment of the institutional capacity of the South-based institution is undertaken to ensure that the partner is capable of undertaking the responsibilities required of a lead partner (Norad, 2012). This method of instituting partnerships is seen as an efficient way of building local ownership and capacity development in South-based institutions.

Non-profit and independent research organisations receive less funding than universities and public research institutes, particularly in the developing country context. This appears to be changing however with a move towards the funding of think tanks by many countries (Box 2).

Private organisations are not frequently listed as recipients of donor money for research. If they are listed, it is often foundations being referred to. Major foundations that receive funding are the Gates Foundation and Wellcome Trust. These foundations also operate many programmes in developing countries to build research capacity, with the Gates foundation being the largest research funder in 2006. Both the Gates Foundation and the William and Flora Hewitt Foundation have been very active in the Think Tank Initiative managed by IDRC, by together providing the majority of funding for phase I (Box 2).
# Box 2: Think Tank Initiative

The Think Tank Initiative is composed of five partner organisations that have committed $CA 113 million funding for the first phase, and that share in the governance of the initiative:

- $42 million - William and Flora Hewlett Foundation
- $42 million - Bill and Melinda Gates Foundation
- $14 million - IDRC (Canada)
- $9 million - DFID (UK)
- $6 million DGIS (Netherlands)

The aim overall goal of the programme is to strengthen the capacity of independent policy research organisations in the developing world. The programme aims to provide Southern policy research organisations with the support required to improve the quality of their research, the effectiveness of their organisations, and their interactions with policymakers, civil society and the media, allowing them to increase their impact on social and economic policies.

The programme’s approach to capacity development is grounded in six principles:

- Focus on impact, and contribute to practice, to create relevant experiences
- Generate sharing and participation, from and between the think tanks
- Stimulate demand for more engagement, and build habits of looking for available resources
- Demonstrate success, to accelerate change
- Design for the user, always making sure that material is understandable and coherent
- Reach the broader community, including those that are not funded by TTI

Among other activities the Initiative supports peer-to-peer review, learning and exchange by bringing together the funded institutions and outside experts. Funding, in the shape of long-term core grants, is combined with dedicated technical support in three broad areas:

- Research methods and skills
- Policy engagement and communication
- General organisational development

Current recipients - 51 think tanks in 23 countries that meet specific criteria such as a degree of both political openness and policy research capacity.

- East Africa: Ethiopia, Kenya, Rwanda, Tanzania, Uganda
- West Africa: Benin, Burkina Faso, Ghana, Mali, Nigeria, Senegal
- Latin America: Bolivia, Ecuador, el Salvador, Guatemala, Honduras, Paraguay, Peru
- South Asia: Bangladesh, India, Nepal, Pakistan, Sri Lanka

A diverse set of research themes are being pursued in these think tanks, including:

- Development
- Economics
- Environment and Natural Resources
- Food and agriculture
- Governance
- Health
- Information and Communication
- Science and Technology

*Source: Halliwell 2012*
**Funding mechanisms**

Funding on the organisational level is generally in the form of programme funding, however some countries also use a mix of technical assistance, core funding and grants. Some countries only use core funding to target organisations in OECD countries and use programme funding or competitive grants for developing country counterparts. However, in some instances core contributions make up a large portion of funding for developing countries, a greater portion than that aimed at donor country organisations. Finland states that it provides programme funding to domestic organisations and core funding to organisations in developing countries. Switzerland also has a similar policy, with 42.5% of funding to organisations in the South or East being unearmarked, compared to 18.4% of funding for Swiss-based organisations. AusAID, in its implementation of the Knowledge Sector Program in Indonesia has used core funding for research organisations. AusAID argues that the scarcity of core funding limits the organisations' opportunities to develop an independent research agenda and retain and develop top-quality research staff.

It appears that there is no focus on centres of excellence as a funding instrument by bilateral donors. Australia provides some funding to the Institute for Health Policy, which is stated as being a centre of excellence in Sri Lanka. However, in this case the funding is in the form of a grant rather than a centre of excellence.

Technical assistance is a popular funding instrument for a number of organisations. This is France's main funding instrument (with the exception of scholarships). In most cases French researchers are embedded in partner institutions such as universities, institutes or international organisations for a period of 3-6 years to impart knowledge on local staff with the aim of advancing cutting edge research, supporting capacity building and increasing linkages and cooperation between the research community and industry.

**Policy level**

The policy level is not often targeted by donor agencies. Only five countries that were reviewed target this level through the support of ministries in developing countries. These programmes appear to be small in scope compared to programmes targeting organisations and when donors do target this level they often only target one or two recipient countries, rather than all priority countries.

The donors that do target this level tend to fit into the first group of funders; those with the objective of funding programmes that support a country’s ability to design and implement research policy, often with a systemic and holistic approach to research funding. Thus targeting the policy level normally links with programmes targeting other levels of the research system as seen in the case of Australia in Box 1.

Programme funding is the instrument frequently utilised to target the policy level, allowing the donor to maintain strong control over the outcomes to be achieved. There are some countries that
also use technical assistance, however it appears that this is not very frequent in the case of research funding.

**International Level**

Countries provide the largest amount of funding for research to the international level. 46.8% of research funding from the Swiss Development Agency went to multilateral organisations and other organisations with international membership in 2007-08 (Swiss evaluation). Funding to international organisations is most often provided to the World Bank, the World Health Organisation (WHO) and various organisations within the United Nations, with an emphasis on UNESCO and UNDP. The support that the World Bank in turn provides to developing countries will be discussed below.

International Public research organisations also receive a large amount of funding. The largest recipient is CGIAR, who receives core funding from all countries surveyed. CGIAR received 31% of Switzerland’s foreign assistance, or 12 million CHF, in 2008 making up a substantial portion of its funding to international organisations. As of April 2013 CGIAR had confirmed receipt of USD 152.6 million towards its 2013 budget, with the expectation that more funding would be confirmed in the near future.

CGIAR’s vision is to reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience through high-quality international agricultural research, partnership and leadership. This is supported by three strategic objectives:

- **Food for people**: create and accelerate sustainable increases in the productivity and production of healthy food by and for the poor
- **Environment for people**: conserve, enhance and sustainably use natural resources and biodiversity to improve the livelihoods of the poor in response to climate change and other factors
- **Policies for people**: Promote policy and institutional change that will stimulate agricultural growth and equity to benefit the poor, especially rural women and other disadvantaged groups

Only a few countries provided funds to international organisations that have their headquarters in developing countries. The predominant recipient of this funding was ICDDR based in Bangladesh. Funding is also provided to CGIAR’s consortiums, some of which are located in developing countries. However, as these fall under the umbrella of CGIAR they have been categorised under organisations located in developed countries.

Some aid agencies have started collaborating to create larger and more focussed capacity building research programmes. Australia currently has government level agreements or agency level memoranda of understanding with the following countries: Canada, EU, France, Germany, Japan,

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20 [http://www.cgiarfund.org/node/33](http://www.cgiarfund.org/node/33)
New Zealand, Republic of Korea, United Kingdom and the US. This is just one example of the interconnectedness on the donor level. Furthermore, there are research-oriented programmes being operated by a collaboration of countries such as the Think Tank Initiative discussed in Box 2. In addition, the ERA-Net Programmes operated by some European Union members are also frequently used consortia. The ERA-Nets, such as SPLASH, operate as a consortium with EU member countries voluntarily contributing resources to selected Nets. The SPLASH program is supported by a number of survey respondents and is outlined in Box 3.

**Box 3: Splash**

SPLASH is the European Union Water Initiative Research Area Network. It is a consortium of 16 ministries, funding agencies and national research and technological development authorities from 11 European countries.

Within the context of water and sanitation research SPLASH:
- Coordinates between existing programmes to minimise duplication and identify gaps
- Ensures that good research management practice is known and used
- Improves knowledge sharing between researchers and practitioners to speed up the transfer of research findings into policy and practice
- Agrees to a research agenda and jointly funded activities which can benefit from a transnational approach, with European partners working together

Source: [http://www.splash-era.net/](http://www.splash-era.net/)

Funding to international organisations and public research institutes is generally in the form of core funding through pre-existing core funding agreements between international organisations and countries. The agreements do not always specify a contribution to research, however all international organisations are undertaking research of some form. In addition to core funding, programme funding is provided if a donor country has a specific programme that it would like to contribute to. Programme funding is used in the case of international non-government research institutes.

**The European Union**

The EU has a holistic approach, operating programmes that target individuals through scholarships, universities by strengthening institutional management and implementing structural changes to help the recipient organisation converge with the EU system, create centres of excellence, whilst also implementing programmes that aim to build infrastructure for research institutions. For example, the Tien3 programme in EurAsia intended to bridge the digital divide of less developed countries in Asia by improving the Internet connectivity for research and education institutions.\(^{21}\) The programme provided high capacity Internet connection to universities, research centres and

\(^{21}\) [http://www.tein3.net/Pages/home.aspx](http://www.tein3.net/Pages/home.aspx)
institutions to increase the exchange of knowledge amongst them and make important international projects realistic. With the range and holistic nature of the EU programmes being operated it is very difficult to specify exactly who the target group is and the funding mechanisms used in each programme.

The EU utilises scholarships and technical and scientific training to target individuals, while it frequently uses programme funding to target other beneficiaries. The EU also uses mechanisms such as joint-funding, the creation of networks and the exchange of experiences.
6. Multilateral Organisations’ support for research

The research programs of three multilateral organisations were assessed in this study: the World Bank, Asian Development Bank and the African Development Bank. Of these the World Bank is by far the largest provider of support to research.

The World Bank has implemented a number of programmes targeting research and higher education institutions. Many of these programmes are holistic in that they target a number of elements of research capacity. The majority of programmes operated by the World Bank target the institutional management of the organisational level. This involves strengthening the higher education system in the country by improving the quality of actors, the curricula being taught, and restructuring university linkages and systems in individual institutions. An example of the World Bank’s support is the Africa Centres of Excellence Initiative to be launched in July 2013 through which it will spend US $430 million to strengthen capacity in universities in West and Central Africa (Tongai, 2013).

The Asian Development Bank also has a large number of projects that fit the criteria outlined in the methodology, however a large number of these projects, particularly those on the regional level, tend to be more focused on commissioning research to achieve other societal goals through the use of a short term technical assistance, rather than building up the research capacity of a target group. For example, the Enhancing Economic Analysis and South-South Learning programme provides technical assistance for economic research support (amongst other things) to gain a deeper understanding of immediate economic issues and concerns (ADB, 2012). The ADB and its subsidiaries are often the recipients of the aid project, that is, aid funding is used for technical assistance within an ADB branch to conduct research to support future policy decisions.

The African Development Bank has a much smaller number of programmes targeting research. These programmes were largely aimed at increasing the capacity of organisations and the number of skilled graduates graduating from higher education institutes. In addition there was a focus on establishing regional centres of excellence and networking institutions across parts of the continent. In addition the AfDB also provides funds to international institutes such as CGIAR.

The policy level receives some attention from international organisations, however the focus is predominantly on the organisational level, particularly on institutional management. All organisations have a large focus on regional institutes and organisations. This is particularly the case for the ADB and AfDB. The World Bank also funds regional programmes, however it still prioritises national systems.

Funding Instruments

All of the banks utilise loans to fund programmes, however the Asian Development Bank predominantly utilises technical assistance to implement its programmes. This is predominantly the case when the ADB targets its own subsidiaries. In the case of the World Bank funding is
generally provided to the government of the recipient country and thus the implementer is stated as being the national government department for higher education or science and technology. However, as discussed above, in many cases the funding is not used to remedy problems on the policy level, but rather to improve institutional management of organisations.
7. Trends and gaps in development assistance support to research

Target groups

The shift on the country level away from targeting individuals towards organisations has had an impact on the overall landscape of foreign assistance for research. Organisations, particularly universities and public research institutes, receive a significant amount of funding from donors. These organisations are predominantly located in the donor country, however the shift towards the organisational level has coincided with a shift towards targeting organisations in the recipient country. Many donors studied still target the organisational level through the use of grants or individual research projects rather than using larger scale funding, such as core funding, to build the institutional management capacity of the target organisation. This strategy has been criticised for not strengthening the academic core, nor contributing to development in a sustainable manner (Cloete, 2012). In acknowledgement of this fact, some funders focus on building capacity within the organisational level. Rather than awarding narrow research projects to a university these donors aim to improve institutional management through activities such as increasing the relevance of curricula, improving quality assurance and improving infrastructure.

Despite the shift towards the organisational level, individuals are still targeted by many aid donors through the use of scholarships thus ensuring that individual capacity is still being built. This does not however act in any way to maintain the capacity of individuals through training nor does it impact upon the quality of employment conditions for researchers. The effectiveness of scholarships as a funding mechanism for targeting individuals is discussed in the following section.

As discussed above the policy level is important for the overall research system. Strength on the policy level helps to ensure the implementation of evidence-based research policy and, together with the other target levels listed, will assist in the creation of a strong and sustainable research system. Funding on the policy level however presents a major gap in the development research landscape. Countries provide very little funding on this level, with the exception of countries with a holistic view. Multilaterals have filled this gap to some extent, despite their relative focus on institutional management, by building capacity within the ministries, however this is still an area that should be further addressed by all donors. Without a larger focus on this level it is difficult to ensure the sustainability and capacity building aspects of research-oriented aid programmes.

The international level is a major focus for all countries, receiving the largest amount of funding from most donors. The majority of these organisations are located in developed countries, leaving a gap in funding on the developing country level. In addition, some of the international organisations, particularly the ADB, target other international actors creating what could be termed a horizontal transfer of funds. The large focus on regional and international institutes, particularly from regional banks could contribute to a gap in the research system on the national level through a shift in capacity from the national to the regional level. The gap could be further emboldened by the fact
that it is very difficult to link the regional level to the national level if there is not a strong institution, policy or human capacity on the national level to support the transition of knowledge.

**Locations**

Within assistance for research there is a clear bias towards research funding located in OECD countries. This is particularly evident on the individual level, with the priority in many donor countries being to place students from developing countries in universities in OECD countries, thus building up capacity in the individual, not the system in the developing country. At the organisational level this can be further perpetuated by the use of competitive calls for funding as these are often secured by national organisations from the donor country unless a quota system or other requirement is put in place. Some countries are starting to close this gap with the introduction of joint degree programmes, the support of scholarships in the local country, support for building infrastructure, and support to the universities on the organisational level to aid them in training teachers, developing curricula and opening up further PhD positions. All of these programmes will contribute to building capacity in individuals and organisations.

The issue of funding location is related to the objectives that are trying to be achieved by the donor. For example programmes aimed at meeting the objective of commissioning research to achieve societal objectives often fund researchers in the donor country (at least as lead organisations in a joint-partnership) as there is no requirement built into the objective to conduct the research in a developing country, whilst at the same time there is the added benefit of achieving other national goals such as becoming internationally recognised for research. This is in contrast to the objective of support to strengthen countries’ ability to design and implement research policy which requires capacity in the recipient country, in turn requiring programmes that achieve this aim. When assessing countries in this manner it is clear that the objective of commissioning research to achieve societal goals is a greater priority for many countries than strengthening a countries’ ability to design and implement research policy, however it appears that the landscape is starting to shift towards the latter.

**Funding instruments**

Programme funding is the predominantly used funding mechanism. This allows the donor to have a greater degree of control over the outputs achieved. The International level is the only group that consistently receives core funding from all donors. This funding goes into a pool of funding, providing the international organisation with the freedom to undertake the programmes of their choosing. Some countries have started to move towards the use of core funding for other actors located in developing countries, particularly organisations, arguing that it allows the recipient greater freedom and prevents the donor from steering the funding for their own benefit. There is still room however to expand the use of core funding amongst target groups other than international organisations.

Scholarships are still a widely used funding mechanism by countries and the EU to target individual students. Targeting the individual, and particularly students, is important as educated individuals
are required in the research system to build its capacity, while also building up the level of knowledge within the recipient countries. There has however been criticism both from survey respondent countries and the OECD on the operation of scholarship programmes by some countries. There are a number of risks involved with poorly planned scholarship programmes including: a lack of coherence with the DAC members’ or partner's overall development priorities, inequitable distribution of aid resources, limited development outcomes and brain drain (OECD, 2012). DAC members using international scholarships should thus review them to understand the impact that they have on development outcomes. Where countries decide to keep their scholarship programmes, they should reduce negative effects by:

- Focusing support for study on areas that are most applicable to partner countries’ development priorities and challenges
- Including incentives for beneficiaries to return and apply their knowledge and skills in key sectors in their home countries
- Supporting study at home or in the region including in key regional educational institutions, rather than study in the donor country
- Focusing scholarships for study abroad on higher level qualifications that cannot be gained in the region and that are related to development objectives and capacity needs; and
- Ensuring equity and transparency in how students are selected

Technical assistance is another funding mechanism being utilised by some countries and multilaterals and of those using it, there is a heavy reliance. Technical assistance has often been effective in supporting partners to improve their operations in the short term and to complete particular tasks, however it has not been so useful as a tool for building sustainable capacity (OECD, 2012). The supply driven approaches that have characterised the provision of technical assistance have frequently failed to build sustainable capacity and, in many cases, have actually undermined local capabilities by creating a dependency on the expensive, international expertise funded by DAC members. Thus DAC members, and multilateral organisations, should move away from the donor-driven approaches to supplying technical co-operation and instead, play the role of a supporter of partner owned, procured and managed technical assistance. This will require DAC members to ensure that their support for technical assistance:

- Is responsive to partner demands rather than directional
- Is not tied to a particular supplier or source
- Makes use of partner country systems wherever possible, including procurement, avoids imposing overly complex tendering procedures or establishing parallel implementation units
- Draws on local or regional resources, helping to ensure value for money and understanding of local context, while also assisting development of local and regional markets
- Is well linked with wider development efforts
- Is fully transparent about the costs involved
The influence of the Paris declaration can also be seen with greater coordination across donor countries evident in research funding. There is still much work to be done, however many donors are creating joint programmes and initiatives to prevent the cross-over of programmes and to increase their spread thus having a larger impact on strengthening the research system and contributing to development in a sustainable manner.
8. Conclusion

Foreign assistance for research does not play a major role in many DAC member aid programmes or in multilateral organisations. However, an increasing amount of attention is being paid to this area due to its important role in creating the knowledge economy.

A strong research system requires capacity on the individual, organisational and policy level. Increased recognition of the role that the organisational level can play in building research capacity has resulted in it receiving greater levels of funding, which is in turn expected to build capacity on the individual level. However, there is currently a gap in funding on the policy level bringing in to question the sustainability and effectiveness of other programmes being implemented. Without capacity on the policy level it is difficult to implement policies that maintain strength in the research system over the long term.

Of those contributing to research funding, four dominant objectives are evident; funding that supports countries’ ability to design and implement research policy, funding that supports research as a component of addressing specific socio-economic objectives, funding to basic research relevant for development and research commissioned to inform development assistance policies and programmes. Supporting research as a component of addressing specific socio-economic objectives and funding to basic research have been the dominant objectives of donor organisations resulting in the use of short-term research projects, the targeting of individuals and a focus on programme funding. This is starting to change with the recognition of the importance of the knowledge economy and the necessity of countries’ ability to design and implement research policy. This has resulted in a shift towards the use of holistic programmes and the targeting of institutional management by some donors.

With increased attention to research funding expected in the future, it is important that donors coordinate their funding and ensure that gaps in target groups are not evident, particularly on the policy level as seen now. Donors however should maintain a balance and ensure that they are not crowding out funding from public and private local sources.
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