

Draft Report

*International survey of options to fund regional science
and technology in Africa*

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Executive Summary

This report is designed as one of a series of briefing papers prepared for NEPAD's Office of Science and Technology to inform debate on methods to implement Africa's Science and Technology Consolidated Plan of Action (CPA), as agreed by the 2005 African Ministerial Conference on Science and Technology (AMCOST).

The report considers a range of international stakeholders that may be able to provide financial and technical support for the process of implementation. Three groups are discussed in detail, African nations; the private sector and the international donor community.

The analysis stresses the importance of African nations making real contributions to the implementation of the CPA. Whilst it is suggested that in time, these contributions should become very significant, it is likely that only a limited number of nations are currently able to make large contributions. It will thus be necessary for African nations to build links with other development partners to commence implementation of the CPA. A distinction is made between countries with low proportions of Official Development Assistance to total national Gross Domestic Product (GDP) and those with high proportions.

It is suggested that the case for national financial contributions to the CPA would be greatly strengthened by making more explicit links between the CPA's work programme and descriptions of likely benefits such as the contribution to economic and social development, poverty reduction and where possible the Millennium Development Goals. It is also suggested that this process would benefit if national development strategies made explicit reference to science and technology and their contribution to development. In low-income countries, this should include explicit statements in national poverty reduction strategy papers or their equivalent.

Private sector support for S&T in Africa is recognised as being significantly lower than most other regions of the world. This review concludes that direct support for implementation of the CPA by the private sector is likely to be limited, at least during the early stages of work programmes. There may be potential for investment or alignment with specific work programmes and this is most likely to occur at national level. Conversely, it is concluded that the CPA has the potential to make significant impact by helping African nations to create conditions that are more conducive to private sector investment, by addressing current impediments such as intellectual property rights, fiscal measures (e.g. tax regimes) and capacity building to increase the availability of skilled staff.

The fifteen largest development donors to Africa are reviewed to consider potential for their engagement to support implementation of the CPA. The review concludes that the process of implementation would greatly benefit if donors adopted the principles of the Paris Declaration on Aid Effectiveness. A group of donors most likely to be able to support the CPA are identified and this includes several which are currently absent from the process.

A group of seven major philanthropic organisations are reviewed. There is potential for significant support from some of the major foundations, but the method of engagement is likely to be different from those of either African governments or the official donor community. It is suggested that the Foundations are likely to support specific programmes as they are limited by their operational rules. Four foundations are identified as most likely to be able to support components of the CPA.

The discussion on implementation of the CPA comes at a time of ongoing change in the way that development is implemented. Possible future changes in the delivery of aid are discussed with particulate emphasis on the implications of the Paris Declaration on Aid Effectiveness and its principles of ownership, alignment, harmonisation managing for results and mutual accountability. It is also suggested that some donors may move to provide an increasing proportion of their aid through multilateral systems, hence increasing the importance of the

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development banks (World Bank and African Development Bank), the European Commission¹ and some components of the UN system.

¹ It should be recognised that the European Commission is strictly a bilateral agency of the European Union, but most European nations treat it as a multilateral agency in relation to development assistance.

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Summary of Recommendations

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1	The case for contributions from African nations to the CPA will be greatly strengthened by the description of likely benefits in terms of the contribution to national economic, human and social development, poverty reduction and where possible, the Millennium Development Goals.	9
2	The inclusion of S&T as a priority activity in national PRSPs (or equivalent national development strategy) will help to create an environment for government investment in science and technology, including regional programmes.	9
3	The plan to implement the CPA should address issues of long-term financial sustainability developing an agreed level defining Africa's ability to pay for regional S&T activities.	9
4	Implementation of the CPA would benefit from the principles contained within the Paris Declaration on Aid Effectiveness.	35

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Abbreviations

Abbreviation	Definition
ACP	African Caribbean and Pacific (EU Development Partners)
AfDB	African Development Bank
AMCOST	African Ministerial Conference on Science and Technology
ASIF	African Science and Innovation Facility
AU	African Union
AUC	African Union Commission
BMZ	German Federal Ministry for Economic Cooperation and Development
CAADP	Comprehensive African Agricultural Development Programme
CGIAR	Consultative Group on International Agricultural Research
CIDA	Canadian International Development Agency
CIRAD	Centre de coopération Internationale en Recherche Agronomique pour le Développement
CPA	Africa's Science and Technology Consolidated Plan of Action
DAC	OECD Development Assistance Committee
DBS	Direct Budget Support
DBSA	Development Bank of South Africa
DFID	Department for International Development
EC	European Commission
EDF	European Development Fund
ESAF	Extended Structural Adjustment Fund
ESSP	Education Strategic Sector Plan
EU	European Union
FDI	Foreign Direct Investment
FP7	7 th Framework Programme for research and development (EC)
GERD	Gross domestic Expenditure on Research and Development
GNI	Gross National Income
GoR	Government of Rwanda
GTZ	Agency for Technical Cooperation
HIPC	Highly Indebted Poor Countries
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDRC	International Development Research Centre
IMF	International Monetary Fund
IPAD	<i>Insitutio Português the Apoio ao Desenvolvimento</i>
IPR	Intellectual Property Rights
IRD	Institut de recherche pour le Développement
JICA	Japanese International Cooperation Agency
JICA	Japan International Cooperation Agency
LIC	Lower Income Countries
MCC	Millennium Challenge Corporation
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goal(s)
NEPAD	New Partnership for Africa's Development
NEPAD-OST	NEPAD's Office of Science and Technology
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development

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Abbreviation	Definition
PDAE	Paris Declaration on Aid Effectiveness
PRGF	Poverty Reduction and Growth Fund
PRSP	Poverty Reduction Strategy Paper
PRSP	Poverty Reduction Strategy Paper
S&T	Science and Technology
SAF	Structural Adjustment Fund
SAREC	Department for Research Cooperation
STI	Science Technology and Innovation
SWAP	Sector Wide Approach
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WB	World Bank
WDI	World Development Indicators

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1 Introduction

1.1 Background

- 1.1.1 Africa's Science and Technology, Consolidated Plan of Action (CPA) was approved by the African Ministerial Conference on Science and Technology (AMCOST) at their second meeting, held in Senegal, September 2005. The CPA presents an extensive programme of work required to build up processes to support regional initiatives in Science and Technology (S&T) to support development in Africa. The Plan (AMCOST, 2005) brings together the S&T programmes of the African Union (AU) and the New Partnership for Africa's Development (NEPAD) forming an instrument to implement the decisions of the 1st AMCOST meeting held two years earlier in South Africa.
- 1.1.2 The CPA is built around three themes: (1) capacity building; (2) knowledge production and (3) technological innovation (AMCOST, 2005). In addition to describing twelve priority flagship programmes for S&T, the CPA discusses the need to for a "well configured institutional setup or system" to support the development of S&T on the African continent. The Plan discusses implementation of programmes and calls for the establishment of the African Science and Innovation Facility (ASIF). It is acknowledged that implementation of the CPA and the establishment of ASIF will require the engagement with a range of stakeholder groups in Africa and internationally. The African Union Commission (AUC) and NEPAD's Office of Science and Technology (NEPAD-OST) were given the remit to jointly undertake a programme of work to implement the CPA. A number of members of the donor community present at the meeting in Senegal a willingness to be engaged in this process.
- 1.1.3 The outcomes of the 2nd AMCOST meeting were presented at the 2006 Summit of the African Union along with a recommendation to adopt of the theme of science and technology for the 2007 summit. This recommendation was adopted and the work of AMCOST, AU and NEPAD given extra impetus. These groups intend to present the CPA and a plan for its implementation to Heads of State at the 2007 Summit.
- 1.1.4 The United Kingdom's Department for International Development (DFID) has provided financial and technical support to NEPAD-OST throughout this process. Part of this support has involved the generation of a series of six background papers designed to inform the discussion and decision process relating to the implementation of AMCOST's decisions relating to continental and regional S&T as articulated through the CPA.

1.2 Scope of the study

- 1.2.1 The remit of the current study is to review possible sources of financial support for implementation of the CPA. Four groups are discussed: (1) African Nations; (2) The Private Sector; (3) Donors; and (4) Foundations and other philanthropic sources.
- 1.2.2 NEPAD places very great importance on promoting African ownership of the new paradigms of development on the continent. The CPA is firmly based in this approach with the expectation that African nations themselves should provide a significant proportion of the funding for its implementation. It is possible that in time, this expectation can come to fruition, along with increasing private sector investment in S&T activities in Africa. In the short to medium term, however, significant external sources of funding will be required to implement the CPA. For this reason considerable emphasis has been given to the donor community in this report.

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1.3 Science, Technology and Innovation for Development

1.3.1 The role that Science, Technology and Innovation (STI) can play in supporting development has been extensively debated, with views ranging from an extreme that STI is an irrelevance to STI being an essential prerequisite for development. There has been increasing recognition of the potential of STI to contribute to development in the years following the Millennium Declaration of 2000 (United Nations, 2000) and the subsequent World Summit on Sustainable Development (WSSD) held in Johannesburg (United Nations, 2002c). Such potential was captured through the Millennium Project's report on innovation and application of knowledge in development (UN Millennium Project, 2005).

1.3.2 Science and technology within the field of development can be interpreted in a variety of contexts (Farley, 2005):

- The creation of innovation systems to promote economic growth.
- Research and Development activities to improve technological outputs and scientific knowledge;
- Creation of a knowledge base;
- S&T for human capacity building;
- Improvement of educational curricula in relation to S&T.

1.3.3 Many organisations that support S&T for development do so in such a way that research or S&T is essentially mainstreamed within sectoral activities. For this reason, S&T does not feature in standardised reporting by donors through the Development Assistance Committee (DAC) of the OECD (Organisation for Economic Cooperation and Development). Information may be available for individual donors, but not in a consistent format.

1.3.4 Within African nations, there is great variation in the way that S&T is supported both directly and indirectly. Public Administration bodies with a mandate for S&T are varied. A number of nations now have departments or ministries dedicated to S&T, whilst others may have this responsibility merged with education, for example. As such it is difficult to assess Africa's own public sector investment in S&T. This has led to the recognition of an urgent need to improve the statistics on S&T in Africa, through processes including the development of common science, technology and innovation indicators for Africa included in the CPA (AMCOST, 2005) and UNESCO's strategy to improve S&T statistics and indicators (UIS, 2003).

1.4 Approach adopted by this study

1.4.1 The approach adopted by this study has been defined by the practical constraints of needing to inform the process supporting implementation of the CPA. In the absence of coherent statistics on the support of S&T in development, macroeconomic data were used to describe African states and data on gross Official Development Assistance² (ODA) were used to describe donors. These primary data were supplemented through the review of earlier analytical studies including those of the OECD-DAC. This information was supplemented with a limited number of interviews and a review of recent literature and international agreements on development assistance and aid effectiveness.

² Gross ODA was used in this study to represent the willingness to invest by donors. It is recognised that there are significant differences between gross and net ODA for some countries reporting either disbursements by donors or receipts by beneficiaries.

2 African Nations

2.1 The need for national contributions to implement the CPA

2.1.1 Any process to promote implementation of the CPA must continue to value the principle of African ownership that has underpinned its development. In order to achieve this, it is essential that African nations contribute to providing the resources required by the Plan. These will probably include financial resources, human resources and developing or providing access to infrastructure.

2.1.2 Much of the discussion about the CPA has focused on the need for financial contributions. This section discusses why a wide variety of approaches will probably be required for such contributions; to reflect the great diversity of economic performance and the availability of human and physical resources across Africa.

2.2 Africa's ability to pay

2.2.1 Africa's ability to pay for regional S&T initiatives is currently difficult to assess. Owing to this, the report uses macro-economic data as indicators. Table 1 presents data for 2004 derived from the 2004 World Development Indicators (World Bank, 2006b). The data illustrate the degree of economic diversity in Africa. The region's total economic activity as measured by Gross Domestic Product (GDP) was nearly US\$ 800 billion with an annual growth rate of around 5 % in 2004. The economic performance of the top five countries (South Africa, Algeria, Egypt, Nigeria and Morocco), at nearly US\$ 500 billion, is a significant 63 % of total activity. This would mean that if financial support from African nations for the CPA is assessed on the basis of GDP, as of today, these five countries would be expected to provide nearly two-thirds of African contributions.

2.2.2 African nations, through the first AMCOST meeting (South Africa, 2003) have already made a commitment to increase national expenditure on R&D up to a target of 1 % of GDP. Similar levels of government contribution to Gross domestic Expenditure on Research and Development (GERD) are seen in many OECD member countries (OECD, 2003b). Within the OECD, members of the European Union have the best example of a regional programme to support research (the European Commission's Framework Programme) which currently represents around 7 % of public expenditure on S&T in the region.

2.2.3 It is possible to calculate a scenario for a likely maximum amount that Africa would be able to pay as contributions to the implementation of the CPA based on the 1% commitment for Africa, and international experience from OECD members. If an arbitrary value of 5 % of total national expenditure is combined with the African target of 1 % of GDP, this equates at a maximum regional contribution of 0.05 % of GDP or US\$ 395 million based on 2004 data.

2.2.4 The true amount likely to be allocated by African nations to support the CPA is likely to be far less than this, especially at first. Many countries do not yet have sufficient financial resources to be able to make large contributions to regional science and technology programmes. On top of this, the CPA is currently only one of several regional or continental initiatives involving S&T that African nations may wish to support, others include research components of NEPAD's own Comprehensive African Agricultural Development Programme (CAADP), and a number of initiatives in the health sector. For this reason, the next section considers issues likely to affect African nation's willingness to contribute to the CPA implementation process.

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Country	GDP (US\$ million)	ODA (% of GDP)	Population (million)	
Algeria	84649	313	0.4	32.4
Angola	19493	1144	5.9	15.5
Benin	4075	378	9.3	8.2
Botswana	8974	39	0.4	1.8
Burkina Faso	4824	610	12.6	12.8
Burundi	657	351	53.4	7.3
Cameroon	14391	762	5.3	16.0
Cape Verde	948	140	14.7	0.5
Central African Republic	1307	105	8.0	4.0
Chad	4221	319	7.6	9.4
Comoros	367	25	6.7	0.6
Congo, Dem. Republic	6628	1815	27.4	55.9
Congo, Rep.	4343	116	2.7	3.9
Cote d'Ivoire	15475	154	1.0	17.9
Djibouti	663	64	9.7	0.8
Egypt, Arab Republic	78796	1458	1.8	72.6
Equatorial Guinea	3235	30	0.9	0.5
Eritrea	925	260	28.1	4.2
Ethiopia	8003	1823	22.8	70.0
Gabon	7229	38	0.5	1.4
Gambia, The	415	63	15.1	1.5
Ghana	8869	1358	15.3	21.7
Guinea-Bissau	280	76	27.2	1.5
Guinea	3870	279	7.2	9.2
Kenya	16088	635	3.9	33.5
Lesotho	1313	102	7.8	1.8
Liberia	492	211	42.8	3.2
Libya	29119	18	0.1	5.7
Madagascar	4364	1236	28.3	18.1
Malawi	1879	476	25.3	12.6
Mali	4863	567	11.7	13.1
Mauritania	1534	180	11.7	3.0
Mauritius	6034	38	0.6	1.2
Morocco	50031	706	1.4	29.8
Mozambique	6086	1228	20.2	19.4
Namibia	5712	179	3.1	2.0
Nigeria	72053	573	0.8	128.7
Niger	3081	536	17.4	13.5
Rwanda	1845	468	25.3	8.9
Sao Tome and Principe	62	33	53.7	0.2
Seychelles	704	10	1.5	0.1
Senegal	7776	1052	13.5	11.4
Sierra Leone	1076	360	33.4	5.3
Somalia	<i>n/a</i>	191	<i>n/a</i>	8.0
South Africa	212777	617	0.3	45.5
Sudan	21098	882	4.2	35.5
Swaziland	2396	117	4.9	1.1
Tanzania	10851	1746	16.1	37.6
Togo	2061	61	3.0	6.0
Tunisia	28185	328	1.2	9.9
Uganda	6822	1159	17.0	27.8
Zambia	5402	1081	20.0	11.5
Zimbabwe	4696	187	4.0	12.9
Total	791034	26693	3.4	876.9

Table 1 African macro-economic indicators, 2004 data.
World Development Indicators (World Bank, 2006b).

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- 2.3 Africa's willingness to contribute to the CPA
- 2.3.1 Some of the major economic powers in Africa are already making significant investments in national science and technology activities. South Africa, Egypt, Libya and Nigeria are well known examples. All of these countries have successful and growing economies and hence have the capacity to invest. It would be expected that these countries would be able to make significant financial contributions to the CPA, and indeed each of these countries is currently supporting the process. The situation may be more difficult for countries at the other end of the economic scope.
- 2.3.2 Table 1 provides data describing the reliance of nations on Official Development Assistance (ODA). The reliance on ODA is sometimes described through nominal membership of either the 0.2 % or 20 % "Clubs". Developing countries with a lower reliance on ODA are considered to be members of the 0.2 % Club whilst those with very much higher "aid dependence" are considered to be members of the 20 % Club (Overseas Development Institute, 2006). A significant proportion of African nations currently have a high level of aid dependency and consequently funds derived from ODA may represent a high proportion of total government expenditure. For countries in the "20 % Club", any national contribution to the CPA will most likely need to be linked to flows of ODA.
- 2.3.3 Any decisions relating to investment by African nations in the CPA will ultimately need to be approved by the national Ministry of Finance or equivalent. A study on investment in activities relating to environment and natural resources in East Africa (van Gardingen, 2003) stressed the need to be able to document the benefits likely to result in terms of either enhanced economic performance or poverty reduction. Similarly, African nations are only likely to become willing to make significant contributions to regional programmes when they can see how the process is likely to contribute to their own development. This may be particularly true in countries with a high aid dependency, since resources will need to be diverted from other, competing activities. No nation in Africa, or indeed the world, would currently consider that a national budget has significant unallocated financial resources.
- 2.3.4 Willingness to contribute is also likely to be influenced by national perceptions of the proportion of any financial contribution that is available to support activities in their own country. If the largest economy were to provide 25 % of African funding, would they also expect to have a similar amount spent by the programme in their own country? There are important issues relating to management of expectations which will undoubtedly will influence willingness to contribute.
- 2.4 Other possible African contributions to the CPA.
- 2.4.1 The above discussion has identified a number of challenges which may limit the total direct financial contribution likely to come from African nations in support of the CPA. These are, however, likely to be partly offset by other human or physical contributions, such as the secondment of staff and provision of physical resources. The CPA recognises that African nations may contribute through the alignment of national programmes with those of the CPA (Box 1). That option is likely to be most suited to countries which currently have high aid dependency.

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Institutional Arrangements

“This plan of action and its programmes are being designed in such away as to be implemented through networks of centres of excellence. These networks will be organized as consortia of institutions that bring their best intellectual, administrative and infrastructure as well as financial resources together. Success will depend on the voluntary participation and contributions of different governments and relevant institutions. The main objective of institutional networking approach is to benefit from the synergy of information exchange, the richness of diversity and shared resources. The agency networking will be deployed in the further development of the programmes through planning and coordination and its success depends on the principles outlined below:

- (a) Commitment by groups of participating institutions to take responsibility to work collectively.
- (b) Commitment by participating institutions to devote some of their existing resources to support the implementation of the programmes and projects.
- (c) Recognition that no single institution can generate all the knowledge and information required to implement the programmes and projects.
- (d) Commitment by African countries to provide financial resources and technical capacities.”

Box 1 Institutional arrangements for implementation as specified in the CPA (AMCOST, 2005)

2.5 The Rwanda case study: S&T at the core of Government interventions

- 2.5.1 Rwanda was chosen as a recipient country case study because ODA accounts for a high level of the country’s GDP, nearing 25%. Additionally, the country has recently restructured its Public Administration in order to create a single Ministry for Science and Technology, which will make the policy approved in 2005 operational.
- 2.5.2 S&T is seen as a basic pathway to strengthen the implementation of the Vision 20/20, the long-term national development plan. This is to be achieved through the development of Science and Technology capacity of the people of Rwanda; which in turn shall support the development of a prosperous knowledge-based, technology-led economy.
- 2.5.3 Key drivers for the Vision 20/20 include the transformation into a knowledge based economy whereby elements of Science and Technology are present across all elements of Government. In particular, it is stipulated that the developed Science and Technology sector shall: (a) stimulate a steady growth in GDP, (b) advance the quality of life for all the citizens (c) improve skills and knowledge among the population and (d) integrate Technical Education with commerce, industry and the private sector in general (MFIN, 2002).
- 2.5.4 Such clear inter sectoral policy links have provided a favourable environment for the development of a knowledge based economy. Rwanda is a landlocked, hilly country without access to vast natural resources. Hence their interest in creating a competitive edge based on S&T, to leap frog an industrial development based on natural resource use; an approach favoured by a conducive fiscal regime. As an example, entrepreneurs who invest more than US\$50,000 are not subject to taxation, or to regulations that require them to re-invest profits in the country.
- 2.5.5 Such enabling environment is greatly favoured due to President Kagame’s interest in Science, which is partly reflected in the high incidence of Cabinet Members who have

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such background (i.e. Education, Ministry of Foreign Affairs, Agriculture, Environment and Mining).

- 2.5.6 The mainstreaming of Science and Technology as a cross cutting pillar within different sectors of government, under the rationale of further economic development has been a relatively effortless task. Cabinet members are supportive of cross cutting policy making and are invited to participate in the setting of programmatic and budgetary goals for Science and Technology. The Education Sector Strategic Plan (ESSP)³ Sector Wide Approach modality (SWAP) will be used within the Science and Technology Ministry policy review processes, The ESSP outlines how joint reviews for the monitoring of progress achieved will take place in view of achievement of goals. Its joint review process provides a forum for donors and GoR policy makers from various Ministries (Muranzi, 2006b).

³ The Education Strategic Sector Plan 2006 – 2010 marks the way for the whole education sector, its contribution to economic development and poverty eradication. It includes indicators and operates as a guide for detailed, operational 5 year planning.

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Box 2 Science and Technology in Rwanda

Rwanda S&T as a tool for socio economic development

For the first time the Government of Rwanda has a completely separate budget for Science and Technology with the Minister gaining appointment in May. Previously, the budget for S&T was embedded into the Ministry of Education's budget. Rwanda is investing in S&T areas that can help achieve economic growth by further increasing foreign direct investment; it is seeking to become a technology hub. The Minister, Professor Muranzi, believes that it is important for governments to ask what science and innovation research can do for development.

Using ICT as an example in Rwanda, networks will be improved to support the transfer of better images, video and telecom through mobile phones, thereby increasing connectivity in terms of data and access to email. The GoR is exploring the possibility of attracting FDI to support mobile banking technologies whereby financial services could be set up to be conducted on a cell phone-to-cell phone basis. If such transfers were to take place, monies in the rural areas could be brought into the formal economy consequently 'boosting' the GDP as those monies are currently unaccounted for. An increasing level of connectivity is dramatically changing the way that Rwanda is doing business transactions (Rice, 2006)

Prof. Muranzi pointed out that 'if (the welfare generated through) this (economic) growth can be distributed, people can be empowered through access to technology, such as low cost mobile phones which can be used by people to communicate, for example from rural areas where the radio is the main form of entertainment. So if a mobile phone is equipped with radio and video, and it can be used for financial transactions, to play games, many other things; then it can become a tool for rural areas' (Muranzi, 2006a). Such appropriation of technology for better quality of life is also seen in sectors such as access to water, agriculture, and crucially in terms of primary, secondary and tertiary education.

However, S&T does not end in use of products and services: the Government of Rwanda is interested in getting access to real knowledge in order to become a supplier of high end technology for the region.

2.6 Practical considerations for African contributions to the CPA

- 2.6.1 The discussion above has assessed issues likely to influence both the ability and willingness of African nations to contribute diverse resources to implement the CPA. In the longer-term, this African-owned initiative needs to be seen to be self supporting and hence sustainable.
- 2.6.2 Increased national ownership of the development processes is being promoted through the UN's Monterrey Declaration (United Nations, 2002b) and subsequent Paris Declaration on Aid Effectiveness (OECD, 2005c). For this reason it is essential that the expected benefits to be derived from the CPA are articulated in terms that relate to national development plans. In many cases, these will be Poverty Reduction Strategy Papers (PRSPs) or their equivalent.

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Recommendations

- 1 The case for contributions from African nations to the CPA will be greatly strengthened by the description of likely benefits in terms of the contribution to national economic, human and social development, poverty reduction and where possible, the Millennium Development Goals.
- 2 The inclusion of S&T as a priority activity in national PRSPs (or equivalent national development strategy) will help to create an environment for government investment in science and technology, including regional programmes.

- 2.6.3 Within the scenario suggested here, the figure for maximum contribution based on 0.05 percent of African GDP would have given maximum funding of around US\$ 400 million in 2005. This can be projected over ten years to 2015 (the target date for the UN's Millennium Development Goals) using the 2004 average GDP growth rate of 5 % *per annum* for Africa (World Bank, 2006b) to give a maximum financial contribution from Africa of US\$ 650 million for regional S&T activities. It is crucial to note that the CPA is currently competing with other programmes for these types of funds. This is unlikely to represent a continued level of funding for the CPA. Most current development thinking is based on the expectation that nations will take increasing responsibility for expenditure to promote their own development.

Recommendation

- 3 The plan to implement the CPA should address issues of long-term financial sustainability developing an agreed level defining Africa's ability to pay for regional S&T activities.

- 2.6.4 Over the next decade it would be unrealistic to consider that African nations are likely to be able to provide the level of resources required for full implementation the CPA without some external assistance. The numbers indicated here, and those listed in the CPA itself are designed to support debate and to keep this debate within realistic limits.

3 Private Sector

3.1 The potential for private sector investment

3.1.1 The full potential contribution for the private sector to Africa's Development agenda has not yet been captured. In the last century, the private sector was frequently treated as the source of the problem rather than a potential solution to development issues. In 2002, the Monterrey Declaration (United Nations, 2002a) and the World Summit on Sustainable Development (United Nations, 2002b; United Nations, 2002c) marked a significant change in development thinking. The private sector is now generally recognised as being an essential partner to meet the challenges of the Millennium Development Goals.

3.1.2 In Africa, the contribution of the private sector is generally poorly developed. This is often most apparent in countries that have a high aid dependency (Table 1). The lack of appropriate S&T statistics and indicators in Africa means that the degree of private sector investment in S&T is difficult to assess. It is, however, generally recognised that in most African nations, private sector investment in S&T is very low, often even less than that funded by the State. This should be contrasted with economically successful OECD member countries where private expenditure in S&T (or research for innovation) is typically two or more times higher than that spent by the state (OECD, 2003b). For these reasons there is great unrealised potential for promoting private sector investment in S&T in Africa. The two challenges are:

- understanding the reasons for the suspected current low levels of investment; and
- finding appropriate incentives to promote new investment.

3.2 Local or foreign investment

3.2.1 Increased investment by the African private sector will be an important step in enhancing the economic prospects on the continent and ensuring that technology and innovation play their part in achieving development objectives. The many challenges of doing business in Africa, means that increased investment by local businesses in S&T is likely to be initially directed at activities with a local or national focus, with the exception of African companies that already have significant trans-boundary activities.

3.3 Foreign investment in Africa

3.3.1 The last decade has seen significant investment in Africa. OECD data on Foreign Direct Investment (FDI), shows a ten-fold increase over the last twenty years, with a total of nearly US\$ 90 billion (90,000 million) currently invested by OECD members in the continent (Figure 1). This value is now certainly an underestimate with countries such as China, India and Brazil playing an increasingly important investment role on the continent.

3.3.2 The net annual investment in Africa since the late 1990's has ranged between 14 and 16 billion US\$ *per annum* (Figure 2), but it is important to recognise that this investment is distributed to a very limited number of countries, with over 87 % of new FDI in 2003 going to South Africa, Morocco and Egypt.

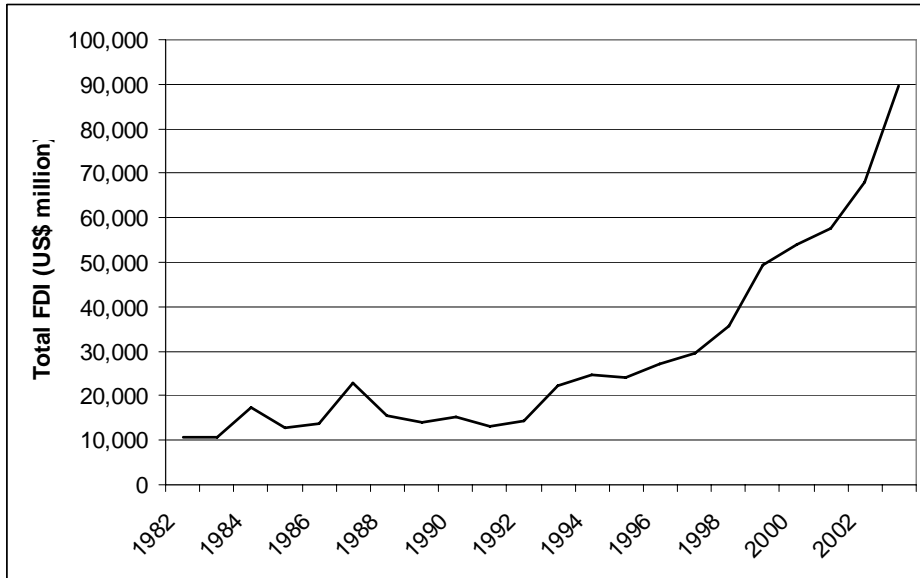


Figure 1 Foreign Direct Investment (FDI) current position for investment in Africa by OECD members. (OECD, 2006b).
 The current position indicates the net cumulative amount invested in Africa. See Figure 2 for 2003 annual data. Note that these data exclude information from new investor countries including China, India and Brazil.

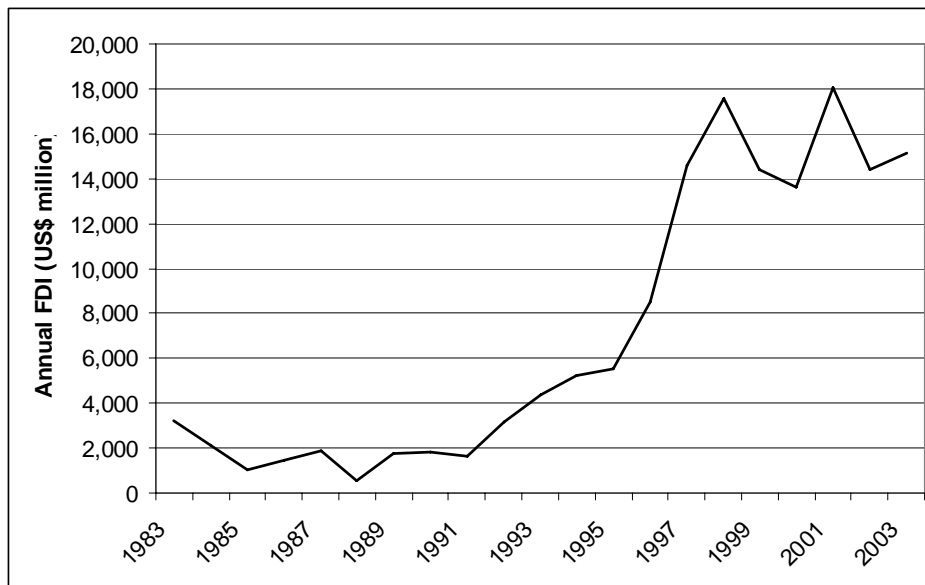


Figure 2 Foreign Direct Investment (FDI) net inward investment in Africa by OECD members in 2003. (OECD, 2006b).

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3.4 Investing in S&T

3.4.1 The challenges to increase private sector investment in S&T in Africa are significant. Some of these are not specific to S&T and include political, economic and fiscal stability, a burdensome regulatory environment and corruption which may deter investors. Others which are specific to S&T are:

- Intellectual Property Rights (IPR);
- Availability of trained staff (human resources); and
- Fiscal incentives.

3.4.2 The private sector requires the provision of a stable enabling environment to encourage investment in S&T. This is currently addressed within the CPA. Nonetheless, it must be expected that any resulting increase in private sector investment will take time as structural changes need to take place, for example if a trained workforce is needed.

3.5 The private sector and regional S&T

3.5.1 It is unlikely that the private sector will be a major investor in the CPA to support a regional S&T programme. Private sector engagement is most likely possible through partnerships with research agencies that are involved in contributing to the CPA.

3.5.2 The CPA itself has a very important role to play in defining rules of the game to promote private sector investment in S&T (or innovation) in Africa. As suggested previously, there is a need to address IPR issues, to develop appropriate fiscal measures and to provide a pool of trained S&T staff. The CPA currently contains a number of measures that will address each of these critical issues and as such implementation of the CPA itself will help to enhance private sector participation.

4 The International Donor Community

4.1 The role of the donor community

4.1.1 The Monterrey Consensus and the Paris Declaration on Aid Effectiveness (PDAE) (United Nations, 2002a; OECD, 2005c) have challenged donors and their recipient partners to adopt more effective approaches to development assistance or “aid”. Donors are now expected to respond to the agenda set by targeted recipients of aid. In this context the CPA is a valuable document as it clearly articulates demand from African stakeholders for a regional S&T programme, whilst the endorsement by AMCOST gives this plan political authority.

4.1.2 The CPA envisages that its activities will be implemented with support provided by African nations and to a lesser extent the private sector. It is also clear that these regional sources will not be able to provide all the financial and technical resources required for the early stages of implementation, leading to need for support from the international donor community.

4.2 Existing donor support for CPA activities

4.2.1 A number of members of the donor community have been engaged or have expressed interest in supporting activities described by the CPA. Current support covers only a small proportion of the priority areas described in the CPA and donor actions are not yet coordinated. Each action carries with it individual contractual and reporting requirements leading to an ever increasing administrative burden which is currently absorbed by NEPAD and the Development Bank of Southern Africa (DBSA) as the management arm of NEPAD.

4.2.2 The CPA envisages the development of more appropriate arrangements for implementation, and has proposed the establishment of the African Science and Innovation Facility (ASIF).

4.2.3 The next sections identify donors that may be able to contribute resources to implement the CPA and then discusses possible modalities of support within the context of current trends in the provision of development assistance.

4.3 Profiles of Donors (Bilateral and Multilateral)

4.3.1 Statistics describing Official Development Assistance (ODA) are collated on an annual basis for members of the OECD by the Development Assistance Committee (DAC). The DAC statistics are categorised by donor, recipient, sector and typology (e.g. loan, grant, technical assistance). As discussed previously, there is however no standard method available which can describe the proportion of ODA allocated to research or S&T.

4.3.2 This review of donors thus needed to be based upon a coarser measure of total ODA allocation to Africa. The year of 2004 was used as the reference because it is the most recent dataset that has been analysed by OECD. The data were supplemented with information from technical peer reviews of development activities conducted by OECD members. These evaluations are carried out on a rolling basis with each country being reviewed approximately once every four years (<http://www.oecd.org/dac/peerreviews>).

4.3.3 In recent years, most donors have been increasing their overall allocation to ODA; an increasing number have now made firm commitments to achieve the overall target of 0.7 % of GDP. This target was first set by the UN in 1970 (Banuri and Bigg, 2002). In addition to augmenting global ODA commitments, some donors are now shifting

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resources to Africa; under the rationale that other major regions such as Asia and Latin America now require less external assistance. The increased commitment to Africa was articulated through the outcomes of the 2005 Gleneagles Summit of the G8 (G8, 2005).

Country	Africa	Global	Africa (%)
France	4,503.9	7,329.4	61.4
World Bank (IDA)	4,484.8	9,189.8	48.8
United States	4,447.2	20,852.4	21.3
European Commission	3,770.3	9,431.7	40.0
United Kingdom	2,454.5	6,773.6	36.2
Japan	2,372.7	14,414.4	16.5
Germany	1,593.1	5,846.0	27.3
Netherlands	1,244.4	3,976.9	31.3
African Development Bank	1,056.8	1,056.8	100.0
Portugal	808.7	890.4	90.8
Sweden	676.2	2,787.8	24.3
Canada	642.5	2,724.3	23.6
Norway	626.9	1,866.2	33.6
International Monetary Fund	591.9	1,203.7	49.2
Belgium	564.2	1202.0	46.9

Table 2 Total gross Official Development Assistance (ODA) for the top fifteen donors to Africa in 2004 (US\$ million). (OECD, 2006a).

4.3.4 The ODA statistics for 2004 presented as Table 2 were used to select the donors to be discussed in this report. At the top of the list, France allocated US\$ 4.5 billion in 2004, representing 61 % of their total ODA. France's ODA for Africa in absolute terms is very similar to that of the United States, but it is noted that the United States only spends 21 % of their total ODA in Africa, a percentage only exceeding that of Japan.

4.3.5 It is clear from this simple analysis that donors who are all members of the OECD-DAC have differing approaches to assistance for Africa. The following boxes are designed to present additional background information on each of these donors.

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Box 3 Profile of development assistance: France

ODA Allocation 2004	US\$ (millions)	Percent
Total Global	7,329	
Total Africa	4,503	61 %
Total Loans	453	10 %
Total Grants	4,051	90 %
<i>of which Technical Cooperation.</i>	<i>1,306</i>	<i>29 %</i>
Main Recipients		
Senegal	539	12 %
Madagascar	496	11 %
Morocco	328	7 %
Cameroon	264	6 %
Mayotte	213	5 %
Niger	205	5 %
Overview of modalities of aid		
<p>The <i>Agence Française de Développement</i> is the main agency for French Development cooperation, the operator of the strategic policy designed jointly by the Ministry of Economic Affairs, Finance and Industry and the Ministry of Foreign Affairs.</p> <p>At the Monterrey Round, the French president Jaques Chirac pledged to increase ODA to 0.5% of the GNI by 2007. Aid was earmarked towards attaining the MDG's, also for support to NEPAD's priority areas; nonetheless a coherent policy platform is lacking (OECD, 2004). Agencies involved in cooperation have a mandate that includes aid but is not solely reduced to it. These agencies share core principles of giving priority to Africa, especially francophone Africa, protection of public goods, cultural diversity and promotion of La Francophonie. Overall the 2004 DAC review recommended the drafting of a comprehensive policy and the development of systems of aid delivery which are not framed under poverty reduction but on the integration of the disfavoured sectors into global interventions and so on. Support to multilateral institutions such as the European Union is substantial, totalling a total of 19% of the total ODA, with an additional 6% of the total allocated to multilateral banks in 2004.</p> <p>The Agence Française de Développement intervenes on five continents where it works to reduce poverty, finance economic growth and protect Global Public Goods. Its actions fall within the framework of the Millennium Development Goals (MDGs). Whilst sectoral areas supported in Africa (infrastructure, urban development, rural development and environment, HIPC initiative) are relevant to NEPAD's CPA, there isn't a direct reference to Science and Technology. Notably, the water sector is priority, with a focus on management of inland waters, drinking water supply and sanitation.</p>		
Interest in S&T		
<p>A number of French agencies are involved in research to support development globally. In localities which are not French dependencies, the two most important are the <i>Institut de recherche pour le Développement</i> (IRD) and <i>Centre de Coopération Internationale en Recherche Agronomique pour le Développement</i> (CIRAD). CIRAD concentrates on agriculture and IRD on most other sectors. Much of the support in Africa is directed to francophone countries, with IRD's largest research centre located in Senegal.</p> <p>France has already provided support to the water programme of the CPA via IRD. Water in Africa is a priority for development assistance following the G8 action plan derived from the Evian Summit.</p> <p>Much of France's bilateral support for S&T is still tied with an expectation of significant contributions by French researchers and institutions.</p>		
Implementing Agencies		
Agence Française de Développement	http://www.afd.fr	
Institut de recherche pour le Développement	http://www.ird.fr	
CIRAD	http://www.cirad.fr	

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Box 4 Profile of development assistance: World Bank Group,
International Development Agency (IDA)

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	9,190	
Total Africa	4,485	49 %
Total Loans	3,128	70 %
Total Grants	1,357	30 %
<i>of which Technical Cooperation.</i>	<i>N/A</i>	<i>N/A</i>
Main Recipients		
Tanzania	534	12 %
Ethiopia	515	11 %
Uganda	342	8 %
Ghana	344	8 %
Congo, Dem Rep	255	6 %
Mozambique	206	5%
Overview of modalities of aid		
<p>The International Development Agency is the part of the World Bank Group that provides concessionary loans and grants to low income (Highly Indebted Poor Countries, HIPC). Together with the International Bank for Reconstruction and Development (IBRD) it makes up what is commonly known as the “World Bank”. It is primarily a multilateral lending organization, with 184 member countries and a global remit to support the eradication of poverty and the improvement of quality of life. It provides mainly financial and technical assistance to developing countries. The Bank’s creditors operate the projects through their own implementing agencies. Both agencies provide low-interest loans, interest-free credit and grants.</p> <p>The IDA provides concessionary loans and grants, loans making up 70 % of the IDA’s African portfolio. Following the introduction of the Comprehensive Development Framework in the late 1990’s, the Bank’s activities have increasingly become aligned against national development frameworks. For HIPC countries, and hence the majority of Africa, this is now interpreted as PRSPs.</p> <p>Grants are designed to facilitate development projects by encouraging innovation, co-operation between organizations and local stakeholders’ participation in projects. IDA grants are either funded directly or managed through partnerships and have been used to, for example, relieve the debt of heavily indebted poor countries (World Bank, 2006a)</p> <p>The majority of Bank activities are implemented at country level. The most recent 14th replenishment of the IDA recognises the “that development and poverty reduction are affected by a range of issues that cross national boundaries” (IDA, 2005). This opens opportunities for WB funding of regional activities such as the CPA.</p>		
Interest in S&T		
<p>The World Bank has a Chief Scientist and recent established a Science and Technology and Innovation (STI) programme with the aim of amalgamating support to S&TFD. This has helped provide support in programme design and finance allocation for S&T programmes in borrowing countries. Finance for the 25 current pilot programmes in S&TFD are done through the IDA, for country led initiatives.(Watkins, 2006c)</p> <p>The Bank’s historical support to S&T has been reviewed by Watson <i>et al.</i> (2003). The Bank works on the basis that there are clear links between investment in Science and Technology and country-level economic growth. Its programmes support ‘knowledge development’ a term used to describe how countries are able to take advantage of knowledge to foster their economic growth (Farley, 2005).</p> <p>The STI programme focuses on enhancing capacity on ‘knowledge intensive activities’ which focus on the production of high value added goods and services, irrespective of whether they are in high tech or low tech sectors, within four dimensions: Education for the knowledge economy, Research & Development (R&D): Producing new, economically relevant knowledge, Technology Acquisition and Diffusion: Using existing knowledge to improve the competitiveness, Science & Technology Policy Making Capacity. (World Bank, 2006a) A recent example of WB investment support S&T in Africa is the \$30 million project for the Millennium Science Initiative in Uganda, which is geared towards supporting high level scientific and technological research (World Bank, 2005).</p>		
Implementing Agency		
World Bank Group	http://www.worldbank.org/sti	

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Box 5 Profile of development assistance: United States

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	20,852	
Total Africa	4,447	21.3
Total Loans	61	1 %
Total Grants	4,386	99 %
<i>of which Technical Cooperation.</i>	<i>1,703</i>	<i>38 %</i>
Main Recipients		
Egypt	904	20 %
Ethiopia	409	9 %
Sudan	378	8 %
Uganda	208	5 %
Congo, Dem Rep	191	4 %
Overview of modalities of aid		
<p>The modalities for the provision of development assistance and associated institutions in the United States are undergoing significant change. Traditionally, the United States Agency for International Development (USAID) has provided direct support and helped to coordinate the actions of other US agencies (such as the US Department of Agriculture, USDA). Future support for development is to be linked explicitly with US Foreign Policy considerations, a major difference when compared with the major European Donors. Likewise, due to domestic economic policy, aid is likely to remain tied.</p> <p>The Millennium Challenge Corporation (MCC) was established in 2004 to implement commitments made by the United States during the Monterrey Conference on Financing for Development. The MCC works in ways that adopt some aspects of best practice defined by the Monterrey Consensus, but within the overall constraint of contributing to US Foreign Policy objectives. The MCC operated almost entirely at country level.</p> <p>The OECD considers that the US has flexibility to accommodate to short term development needs but is inflexible in terms of long term policy. This is a result of the complex organizational landscape which is set against a 'checks and balances' system by which decisions are often made through Congress. Consequently, policies need support of local lobbyists to succeed. Budget line's allocations are approved at Congress, often themes such as food aid, or charismatic issues such as child protection tend to have greater support. This creates inefficiencies. The DAC review encouraged the USAID to further inter institutional policy coherence, and to raise public awareness if aid, additionally partnering with non government and other public interest organizations (OECD, 2002b). Bilateral ODA implemented by the USAID is tied to procurement of goods and services from the United States.</p>		
Interest in S&T		
<p>USAID supports S&T activities within a wide portfolio of largely sector-focused projects. Agricultural and health research are well supported. The approach adopted by USAID means that US organisations and researchers normally play a significant role in implementation. Much of their research involved US-based universities and research organisations.</p> <p>There has been discussion about increasing the role of S&T in USAID, including the possibility of appointing a Chief Scientist. Much of this has now been put on hold until the institutional review of USAID's activities have been completed</p>		
Implementing Agencies		
USAID	http://www.usaid.gov	
Millennium Challenge Corporation	http://www.mca.gov	

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Box 6 Profile of development assistance: European Commission (EC)

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	9,432	
Total Africa	3,770	40 %
Total Loans	316	7 %
Total Grants	3,454	92 %
<i>of which Technical Cooperation.</i>	<i>152</i>	<i>4 %</i>
Main Recipients		
Congo, Dem Rep.	250	7 %
Egypt	225	6 %
Morocco	220	6 %
Tanzania	163	4 %
Mozambique	155	4 %
South Africa	143	4 %
Overview of modalities of aid		
<p>The European Union administers development assistance under the responsibility of DG Development of the European Commission. Development is placed within the context of the Cotonou Agreement for ACP States (Africa, Caribbean and Pacific). The Commission and Council of Europe published a new Development Policy towards the end of the UK's Presidency in 2005 and published in the Official Journal 2006, (European Commission, 2006).</p> <p>The EU's new Development Policy makes a very strong link to achieving the MDGs and promoting policy coherence within Europe and other donors. There is commitment to respond to the expressed needs of partner countries and the Policy adopts many of the principles of the Paris Declaration on Aid Effectiveness. The EC had already started to make explicit links to promote the role of S&T in development (European Commission, 2002) as a combined EU-ACP vision of the role of research in sustainable development.</p> <p>The EC's Framework Programme for Research and Development is undergoing review, leading up to the implementation of the 7th programme over the period of 2007-2013. FP7 will include specific measures to promote research and development to meet the needs of Europe's partner countries. Specific proposals are not yet available, but the EC may be able to consider issuing specific calls linked to selected priority areas from the CPA.</p>		
Interest in S&T		
<p>The European Commission's Framework Programme is the largest budget area that is directly administered by the Commission (as opposed to member states). The plans to extend the application of research to meet developing country needs through FP7 should be welcomed, but the extent of potential opportunities will need to be assessed when proposals are released.</p> <p>The European Development Fund is looking to increase its investments in S&T and has expressed an interest in making a programmatic investment in the CPA. As the EC is fourth largest donor in Africa, any direct engagement by the Commission in support of the CPA must be seen as highly beneficial. The importance of such links may increase in the future, if some bilateral donors shift to provide a larger proportion of resources through multilateral approaches (see Section 4.5)</p>		
Implementing Agency		
European Commission	http://ec.europa.eu/index_en.htm	

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Box 7 Profile of development assistance: United Kingdom

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	6,774	
Total Africa	2,455	36 %
Total Loans	241	10 %
Total Grants	2,214	90 %
<i>of which Technical Cooperation.</i>	239	10 %
Main Recipients		
Congo, Dem Rep.	301	
Zambia	283	12 %
Ghana	264	11 %
Tanzania	218	9 %
Sudan	117	5 %
Nigeria	126	5 %
Overview of modalities of aid		
<p>Since 1997, considerable changes have occurred in the British Government's approach to international cooperation. The OECD DAC's peer review has given a positive review of the UK's approach to aid, and DFID as an agency that has formed a synergy across Government.</p> <p>DFID Policy has been guided by a series of three White Papers on international development and is regulated through the 2002 International Development Act. DFID operates as a unified single agency in charge of both policy design and delivery, topped with control of a high percentage of the aid budget, which is allocated through a decentralised network of country offices.(OECD, 2006d) The Department operates under a strategic delivery system whose targets are embodied in the latest White Paper (DFID, 2006).</p> <p>Progress against the International Development Act is assessed through the Public Service Agreements, a Government wide system to assess operational progress. This comprehensive monitoring and evaluation system permeates the UK's aid delivery. There is a target to considerably increase the level of aid to allocate 0.7% of the GNI for ODA by 2013 with a strong focus on poverty reduction, mostly in Lower Income Countries (LIC)</p> <p>Up to 1/3 of DFID's ODA is channelled to multilaterals, rendering the UK as an important contributor to the system. It remains a leading aid agency, with potential to support the implementation of the Paris Declaration (OECD, 2006d).</p> <p>DFID's spending is increasingly aligned at country level using PRSPs to set priorities. DFID is implementing many aspects of the Paris Declaration and is a leading proponent of Direct Budget Support for aid delivery.</p>		
Interest in S&T		
<p>The 2006 White Paper '<i>Eliminating world poverty: making governance work for the poor</i>' is the first White Papers that addresses the role that research or S&T can play in development probably reflecting the increasing emphasis placed on these issues since the appointment of the Department's first Chief Scientific Advisor in 2005. Examples of targets contained in the White Paper are varied for example, a commitment to 'double our funding to science and technology research, including efforts to find better drugs, and new technologies for water treatment and to manage climate change' (DFID, 2006)</p> <p>DFID is currently providing support to S&T through NEPAD, the Comprehensive African Agricultural Development Programme (CAADP), and for implementation of the CPA.</p> <p>Important themes include agriculture, health research, water, and climate change</p>		
Implementing Agency		
Department for International Development (DFID) http://www.dfid.gov.uk/		

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Box 8 Profile of development assistance: Japan

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	14,414	
Total Africa	2,373	17 %
Total Loans	251	11%
Total Grants	2,122	89 %
<i>of which Technical Cooperation.</i>	<i>217</i>	<i>9 %</i>
Main Recipients		
Ghana	1,021	43 %
Tanzania	158	7 %
Senegal	142	6 %
Tunisia	100	4 %
Morocco	92	4 %
Mali	86	4 %
Overview of modalities of aid		
<p>Japan's support is mainly provided through bilateral grants, loans, or contributions to multilateral donors, which are coordinated through the Ministry of Foreign Affairs. The overarching aim of Japan's aid effort is to promote peace and security, with poverty reduction as a component, but not an overarching goal determining the country's activities (OECD, 2003a). An unstable economic situation in recent years has prevented a considerable increase in aid commitments in terms of ODA/GNI ratio. A considerable significant proportion of ODA is spent in Asia, with up to 74% channelled to the region in 2003 (OECD, 2003a).</p> <p>Japan International Cooperation Agency (JICA) is Japan's main implementation agency for technical assistance. It is focused on institution building, organizational strengthening and human resource development which can help countries pursue their own sustainable socio-economic growth. Grant aid cooperation is issue-specific, aid implementation plans are designed in country offices, where decisions are made based on needs assessments (JICA, 2006). Technical cooperation is a popular method for aid support; it can involve either posting a Japanese expert to an institution, or fostering study visits to Japan, as well as the creation of bilateral specialists' networks.</p> <p>The Japanese Ministry of Foreign Affairs provides the funds for grant aid cooperation projects also actively participating in grant management (JICA, 2006), Grant aid is understood in Japan to be a form of ODA involving the provision of funds to the governments of developing countries without the obligation of repayment. The aim is to cooperate with economic and social development by helping the government of the recipient country to introduce and upgrade its facilities and equipment. The main types of grants include: general fisheries, cultural, emergency grants (support for disaster relief, democratization, and reconstruction and development); food aid, aid for increased food production, and overseas student' grants. Of these categories of grant aid, JICA deals with general project and overseas students' grants.</p>		
Interest in S&T		
<p>This is mainly in terms of Middle Income Countries for high end technology research, particularly Asia, where the transfer of Japan's technological know how may have a higher likelihood of supporting economic development (Jitsukawa, 2006). Support to S&T in Africa includes for example, provision of cooperation in technical development of agricultural techniques for small-scale farmers in Tanzania, Kenya, and Ghana. In South Africa, JICA supports South-South (triangular) cooperation, to utilize Asia's experience in development (JICA, 2006).</p> <p>In Ghana, by far the highest recipient of aid, with over 1 billion dollars in 2004, JICA supports poverty reduction through economic growth by: helping with the reactivation of the rural economy by improving agricultural productivity and basic social services; promoting industrial Development through support to private sector, particularly small and medium enterprises and the development of human resources needed for the industrial sector, including helping on the technical and vocational education and training. JICA also helps with the quality of science and mathematics education and public administration capacity. (JICA, 2006) As seen through this Ghana example, even when S&T is not singled out as a critical area of support, it runs across many of the development assistance activities.</p>		
Implementing Agency		
Japan International Cooperation Agency (JICA) http://www.jica.go.jp/english/about/oda.html		

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Box 9 Profile of development assistance: Germany

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	5,846	
Total Africa	1,593	27 %
Total Loans	169	11 %
Total Grants	1,424	89 %
<i>of which Technical Cooperation.</i>	683	43 %
Main Recipients		
Cameroon	207	13 %
Egypt	137	9 %
Ethiopia	126	8 %
Morocco	85	5 %
Congo, Dem. Rep.	79	5 %
Overview of modalities of aid		
<p>The overarching policy framework for German development aid is the 'Programme of Action 2015 on poverty reduction'. This is a comprehensive government wide policy which has set poverty reduction as critical in terms of the aid delivery agenda but also across other government sectors. Other key themes include peace building and promotion of equitable globalisation. A backbone of this policy is that economic growth, grounded on governance, is critical for social development in view of progress against the MDGs (OECD, 2005a).</p> <p>The German Federal Ministry for Economic Cooperation and Development (BMZ) has a central function to integrate bilateral, multilateral and sectoral activities. GTZ is one of the main implementing agencies for German overseas development aid; a private company owned by the German Government, that works on a public benefit basis and whose main client is the BMZ. It uses all funds generated as profits exclusively for projects in international cooperation (GTZ, 2006), it operates closely with a parallel organization, the KfW Development Bank, which has the remit to provide development loans. Together, they operate under a complex institutional framework which comprises of more than 30 government and non government organizations. GTZ preferred method of aid delivery is through technical cooperation and training which involves transferring of technical knowledge and dissemination of such.</p> <p>Germany's ODA/GNI ratio is low, at 0.28% in 2004. There is no geographical or macro economic criteria for Germany's regional interventions, it operates under the principle of tackling inequality as well alongside poverty reduction, meaning it operates in middle income countries with growing economies such as India and China. Cooperation in partner countries is in few thematic areas (OECD, 2005a).</p>		
Interest in S&T		
<p>GTZ has supported a range of projects which include a technological component, but has tended not to provide explicit support for S&T. In terms of Sub Saharan Africa, the focus is to be on the following three priority areas:</p> <p>Good Governance, including themes such as decentralization and governance reform process (through projects such as the recent 'Ghana: combating poverty through transparency', which seeks to make gold mining processes more transparent). At a regional level also in terms of governance reform process, peace and security.</p> <p>Private sector Development, which at a regional and country level can include supporting the creation of an enabling environment and support to agribusinesses; the same issues will be covered at a country level, also with support to the development of financial systems.</p> <p>Water, on a country and regional level support to water resources management was singled out with an added layer of urban water and sanitation for the country level (Brueckner, 2006).</p>		
Implementing Agency		
<i>Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) http://www.gtz.de/en/</i>		

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Box 10 Profile of development assistance: Netherlands

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	3,977	
Total Africa	1,244	31 %
Total Loans	0	0 %
Total Grants	1,244	100 %
<i>of which Technical Cooperation.</i>	<i>163</i>	<i>13 %</i>
Main Recipients		
Ghana	153	12 %
Tanzania	118	9 %
Swaziland	98	8 %
Uganda	71	6 %
Mali	64	5 %
Overview of modalities of aid		
<p>At a strategic level, Netherlands' interest is in furthering the overarching rationale of poverty reduction also championing coherence, partnerships, good governance and quality and effectiveness. Of these, coherence is crucial; the Dutch government is seeking to further the consideration of developing country interest within rich countries decision making processes, such as protection of agricultural sector, through elimination of cotton subsidies, for example. The country is seeking to put coherence high in the political agenda, and sees the Poverty Reduction Strategy Papers as the main entry point to introduce the concept to developing countries. The Dutch government channels bilateral aid through governments of developing countries (MINBUZA, 2006).</p> <p>Dutch development assistance is benchmarked against a fixed percentage of ODA. It operates with a limited group of 17 core target countries. (OECD, 2001) It has a structural, bilateral development relationship with the following African countries: Benin, Burkina Faso, Cape Verde, Egypt, Eritrea, Ethiopia, Ghana, Kenya, Mali, Mozambique, Senegal, South Africa, Tanzania, Uganda and Zambia. Special attention is paid to the Great Lakes Region and the Horn of Africa (MINBUZA, 2006). Its development cooperation has strongly based alliances with civil society organizations.</p> <p>In its' 2003 Memorandum, The Netherlands made the statement of putting Africa at the centre of its integrated foreign policy, including development cooperation. The country has pledged to increasing assistance to Africa by 50% of its bilateral development budget, with a continued presence in afore mentioned key partners. Their approach to tackling the development challenge is through an integrated approach whereby security in Africa is achieved through political, economic and diplomatic interventions alongside aid. The modalities of aid will vary according to the level of intervention and range of partners.</p> <p>As a policy, the Netherlands will regularly assess whether local, national or regional level interventions are needed as well as the sort of instruments to be used in a partner by partner basis (and not limited to governments). The Netherlands views NEPAD's constitution, and in particular the Peer Review Mechanism, as a positive sign that Africa is taking greater responsibility of the continent's development into its' own hands (MINBUZA, 2006).</p>		
Interest in S&T		
<p>Science and technology is not mentioned, however, there is a focus on Africa, under the theme on Humanitarian Aid. Netherlands sees the promotion of trade, reform to productive sectors and strengthening the African role in Trade negotiations as the key entry points, all under the umbrella of coherence between development policy and other sectors such as agriculture and the environment (MINBUZA, 2006).</p>		
Implementing Agency		
Dutch Ministry of Foreign Affairs	http://www.minbuza.nl/en/	

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Box 11 Profile of development Assistance: African Development Bank (AfDB),
African Development Fund

	US\$ (millions)	Percent
Total ODA Gross	1,057	
Total Africa	1,057	100 %
Total Loans	145	14 %
Total Grants	912	86 %
<i>of which Technical Cooperation.</i>	<i>N/A</i>	<i>N/A</i>
Main Recipients		
Mozambique	93	9 %
Ethiopia	77	7 %
Tanzania	67	6 %
Uganda	60	6 %
Senegal	57	5 %
Overview of modalities of aid		
<p>The African Development Fund is part of the African Development Bank. It provides development finance on concessional terms to low-income countries which are unable to borrow on the non-concessional terms of the African Development Bank.</p> <p>Poverty reduction is highlighted as the main aim of the Fund, which supports development activities in borrowing countries. The modalities of aid concessional loans and grants providing financing for projects and technical assistance. Loans are provided as interest free, long term loans with a 50-year repayment period (AFDB, 2006) and an annual 0.75 % service charge.</p> <p>The Bank is undergoing a period of rapid change with the aim of becoming more able to meet the needs of Africa and support development objectives in the region.</p>		
Interest in S&T		
<p>The African Development Bank will recruit S&T staff during 2006. This will help the Bank to increase support for S&T activities. It is likely that initial support will be aligned with infrastructure activities as this is the main area currently supported by the Bank</p>		
Implementing Agency		
African Development Bank	http://www.afdb.org	

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Box 12 Profile of development assistance: Portugal

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	890	
Total Africa	809	91 %
Total Loans	698	86 %
Total Grants	111	14 %
<i>of which Technical Cooperation.</i>	82	10 %
Main Recipients		
Angola	715	88 %
Cape Verde	35	4 %
Mozambique	24	3 %
Sao Tome and Principe	13	2 %
Guinea Bissau	12	1 %
Overview of modalities of aid		
<p>Portugal concentrates on a handful of very poor countries where there are historic or linguistic links. A high proportion of its total bilateral ODA goes to few countries in sub-Saharan Africa, largely to Angola. Of the top ten recipients of Portuguese bilateral aid in 2003-04, eight were least developed countries. In terms of aid modalities, debt relief and technical co-operation are the main modalities; projects and programmes are used the least (OECD, 2006c). As of yet, the MDGs are not clearly integrated into Portugal's development policy, preference is given to countries with historic and linguistic links. Priority sectors include education, good governance, participation and democracy. The OECD DAC recommended that Portugal develops guidelines based on needs assessments to support its aid policy framework.</p>		
Interest in S&T		
<p>Support has been provided to Angola's Ministry of Science, Technology and Education, the third most important Ministry recipient of aid, US 16.2 million in 2003. This was considerably reduced to 3.8 in 2004 (OECD, 2006c).</p>		
Implementing Agency		
IPAD <i>Instituto Português de Apoio ao Desenvolvimento</i>		http://www.ipad.mne.gov.pt/

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Box 13 Profile of development assistance: Sweden

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	2,788	
Total Africa	676	24 %
Total Loans	0	0 %
Total Grants	676	100 %
<i>of which Technical Cooperation.</i>	<i>13</i>	<i>2 %</i>
Main Recipients		
Tanzania	84	12 %
Mozambique	68	10 %
Ethiopia	51	8 %
Uganda	43	6 %
Sudan	27	4 %
Overview of modalities of aid		
<p>Sweden has consistently allocated a high ratio of ODA/GNI to aid, with over 0.8 % since 2003, a figure expected to reach 1 % in 2006. The least developed or low income countries are allocated over two thirds of the country's bilateral aid, half of which is assigned to Africa (OECD, 2005d).</p> <p>The Ministry of Foreign Affairs has the remit to design policy whilst the Swedish International Cooperation Agency (SIDA) has a strong field presence, as is responsible for implementing projects worldwide, the approach of its work being geared towards maintaining this presence whilst covering fewer themes. Key aid decisions are approved by parliament, and its Policy for Global Development (PGD) is based on the MDG principles. Sweden has traditionally promoted collaboration with Non Government Organizations, gearing them up towards 18 % of total ODA.</p> <p>Multilateral cooperation comprised around 30 % of total expenditure. Sweden plays a role of international advocacy within donors, and is an active supporter of policy coherence. Policy related decision making is mainly decentralized to embassies.</p>		
Interest in S&T		
<p>S&T for development is covered under SIDA's goal to generate knowledge, with research considered to be one of the most important tools to find solutions to local development challenges. SIDA is the main implementing agency for development cooperation. A considerable part of SIDA's support to S&T is channelled through the Department for Research Cooperation (SAREC); it includes providing financial and scientific resources for the creation and dissemination of new knowledge (Farley, 2005). S&T research can be either embedded into wider institutional programmes or it can be a specific project. In 2004 SIDA disbursed approximately USD 130 million for research cooperation (Farley, 2005). However, specific figures for research allocated to S&T are not available, neither is Science and Technology specifically discussed within SAREC's priority themes (SIDA, 2006).</p>		
Implementing Agency		
SIDA	http://www.sida.se	

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Box 14 Profile of development assistance: Canada

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	2,724	
Total Africa	643	24 %
Total Loans	0	0 %
Total Grants	643	100 %
<i>of which Technical Cooperation.</i>	<i>152</i>	<i>24 %</i>
Main Recipients		
Ethiopia	58	9 %
Ghana	49	8 %
Cameroon	43	7 %
Mali	44	7 %
Sudan	26	4 %
Overview of modalities of aid		
<p>Canada has a complex institutional and aid delivery system, with a range of implementing agencies that cover a wide geographical scope through a projects based system whose approach is currently being reformed to become more programmatic. Canada considers Africa to be a key aid region; NEPAD has been identified as a partner for aid cooperation through the 2002 G8 Plan for Africa. Development assistance is delivered through the Canadian International Development Agency (CIDA), which is aligned with the goal of poverty reduction and achievement of the MDGs. Aid is increasingly delivered through country driven strategies. The key Canadian policy paper is 'Sustainable Development Strategy 2001-2003. Canada's aid is still tied; however, policy and programming are moving towards untying aid and making trade policy fairer, under the principle of increasing policy coherence.</p> <p>Modalities of aid include project support to a varied number of partners, which renders their regional scope wide, with just 45% of bilateral aid traceable. Up to 15% of CIDA's budget is managed via a joint partnership approach through specialised institutions. For example, this budget line is the financial source for the International Research Centre's (IDRC), an organization with an explicit interest in research for S&T. A considerable 17% of total ODA was reported to have been channelled through NGOs in 2000; support to multilaterals is in the range of 30% (OECD, 2002a).</p>		
Interest in S&T		
<p>Canada established the International Development Research Centre (IDRC) as a public corporation through an act of parliament in 1970. It has the specific remit to help developing countries use science and technology to support development. A significant proportion of IDRC's funding is provided by CIDA.</p> <p>IDRC has been a long-term supporter of NEPAD's S&T programme, providing significant support for the Biosciences programme.</p> <p>Support to Africa is predominant with over 54% of this channelled to Africa during 2003 – 2004. Sectors promoted by the Centre include Systems for Biotechnology, support to private sector development.</p> <p>Canada has a National Science Advisor who has pledged commitment to work with the research community.</p> <p>The modes of support provided by IDRC, means that it may also be beneficial to explore direct links with CIDA in relation to the CPA.</p>		
Implementing Agency		
CIDA	http://www.cida.ca	
IDRC	http://www.idrc.ca	

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Box 15 Profile of development assistance: Norway

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	1,866	
Total Africa	627	34 %
Total Loans	10	2 %
Total Grants	617	98 %
<i>of which Technical Cooperation.</i>	<i>104</i>	<i>17 %</i>
Main Recipients		
Tanzania	60	10 %
Mozambique	61	10 %
Sudan	57	9 %
Uganda	41	7 %
Zambia	37	6 %
Overview of modalities of aid		
<p>Norway's development policy is underpinned by two key strategy and policy papers, respectively: Fighting Poverty: the Norwegian Government's Action Plan for Combating Poverty in the South Towards 2015 (2002) and Poverty Together, a Comprehensive Development Policy (2004). Other supporting papers are on HIV/AIDS, education and peace building. The Government of Norway will only align its activities with country policy frameworks such as the Poverty Reduction Strategy Papers. The planning, execution and administration of aid activities has been increasingly decentralized to the country level. Embassies now have a role in improving the coordination and coherence of bilateral and multilateral efforts (OECD, 2005b).</p> <p>NORAD's responsibilities have been modified to cover evaluation, quality assurance, admin of grants schemes, and critically for NEPAD's OST, knowledge management. Norway strongly supports the MDGs as priority areas. Additionally, it has the highest ODA/GNI ratio at .92% in 2003.</p> <p>Norway's bilateral aid constitutes the main modality of support. Their regional coverage is great, extending over 120 countries, seven of which are partner countries; with Sub Saharan Africa receiving up to nearly 50%. The thematic priority areas are aligned with the MDGs and include education, health, agriculture, biodiversity. The approach is predominantly rights based.</p> <p>Multilaterals are supported with up to 28 % of total ODA. Norway is actively driving aid coordination in terms of development cooperation. It is championing joint programming and pooling of funds within the context of PRSPs. NGOs are allocated over 20% of Norwegian aid, mainly for humanitarian activities. It was identified by the DAC that Norway could have mandate to conduct evaluations on policy coherence.</p>		
Interest in S&T		
<p>Implementing agencies are the embassies, but critically in terms of knowledge management, NORAD.</p> <p>S&T is perceived by this agency to be at the core of capacity building activities. Such emphasis is on tertiary education, and development research, including use of research within development cooperation (Farley, 2005). It is hard to pin down the level of support that NORAD receives in terms of Science and Technology and how much of the allocated budget for research is spent on activities which are purely capacity building driven.</p> <p>Within higher education and research S&T is perceived as critical because 'Technological innovation is a major factor in economic development and at the core of a country's competitive advantage in the global economy.' Science and technology is seen as important in terms of innovation and as a knowledge generation, which can be disseminated for local solutions for 'development issues' (NORAD, 2006). In 2003 Norway spent approximately US\$93 million on support to research and higher education.</p> <p>This includes the links to research centres programmes and interventions, as well as country level through bilateral cooperation. A key programme is the Norwegian Programme for Development, Research and Higher Education (NUFU), which is a fund for capacity building used to suffice needs identified at country level by Norwegian embassies, on an ad hoc basis.</p>		
Implementing Agency		
Ministry of Foreign Affairs	http://odin.dep.no	
NORAD	http://www.norad.no	

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Box 16 Profile of development assistance: International Monetary Fund (IMF)

	US\$ (millions)	Percent
Total ODA Gross	1,204	
Total Africa	592	49 %
Total Loans	592	100 %
Total Grants	0	0 %
<i>of which Technical Cooperation.</i>	<i>N/A</i>	<i>N/A</i>
Main Recipients		
Zambia	255	41 %
Congo, Dem Rep	79	13 %
Madagascar	52	9 %
Sierra Leone	42	7 %
Ghana	39	7 %
Burundi	39	7 %
Overview of modalities of aid		
The IMF's Structural Adjustment Facility and Extended Structural Adjustment Facility (SAF & ESAF) have become the Poverty Reduction and Growth Fund (PGRF).		
The IMF's focus and mode of operation means that it will not be relevant to implementation of the CPA, but is included here for completeness		
Interest in S&T		
The IMF has no specific interest in S&T and is unlikely provide support.		
Implementing Agency		
IMF	http://www.imf.org	

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Box 17 Profile of development assistance: Belgium

ODA Allocation 2004	US\$ (millions)	Percent
Total ODA Gross	1,202	
Total Africa	564	47 %
Total Loans	16	3 %
Total Grants	548	97 %
<i>of which Technical Cooperation.</i>	223	40 %
Main Recipients		
Congo Dem Rep	268	48 %
Burundi	26	5 %
Cameroon	23	4 %
Burkina Faso	21	4 %
Tanzania	19	3 %
Overview of modalities of aid Belgium		
<p>Belgium is the smallest donor featured in this review and in Africa directs most of its support to the Democratic Republic of Congo. The DGDC manages c. 30% of the ODA directly and indirectly.</p> <p>The Federal Public Service for Financial Affairs manages loans and contributions to international organizations, which accounts for c. 10% of ODA with other Ministries playing more minor roles in specific issues.</p> <p>The main modalities of aid include direct bilateral cooperation, carried out through the federal government and indirect bilateral cooperation, which includes projects co financed by the DGDC but implemented by other actors such as NGOs.</p> <p>The focus is on 18 countries, with priority given to Central African countries (with 60% of bilateral aid). Sectoral cooperation is on a country needs basis. Multilateral aid accounts for up to 30% of ODA.</p>		
Interest in S&T		
Limited		
Implementing Agency		
DGDC	http://www.dgdc.be/	

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4.3.6 The profiles of donors presented here illustrate the variety of approaches currently being adopted to support development in Africa and the contribution of S&T to that development. A number of semi-structured interviews were conducted to augment this information with emphasis on potential donors, *i.e.* not currently engaged with the CPA.

Donor Perspectives: an insight into World Bank

4.3.7 The World Bank comprises the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD). These two organisations form part of the larger World Bank Group and jointly have responsibility for grants and loans to member governments. The IDA has responsibility for grants and concessionary loans to low income countries and as such is the main part of the World Bank Group that is engaged in Africa.

4.3.8 As of November 2004 activities to support S&T for development have been accounted for within dedicated budget lines for research and research capacity (Farley, 2005). This now means in practice that the World Bank has S&T activities managed by a single group of staff, within the Science Technology and Innovation programme of the World Bank (Watkins, 2006b).

4.3.9 The World Bank Group tends to give assistance to individual projects which Governments support on a country by country basis. In nearly all cases WB support will be aligned against priorities expressed in PRSPs or equivalent national development frameworks. The Banks support for S&T responds to national priorities set by governments for example, incorporating Science and Technology into post primary education, tertiary and vocational education, research in tropical diseases, capacity in education. Science and technology is seen as a critical instrument to achieve Development goals, however, it is a means to an end rather than a goal in itself (Watkins, 2006a).

4.3.10 The largest proportion of WB support to Africa is provided as concessionary loans to individual countries. As such, the WB may have difficulty in significant direct support for regional activities. There are major new initiatives such as the Uganda Millennium Science Initiative. One option for WB engagement may be to ensure that activities that the Bank supports at country level are aligned with regional initiatives supported by the CPA.

4.3.11 Support from the World Bank is geared towards national development often expressed as economic growth. Interventions need to express the likely development outcomes as opposed, for example, the strengthening of research institutes or regional research for S&T. African nations in which S&T is becoming increasingly important to support development include Rwanda, Mozambique and the Democratic Republic of Congo.

4.3.12 Three key messages come out of this profiling are:

- The benefits of investment in S&T ought to be articulated in terms of potential contribution to indicators of development (Macro-economic growth and the MDGs).
- The need investment for S&T must be articulated within national PRSPs.
- There needs to be clear links between the AU-NEPAD CPA and national-level development programmes and objectives.

4.3.13 The 14th replenishment of the IDA contains specific reference to the potential of cross-border or regional programmes to contribute to development and poverty reduction (IDA, 2005) through the generation of global and regional public goods. Five areas have been identified: communicable diseases; environmental commons;

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economic governance and social stability; trade integration and the knowledge revolution. The themes highlighted in IDA14 seem to create opportunities for support of a regional programme such as the CPA, but as with all activities supported by the World Bank, it is essential that support are articulated by national governments through World Bank Country Offices.

United States

- 4.3.14 The United States is currently the second largest bilateral donor in Africa (Table 2) its activities co-ordinated by USAID. In the field, activities may be implemented by a range of other US agencies, such as the US Department of Agriculture (USDA) or Peace Corps.
- 4.3.15 USAID makes significant investments in S&T related areas, for example for agriculture through support of NEPAD's CAADP. The US aid delivery system is currently undergoing a period of significant change with policies moving in a different direction from most other major donors. US development policy increasingly stresses the need for development spending to deliver against US foreign policy objectives. The creation of the Millennium Challenge Corporation, reflects this change and it is expected that there will be a decline in the amount of resources being spent by USAID.
- 4.3.16 Much of the development assistance provided by the United States remains tied. This is particularly true of research where there is normally an expectation that activities will include US organisations such as government departments, universities or NGOs.
- 4.3.17 The opportunities for US engagement on implementation of the CPA are currently limited by the changing policy environment and high degree of tied aid. For this reason, they are not likely to be a major actor during the initial implementation of the Plan.

European Commission

- 4.3.18 The European Commission provides development assistance under the European Development Fund (EDF) led by the Cotonou Agreement for ACP (African, Caribbean and Pacific) states. The EU has published a discussion document on the role of research in supporting development (European Commission, 2002). As such, the EDF is a logical partner to support implementation of the CPA.
- 4.3.19 The European Commission's Framework Programme for research and development will enter its 7th programming period (FP7) from 2007. FP7 has been designed to offer new opportunities for scientists from developing countries to collaborative in its main thematic areas. It is likely that the EC will issue some calls for proposals under FP7 that may be complementary to CPA activities, but direct support and funding for the CPA is more likely to be derived from the EDF.

Japan

- 4.3.20 Japan's main development assistance is provided via the Japan International Cooperation Agency (JICA) providing technical cooperation, mainly on a bilateral basis. Assistance is provided for three strategic areas: poverty reduction and economic growth, improvement of human needs; and economic policy. (JICA, 2006) Country offices have a mandate to provide bilateral support, in kind and through technical cooperation activities. Areas of support which are being carried out in collaboration with NEPAD include: post-conflict peace building; capacity development in countries neighbouring South Africa; and improvement of infrastructure (JICA, 2006) .
- 4.3.21 Japan does not normally provide specific S&T support in Africa, with the exception of South Africa. Science and technology in the African context is seen as a potential

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component of other activities. JICA direct support for S&T in other regions (and South Africa) addresses higher technology branches of science. This is best illustrated in Asia, with a larger percentage of Middle Income countries. Current support in Africa can cover access to user end technologies such as access to internet activities which are mainstreamed within other technical cooperation programmes (Jitsukawa, 2006).

- 4.3.22 Based on this information, the most likely area of engagement for Japan will be related to capacity building.

Germany

- 4.3.23 German technical assistance is implemented via GTZ. Science and Technology does not figure in the MoU agreed between the German Ministry of Foreign Affairs and NEPAD and it is not currently considered to be a priority sector. S&T is not one of the priority areas for Africa (Brueckner, 2006). The German system of development assistance is evolving (OECD, 2005a), and this linked with the new German government, and presidency of the G8 in 2007 could result in shifts in policy.

4.4 Private Foundations

- 4.4.1 Private philanthropic organisations are playing an increasing role in supporting the international development agenda in Africa and elsewhere. The foundations are not bound by the rules or guidelines addressing official development assistance, but must work within their own remit. This may include restrictions on geographic focus, thematic areas and modality of funding.
- 4.4.2 There are some very notable examples of how large philanthropic organisations have contributed to development in Africa. These include the roles of the Rockefeller and Ford foundations in the establishment an ongoing activities of the Consultative Group on International Agricultural Research (CGIAR) and more recent contributions of Wellcome Trust and the Bill and Melinda Gates Foundation to health research.
- 4.4.3 The number of philanthropic organisations globally is large, but realistically only a limited number would have the resources required to be able to make significant contributions to implementation of the CPA. A preliminary list is provided as Table 3.
- 4.4.4 From this list those most likely to be able to support the CPA are the Gates, Ford, Rockefeller Foundations and the Wellcome Trust. The modes of grant or project support offered by most of these organizations means that they are likely to have to restrict their support to specific areas of the CPA, for example Health for the Gates Foundation or Agriculture for the Rockefeller Foundation. This would probably result in Foundations providing complementary funding in support of the CPA, rather than a contribution for a central pool of funds.

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Organisation	Thematic areas	Geographic Focus	Notes	Web
Bill and Melinda Gates Foundation	Health and education	United States and Global, including specific activities in Africa	Providing support to NEPAD-OST for health components of the CPA	http://www.gatesfoundation.org/
David and Lucile Packard Foundation	Conservation and science, population, children and families and communities	Mainly United States	Has provided limited support to Africa. May be interested in some aspects of the CPA	http://www.packard.org/
Ford Foundation	Economic development, community and resource development, human rights, governance and civil society, education, media, arts and culture	International	Has a high profile in Africa and provides support for topics within the CPA. A potential partner.	http://www.fordfound.org/
MacArthur Foundation	International programme: Conservation and sustainable development, human rights, justices, peace and security, migration and human mobility, population and reproductive health	The international programme does not include any countries in Africa	Unlikely to support the CPA	www.macfound.org/
Rockefeller Foundation	Agriculture, arts and culture, health, employment, housing, education and globalization	Global, but only Eastern and Southern Africa	Within the African context, support for agriculture, health and education are relevant	http://www.rockfound.org/
W.K. Kellogg Foundation	In Africa: Economic advancement, public participation in policy, institutional development.	United States, Southern African, Latin America	Support in Africa is limited to seven countries in southern Africa	http://www.wkcf.org/
Wellcome Trust	Human and animal health	Strong UK-based programme, but also supports biomedical research in developing and restructuring countries	UK-based charity funding activities for human and animal health. Has potential to support the CPA	http://www.wellcome.ac.uk/

Table 3 Philanthropic organisations with potential to support implementation of the CPA.

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4.5 The future of aid: alignment, harmonisation and multilateralism?

4.5.1 The Millennium Declaration marked a highly significant event in the evolution of the way that international assistance is provided to the developing world. It was the first time that all world leaders, through the General Assembly of the United Nations, committed to a set of guiding principles for international development. This started a process which has set new standards and approaches to international development.

4.5.2 The Monterrey Consensus of the UN Conference on Financing for Development (United Nations, 2002a) brought together a wide range of stakeholders to discuss that way that aid is delivered. As such, it was the first time that major bilateral donors had combined with multilaterals (e.g. the World Bank and IMF), the private sector and civil society. This process of dialogue has continued and most recently resulted in the Paris Declaration on Aid Effectiveness (PDAE, OECD, 2005c).

Paris Declaration on Aid Effectiveness (PDAE)

4.5.3 The PDAE is based on five fundamental commitments that should underpin the future relationships between donors and their partners.

1. Ownership

4.5.4 Partner countries should exercise leadership to develop and implement their own national development strategies through a broad consultative process. This is often expressed through the development of PRSPs and the PDAE expects that these should be linked into medium-term expenditure frameworks and annual budgets.

4.5.5 Partner countries are expected to take the lead to co-ordinate aid, whilst donors should respect this process and help strengthen national (or regional) capacity to do this.

2. Alignment

4.5.6 Donors are meant to base their support on their partner's own strategies. Implementation should utilise strengthened country systems and donors should move rapidly to untie their aid.

3. Harmonisation

4.5.7 Donors are expected to implement common arrangement and simplify procedures including where possible common arrangements for planning, funding, monitoring and evaluation and reporting. There is a strong emphasis for collective action by donors through harmonisation of activities.

4. Managing for results

4.5.8 Donors and their partners are expected to shift towards managing aid programmes in a way that focuses on desired results and using monitoring information to improve decision-making (or management).

4.5.9 For partner countries this requires much greater emphasis on using national development strategies (such as PRSPs) to determine future spending plans. Linked to this is the need to establish appropriate results-focused reporting and assessment frameworks.

4.5.10 Donors should move towards using their partner country's reporting systems and to harmonise all monitoring and reporting systems. Ideally this would mean that any single development programme would have only one system of monitoring and reporting based on the partner's own systems, irrespective of the number and delivery of donors supporting the programme.

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5. Mutual Accountability

- 4.5.11 Partner countries are expected to strengthen the role of their parliaments in determining development strategies and budgets. A broad range of development partners should be involved in participatory processes for the design and monitoring of development assistance.
- 4.5.12 Donors are required to provide longer-term information of aid flows to help partners to manage their activities.
- 4.5.13 Donors and their partners are committed to joint assessment of implementation of development activities.

Implications of the Paris Declaration

- 4.5.14 The CPA is particularly well suited to adopt the approaches specified by the PDAE. There is clear African ownership of the CPA, through the regional consultations used to develop the plan and the subsequent endorsement by AMCOST. The theme of mutual accountability could extend to linking the CPA or S&T into NEPAD's African Peer Review Mechanism
- 4.5.15 Implementation of the CPA would benefit from donor alignment and harmonisation to provide joint support for the programme. This would avoid "cherry picking" by donors with the resulting loss of ownership and significantly higher transaction costs.
- 4.5.16 The theme of *managing for results* stresses the need to make better linkages between investment and desired development outcomes. The CPA would benefit from having a stronger focus on expected results as this would enhance financial support (from donors and African nations) and provide better information for management.

Recommendation

- 4 Implementation of the CPA would benefit from the principles contained within the Paris Declaration on Aid Effectiveness.

- 4.5.17 The principles of the PDAE most immediately relevant to the CPA include:

- Donor alignment and harmonisation
- Managing for results being linked to potential development impact
- Linkage with national development strategies in Africa (e.g. PRSPs)
- Having a single monitoring and reporting framework for the CPA.

Multilateralism

- 4.5.18 Official Development Assistance (ODA) from the donor community is usually categorised as bilateral assistance (one donor country supporting one or more recipients) or multilateral (more than one donor country supporting one or more recipients).
- 4.5.19 Recent trends to increase collaboration between donors, for example through Sector Wide Approaches (SWAPs), and Direct Budget Support (DBS) against Poverty Reduction Strategy Papers (PRSPs) means that increasingly donors tend to work together. This combined with existing multilateral systems such as the International Development Association of the World Bank Group means that there is an increasing trend towards multilateral aid processes. The principles of the PDAE will reinforce this trend.
- 4.5.20 The total development assistance provide by the European Union (EU Member States plus the European Commission) represents the largest source of ODA on a global basis. In 2005, the EU's Council of Ministers agreed a new Development Policy for Europe (European Commission, 2006). The implementation of this policy will see

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convergence of European development activities to enhance their linkage to the Millennium Development Goals (MDGs) through delivery systems that adhere to the principles of the Paris Declaration.

The future of aid?

- 4.5.21 The future of aid continues to be discussed. Reform of the UN system is generally seen as desirable, albeit an inevitably slow process. There are questions about the future of the IMF, and possible changes in the way that the World Bank works.
- 4.5.22 The challenges derived from the PDAE means that donors are increasingly being asked to work together and untie their aid. Greater alignment onto the national development strategies and the increased use of direct budget support has produced major changes to development assistance to many countries.
- 4.5.23 Through these trends, some organisations are starting to suggest that the current importance of traditional bilateral support may decline with time as donors increase the proportion of aid that is delivered through multilateral mechanisms. There is certainly the suggestion that a number of donors are moving this way, of these the UK is the largest donor to recently indicate a likely move to increased multilateralism, from a current value of around 25 % to as high as 75 % in the future (Overseas Development Institute, 2006).

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4.6 Summary

4.6.1 This section has reviewed major donors and foundations that may be able to provide support for implementation of the CPA. It has helped to provide an initial list of donors and foundations (Table 4) most likely to support implementation of the CPA and stressed the importance of the Paris Declaration on Aid Effectiveness in suggesting the optimal modalities for donor support.

Donor Country	Comments
France	Currently supporting water programme. May be willing to provide wider programmatic support of the CPA.
World Bank	Likely to be willing to align investment at country level if the need for regional activities are articulated in national PRSPs. There may be opportunities for a regional process if the need is clearly articulated by African States.
European Commission	Likely to be willing to contribute programmatic funds through the European Development Fund. May also be able to issue specific calls under the 7 th Framework Programme in support of CPA priority areas.
United Kingdom	Currently providing support for implementation of the CPA. Has expressed an interest in providing ongoing programmatic support for future activities.
Japan	Currently unlikely to provide programmatic support, but may be able to align activities, especially in the area of capacity building.
Germany	Not currently likely to become a major supporter of the CPA. The G8 process in 2007 may be an opportunity for engagement with Germany, through the African Partners Forum
Netherlands	A potential partner, but more likely to form links with specific projects at country level.
Sweden	Has expressed interest in supporting the CPA. Sweden's interest in aid effectiveness means that they may be willing to consider programmatic support under the terms of the PDAE
Canada	Currently support activities within the CPA relating to biosciences. Current activities are supported by IDRC. There may be greater potential in seeking programme support from CIDA. Canada is making slow progress on untied aid and this may restrict their methods of operation
Norway	Has expressed interest in supporting some components of the CPA. Norway is interested in the aid reform agenda and may be willing to consider programmatic support under PDAE terms
Foundation	Most foundations are only likely to be able to support specific activities within the overall programme of the CPA.
Bill & Melinda Gates Foundation	Possible support of health related activities
Ford Foundation	Possible support of activities related to economic development and public participation
Rockefeller Foundation	Possible support for agriculture, health and aspects of education.
Wellcome Trust	Biomedical research and health systems

Table 4 List of donors and foundations with potential interest in providing support for the implementation of the CPA.

4.6.2 Of the countries listed in Table 2 which, do not appear above in Table 4, Portugal and Belgium are excluded because of the narrow geographic focus of their support. The African Development Bank is also excluded because of its current very strong emphasis on loans to build infrastructure in Africa. The United States is considered to be unlikely to support the CPA at present because the changes in American Development Policy will make it more difficult to support regional activities such as the CPA. It is recognised that the AfDB may evolve to become a partner in the CPA, especially with a current process to recruit core S&T staff.

5 Conclusions

- 5.1.1 Africa's Science and Technology Consolidated Plan of Action (CPA) has been designed to promote regional and continental initiatives promoting the contribution of science and technology to Africa's development. This programme requires new approaches in order to mobilise the technical and financial resources required for implementation. This report discusses options to mobilise these resources. Three stakeholder groups are identified: African nations; the private sector and the international donor community.
- 5.1.2 The most important contributions to the implementation of the CPA will come from African nations themselves. This will help to promote ownership of the programme and demonstrate commitment to other stakeholders. With time it is possible that African financial contributions will become significant. Initial contributions are likely to be limited by economic activity on the continent and realistically only a limited number of nations will be able to make significant financial contributions. For this reason, African nations will need to build partnerships with the international donor community to implement the CPA.
- 5.1.3 African nations have made a commitment to allocate up to 1 % of their GDP towards science and technology and provisionally 5 % of this amount of this amount to regional and continental programmes. Using 2004 data for GDP, this would equate to a total of US\$ 395 million for regional activities. The amount potentially available to the CPA would be expected to be less than this amount, allowing for the fact that there are already other regional R&D programmes, for example, in health and agriculture.
- 5.1.4 It is suggested that the case for national contributions to implementation of the CPA would be strengthened through building explicit linkages with national development programmes. Enhanced national investment would be promoted through the provision of a description of likely benefits in terms of the expected social and economic measures rather than just specifying the predicted scientific outputs. Countries that have high flows of official development assistance (as a proportion of total economic activity), will probably need to link their investments with poverty reduction strategies of their equivalent. For this reason implementation the CPA should produce demonstrable progress supporting the achievement of the Millennium Development Goals.
- 5.1.5 Direct private sector investment in support of the CPA is not likely to be significant, at least initially. There are currently low levels of private sector R&D activity across most of Africa. Enhanced activity by the private sector is possible, but it is likely to come through alignment and partnership at national level. This would be possible, for example, through building partnerships with members of some of the Centres of Excellence proposed through the CPA.
- 5.1.6 The international donor community have the ability to support the CPA and a number have either provided initial support or have expressed an interest in supporting future implementation. A group of donors likely to be able to support the CPA have been identified (Table 4) along with several international philanthropic organisations. This review concludes that the process of implementation of the CPA would be greatly assisted through adoption of the principles contained within the Paris Declaration on Aid Effectiveness (PDAE).

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Annex 1. List of interviewees

Date	Place	Name	Position	Organisation
10.08.2006	Telecom	Watkins, Al	Science and Technology Advisor	World Bank
15.08.2006	Telecom	Hughes, Mike	Project Manager	Government of Rwanda
21.08.2006	Telecom	Brueckner, Klaus	Science and Technology Advisor (secondment from GoJ)	GTZ South Africa
21.08.2006	Face to Face discussion	Akeno, Yoshinari	Project Manager	Department of Science and Technology, South Africa
21.08.2006	Face to Face discussion	Jitsukawa, Koji	Minister of Science and Technology	JICA, South Africa Office
22.08.2006	Telecom	Muranzi, Romain Prof.	Science and Technology Advisor	Government of Rwanda
25.08.2006	Telecom	Hauge, Kirstin	Senior Researcher	NORAD, Department of Human Development and Service Delivery

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Annex 2. Standard Interview Questionnaire

Guiding questionnaire for telephone interviews with donors

1. How does your organization support S&T?
2. Is support to S&T in Africa part of its strategic priorities?
 3. What types of organizations do you support?
4. Is your support for S&T untied?
5. Does your organization use Budget Support in Africa and if so are there examples that you know of that support of S&T?
6. Does your organization have priority countries or/and does it favour regional, continental support?
7. Can you provide an estimate of the amount of your organization's level of ODA being dedicated to S&T in Africa, or as a total over all activities?
8. Do you have mechanisms to support regional or sub-regional S&T activities
9. How much of your S&T budget is applied to existing multilateral approaches such as the CGIAR, WHO etc?
10. Do you have an S&T strategy (please provide), and do you have a chief Scientist? If so, where can he/she be contacted?
11. How does your organization use S&T to inform development activities?
12. Are you aware of NEPAD's Consolidated Plan of Action (CPA)?
13. Is your organization likely to be able to support the CPA? If so; in what way? Would you consider programme-level support? If not, which of the flagship programmes might your organization might be interested in supporting?
14. What are the main criteria of potential success that will inform your decisions on funding regional S&T?

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