

*The Need for a Policy Dialogue  
on Science and Technology for Development  
in ACP Countries*

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## List of Acronyms

ACP	African, Caribbean and Pacific Group of States
CGIAR	Consultative Group for International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
CARICOM	Caribbean Community
CTA	Technical Centre for Agricultural and Rural Cooperation (ACP–EU)
DG Dev	Directorate General Development of the European Commission
DG Research	Directorate General Research of the European Commission
EC	European Commission
ECDPM	European Centre for Development Policy Management
EU	European Union
GNP	Gross national product
HIC	High-income country
ICTs	Information and communication technologies
ISSER	Institute for Statistical, Social and Economic Research, Legon, Ghana
LIC	low-income country
NGO	Non-governmental organization
NIP	National Indicative Plan
RTD	Research and technology for development
RIP	Regional Indicative Plan
RTD	Research and Technology for Development
S&T	Science and technology
UNCSTD	United Nations Commission on Science and Technology for Development
UNDP	United Nations Development Programme

## Abstract

The much publicized innovations associated with ‘new technologies’ – biotechnology, biomedical technology, materials science, energy technologies and information and communication technologies (ICTs) – have rekindled interest in the potential of S&T for accelerating the process of economic development among development policy makers. The UNDP have summarized this new mood in its Human Development Report 2001 as follows: ‘if the development community continues to ignore the explosion of technological innovation in food, medicine and information, it risks marginalizing itself and denying developing countries opportunities that, if harnessed effectively, could transform the lives of poor people and offer breakthrough development opportunities to poor countries’.<sup>1</sup> However, to any seasoned observer it is obvious that improving the technological vitality of developing countries is a multi-faceted task that requires nothing less than a transformation of the these countries’ ‘fabric of S&T for development’.

The authors seek to explore the complex issues of technological change, policy development and international cooperation, in particular between the African, Caribbean and Pacific (ACP) countries and the European Union (EU). They examine the extent of the technological divide between high- and low-income countries, and identify some of the principal barriers to the generation, adaptation and diffusion of new technologies in developing countries. They highlight the shift in policy thinking among the development community that is increasingly attaching weight to knowledge-based innovation systems as key to development. The authors continue with a review of the results of a recent ACP–EU project focusing on the development of a framework for policy dialogue on S&T reform in ACP countries and conclude with an assessment of the ‘ACP-EU Partnership in S&T’, a fresh initiative of Mr. Philippe Busquin, Commissioner for Research. As they consider this collaborative programme a welcome, new opportunity for ACP countries to bolster their technological innovation systems, they express their hope that it will not appear to be yet another ‘first step’ in a process already characterized by many false steps and wasted efforts.

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<sup>1</sup> UNDP (2001) *Human Development Report 2001*, Oxford University Press, New York.



# 1 Introduction

The role of science and technology (S&T) in development processes is complex, not least because of the difficulties in identifying the exact technological requirements of the various sectors of a developing economy.<sup>2</sup> Early development models made great play of the contribution of technology to growth and in the literature, the potential impact of technological innovation on productivity and economic development has long been recognized.<sup>3</sup> Yet between high-income and low-income countries there remain extensive variations in the rate and the extent of adoption of technological innovations and the application of scientific and related research. In fact, low technological achievement and mastery is a feature of the weak economic performance of most low-income countries. Many obvious barriers to technological change in these countries have been identified. There are the obstacles of a political nature, such as the inertia associated with weak administrations and entrenched systems of privileges and interests; or, the governments' priority to establishing the superstructure of national industrial establishments, and to excessive military and policing expenditures to hold together their fractious nation states. Other impediments are of an economic nature, and arise from low levels of income and purchasing power that result in major discrepancies between perceived needs and market signals. Such factors deter private and state investment in the human and physical infrastructure that is required to spawn and foster technological innovation and to overcome obvious development problems, policy makers are emphasizing the need of 'good governance' and 'policy change'. In fact, in the last two decades, technology as an instrument to enhance development fell out of favour as extensive investments in science and technology by developing states seemed to have yielded insignificant returns. Donors have contributed to this state of neglect, with their suspicion of, if not hostility to, expensive 'technological fixes' or 'white elephants' that in the past have been all too often inappropriate and took little account of fiscal realities.

The much publicized innovations associated with 'new technologies' – biotechnology, biomedical technology, materials science, energy technologies and information and communication technologies (ICTs) – have rekindled interest in the potential of S&T for accelerating the process of economic development among development policy makers. The UNDP summarized this new mood in its Human Development Report 2001 as follows: 'if the development community continues to ignore the explosion of technological innovation in food, medicine and information, it risks marginalizing itself and denying developing countries opportunities that, if harnessed effectively, could transform the lives of poor people and offer breakthrough development opportunities to poor countries'.<sup>4</sup> However, to any seasoned observer it is obvious that improving the technological vitality of a country is a multi-faceted task that requires much more than that. It involves nothing less than a transformation of the country's 'fabric of S&T for development'.

This paper seeks to explore the complex issues of technological change, policy development and international cooperation, in particular between the African, Caribbean and Pacific (ACP) countries and the European Union (EU). Section 2 briefly highlights the extent of the technological divide between high- and low-income countries, and identifies some of the principal barriers to the generation, adaptation and diffusion of new technologies in developing countries. Section 3 examines a shift in policy thinking among the development community that is increasingly attaching weight to knowledge-based innovation systems as key to development. Section 4 presents the results of a recent ACP-EU project focusing on the development of a framework for policy dialogue on RTD in ACP countries. The project involves both high- income (the EU Member States, plus Norway and Switzerland) and developing countries (the Dominican Republic, Ghana, Senegal, Uganda and Vietnam). Sections 5 and 6 examines recent developments in the Commission's policy on

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<sup>2</sup> For an instructive overview of science and technology policies in practice, see Ogbu, O.M., Oyeyinka, B.O. and Mlawa, H.M. (eds) (1995) *Technology Policy and Practice in Africa*, IDRC, Ottawa.

<sup>3</sup> Caminati, M. (2001) *R&D Models of Economic Growth and the Long-term Evolution of Productivity and Innovation*; Turkosky, S.J. (2001) *Old and New Growth Theories: A Unifying Structure*; and other papers presented at the Conference on Old and New Growth Theories, at the University of Pisa, Italy, October 2001.

<sup>4</sup> UNDP (2001) *Human Development Report 2001*, Oxford University Press, New York.

technological innovation systems and concludes the arguments that have been elaborated on in this paper.

## **2 The Extent of the Technological Divide between High- and Low-income Countries**

If developing and industrialized economies were identical save for governance or purchasing power, the current barriers to the global spread of technological innovations would be easy to surmount. The technological divide between high- and low-income countries is attributable, however, to an intricate web of interrelated factors pertaining to the generation and diffusion of technological innovations as well as the generalization of the conditions for, and process of, developing and nurturing innovation.

The extent of that divide can be ascertained by looking at the availability and quality of (1) human capital (level of education, health, etc.); (2) financial resources devoted to developing and maintaining the RTD infrastructure and capacity; and (3) computing power and the extent of networking and dialogue within local and international RTD communities. Table 1 provides an overview of the situation with regard to these selected indicators. It compares 58 low-income countries (LICs) having a GNP per capita of US\$ 755 or less, with 33 high-income countries (HICs) with a GNP per capita of US\$ 9,266 or more (HICs = 100). Notwithstanding the inevitable loss of detail arising from such a high level of aggregation, the table provides some useful and alarming insights into the status of RTD in developing countries.

### *Human capital*

In addition to being relatively young, the populations of low-income countries are growing rapidly, but life expectancy is low (76:100) and infant mortality rates (children under five) are extremely high (2,000:100). The latter characteristic reflects the impacts of diseases such as malaria, hookworm, sleeping sickness and HIV/AIDS, as well as the lack of access to satisfactory healthcare. For those children who do survive, education levels compare very unfavourably with those in HICs (55:100). Only 51% of the LIC children, for instance, are enrolled in primary, secondary or tertiary education. Similarly, literacy rates in LICs are relatively low (62:100) – only 61.7% of adults have mastered basic reading and writing skills. Among women the proportion is even lower, at 52.2%. Accordingly, the purchasing power of the populations of these LICs is extremely low (7:100).

### *Resources*

The expenditure on R&D in low-income countries pales into insignificance in comparison with that of HICs (1:100). At current levels, absolute expenditure in LICs is often barely sufficient to maintain the physical infrastructure and to pay the salaries of a declining technical workforce, typically leaving little or nothing for acquiring equipment and undertaking research.<sup>5</sup> It is therefore hardly surprising to find that in this group of states there are only 47 scientists engaged in R&D per 100,000 people – a mere 2% of the comparable workforce in HICs. Largely as a consequence, in 1997, for example, scientists in LICs filed a meagre 16,000 patent applications, whereas 2.1 million were filed by those in the HICs (1:100).<sup>6</sup>

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<sup>5</sup> Aryeetey, E. (2000) *A Diagnostic Study of Research and Technology Development in Ghana*, Technical Publication 60, Institute of Statistical, Social and Economic Research, University of Ghana.

<sup>6</sup> In 1999, a record number (76,023) of patents were filed worldwide, three-quarters of which originated in only five OECD states – the USA 40%, Germany 15%, Japan 10%, the UK 6% and France 5%. In the USA itself, a record 153,493 utility patents were filed in 1999.

**Table 1:** The technological divide between high- and low-income countries.

Selected indicators	Year	Unit/measure	High-income countries (HICs)	Low-income countries (LICs)	LIC/HIC (%)
<b>Human capital indicators</b>					
Human Development Index (HDI)	1999		0.926	0.549	59
GDP per capita	1999	PPP <sup>a</sup> in US\$	25,860	1,910	7
Population under age 15	1999	%	18.6	37.2	200
Annual population growth 1999–2015		%	0.4	1.7	425
Infant (under five) mortality rate	1999	per 1,000 births	6	120	2,000
Life expectancy at birth	1999	Years	78	59	76
Primary, secondary, tertiary enrolment	1999	%	93	51	55
Adult literacy rate (male and female)	1999	% age 15+	(99)	61.7	62
Adult literacy rate (female only)	1999	% age 15+	(99)	52.2	53
<b>Resources indicators</b>					
Total GNP <sup>b</sup>	1997	US\$ billion	23,802	722	3
R&D expenditures 1987–97 <sup>c</sup>		% of GNP	2.4	0.9	38
Total R&D expenditures	1997	US\$ billion	571	6	1
Scientists/engineers in R&D 1987–97 <sup>c</sup>		per 100,000 people	3,127	47d	2
Patent applications filed	1997	*1,000	2,137	16e	1
High-technology exports	1998	% goods exported	21	4	19
<b>Computing power and networking indicators</b>					
Telephone main lines	1999	per 1,000 people	591	27	5
Cellular mobile subscribers	1999	per 1,000 people	373	3	1
Personal computers	1999	per 1,000 people	311	3	1
Internet hosts	1999	per 1,000 people	95.2	0.1	0
Electricity consumption	1998	Kilowatt-hours	8,406	362	4

<sup>a</sup> PPP = purchasing power parity, in US\$.

<sup>b</sup> GNP 1997, Atlas method ([www.lefo.ro/iwlearn/pdf/gnp.pdf](http://www.lefo.ro/iwlearn/pdf/gnp.pdf)).

<sup>c</sup> Data refer to the most recent year available during this period.

<sup>d</sup> Based on data available from 11 countries only.

<sup>e</sup> Applications filed by residents only.

Source: UNDP (2001) *Human Development Report 2001*, Oxford University Press, New York.

### *Extent of networking*

The recent explosion and diffusion of scientific knowledge in HICs has been significantly facilitated by the rapid advances in computing power and the declining costs of computing. In addition, the revolution in telecommunications has dramatically increased our capacity to share information through high-speed (inter)national data and voice transmissions. At the competitive boundary, success in research is crucially dependent on the availability of relatively cheap computing power and access to the Internet. By this measure, the ICT infrastructure in the LICs leaves much to be desired. For every 1,000 people there are just 27 telephone lines (5:100), a mere 3.2 computers (1:100) and just 0.1 Internet hosts (0:100).

This situation has resulted in a marked discrepancy between the world's research agenda and the research needs of LICs. In HICs, the agricultural research budget of a private company such as Monsanto is in excess of US\$ 10 billion. Yet the 16 tropical research institutes that form the Consultative Group for International Agricultural Research (CGIAR) and which address the needs of the LICs, have been unable to raise the US\$ 400 million needed to implement their annual research agenda for the period 2000–2010.<sup>7</sup> In a similar vein, global spending on medical research in 1998 was

<sup>7</sup> Pardey, P.G. and N.M. Beintema (2001) *Slow Magic: Agricultural R&D a Century after Mendel* ([www.ifpri.org/checknames.cfm/fpr31.pdf?name=fpr31.pdf&direc=d:/webs/ifpri/pubs/fpr](http://www.ifpri.org/checknames.cfm/fpr31.pdf?name=fpr31.pdf&direc=d:/webs/ifpri/pubs/fpr)) IFPRI, Washington, DC; CGIAR (2001) *CGIAR Annual Report 2000: The Challenge of Climate Change: Poor Farmers at Risk*, Consultative Group for International Agric. Research, Washington, DC.

US\$ 70 billion, of which less than 10% was devoted to research into the health problems that affect 90% of the world's population. In the mid 1990s, the direct and indirect costs of malaria, one of the leading causes of sickness and death in the developing world, have been estimated to be US\$ 2 billion per annum, yet a meagre US\$ 100 million per year was dedicated to malaria research.<sup>8</sup> The cost-benefit ratio of investments in biological control of insect pests is high. For example, this ratio is an estimated 150 for research on the control of the mealy bug, which routinely decimates increasing proportions of Africa's staple crops such as cassava. Yet, research in this and similar areas (such as the so-called orphaned crops) is woefully inadequate.<sup>9</sup>

Science and technology (S&T) for development is dependent on the existence of well established educational institutions, reliable ICT and energy infrastructures, as well as dependable political, financial and legal (property rights) systems, most of which have deteriorated in developing countries over the past 40 years. Funds for public S&T in LICs have declined dramatically and the private sector has not been able or inclined to compensate for this decline in public expenditure. It is often claimed that in OECD countries public-private partnerships have successfully compensated for the declining public funding of S&T, and that LIC countries should learn from these experiences. But this claim should be examined carefully. First, the phenomenon of public-private partnerships in S&T is peculiar to the OECD countries. Second, only 12% of corporate research funding goes to farm-level technologies; most of it goes to food processing and post-harvest research, illustrating the reality that, by and large, farm-based research still depends on public funding while private research has tended to be factory-based. For all practical purposes, that public-private partnerships can bridge the technology divide is an idea that still held only by over-optimistic bureaucrats within development agencies.<sup>10</sup>

### 3 Shifting Thinking: Knowledge as the Key to Development

Clive Thomas, in a provocative but important text that was popular among students of the Marxist/structuralist school in the Caribbean and East Africa in the 1970 and 1980s,<sup>11</sup> argued that developing countries should seek to produce what they consume and consume what they produce. In effect, he emphasized the necessity to ensure that innovation and production structures are demand-related. Thomas further pointed to the hazards of making economic development dependent on consumer tastes that are often externally dictated and irrelevant to the needs of financially disenfranchised masses.<sup>12</sup> This second part of Thomas' argument, which lies at the heart of today's policy debate on S&T for development, was quietly buried. Governments and development agencies have demonstrated a total lack of commitment to develop and maintain their S&T infrastructure and capabilities for demand-led research for development.

A number of non-governmental organizations (NGOs) have sought to incorporate the ideas of thinkers such as Thomas in their development strategies. They have successfully integrated S&T work into their poverty eradication programmes, in particular for the generation and articulation of *locally contextualized* knowledge. One such NGO is the BAIF Development Research Foundation in Pune, India, which has successfully integrated 'high-tech' artificial insemination techniques into a traditional village development programme and boosted the milk production of tens of thousands of small

<sup>8</sup> *The Economist* (2001) 'Aids vaccines on trial', 3 February 2001; WHO (1996) *The Malaria Control Programme*, World Health Organization, Geneva.

<sup>9</sup> Pistrup-Anderson, P and Cohen, M.J. (2000) *Biotechnology and the CGIAR*, IFPRI, Rome; FAO (2002) *28th Session of FAO's Committee on World Food Security*, Rome, 6-8 June 2002.

<sup>10</sup> An illustrative case of how difficult it is to acquire funding from private sector organizations is the Cassava Biotechnology Network (CBN), see Engelhard, R.J. and Box, L. (1999) *Making North-South Networks Work: A Contribution to a Common Vision for the Future of Science and Technology for Development*, paper prepared for the Fourth Session of the UNCSTD, Geneva, 17 May 1999. Posted on *Nature's* website at <http://helix.nature.com/wcs/a37.html>.

<sup>11</sup> Thomas, C. (1974) *Dependence and Transformation: The Economics of the Transition to Socialism*, NY, Monthly Review Press.

<sup>12</sup> Thomas, C.Y. (1979) *Dependence and Transformation*. MRP. New York.

farms.<sup>13</sup> Governments have been slow to follow the example of BIAF and other NGOs. Although their leaders have often played important roles as policy advisers at the national and international levels, their *organizations* are too often perceived as potential sources of political opposition.

International organizations have paved the road for a shift in thinking about the role of S&T in development processes.<sup>14</sup> The UNDP eloquently captured this shift in its Human Development Report 2001,<sup>15</sup> emphasizing the necessity for developing countries to strengthen their indigenous ‘knowledge capacities’ in order to become competitive in a ‘globalizing, knowledge-based economy’. With this, the UNDP and other international organizations have put ‘knowledge as key to socio-economic development’ on the political agenda and have begun a search for knowledge and innovation systems that would enable economies to:

- systematically identify and facilitate innovations arising in various (usually non-formalized/scientific) sectors of their domestic economies;<sup>16</sup> and
- import where appropriate, and adapt, as a matter of routine, scientific discoveries and innovations made outside their domestic economies.

The governments of some developing countries have begun to reflect this thinking and approach in their national policies and are now actively involved in the process of redefining the role of S&T in their strategies for economic and social development. Here we cite just three examples:

- In 1996, in a White Paper on Science and Technology,<sup>17</sup> the government of South Africa argued that no society that wishes to improve the wellbeing and prosperity of its citizens can afford to ignore the need to establish its own national system to promote S&T-based innovations.
- In 1997 the government of Vietnam published a well-known policy study in which it assessed the impact of current Vietnamese S&T policies on its economic and social development and outlined a new S&T strategy that would form one of the cornerstones of its development policy to modernize its agriculture-based economy.<sup>18</sup>
- In 2000 the government of Ghana devoted its National Human Development Report to ‘Science, Technology and Human Development’.<sup>19</sup>

The impact of this shift in thinking on the role of knowledge as key to socio-economic development, and on indigenous ‘knowledge capacities’ and ‘S&T-based innovation systems’ has yet to be felt at the operational level. In its Human Development Report 2001, the UNDP lists some of examples<sup>20</sup> of

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<sup>13</sup> Engelhard, R.J. (1989) *BAIF: Monitoring and Evaluation: Advice on the Establishment of Monitoring and Evaluation Policies and Implementation Strategies*, report prepared for IDRC, Ottawa, and BAIF (Pune), and other IDRC publications.

<sup>14</sup> In a number of strategic policy studies, the UN Commission for Science and Technology for Development (UNCSTD) – together with research institutes, organizations such as IDRC, IDS/SPRU, the Rockefeller and Ford Foundations, and the UN (UNDP, UNESCO and UNU-Intech) – have paved the road for a shift in thinking about technology in development processes. See UNCSTD (1995) *Missing Links: Gender Equity in Science and Technology for Development*, IDRC/ITP/UNIFEM, Ottawa/London/New York; UNCSTD (1997) *An Assault on Poverty: Basic Human Needs, Science, and Technology*, Panel on Technology for Basic Needs, UNCSTD, IDRC/UNCTAD, Ottawa/Geneva; and Mansell, R. and Wehn, U. (1998) *Knowledge Societies: Information Technology for Sustainable Development*, for UNCSTD. Oxford University Press. This change is now slowly transforming the policies that guide decision making in both international organizations and donor agencies. In late 1998, for example, the World Bank made ‘knowledge’ and ‘access to new technologies’ an all-embracing issue in its future policies (see World Bank (1998) *World Development Report: Knowledge for Development 1998/99*, Oxford University Press, New York).

<sup>15</sup> UNDP *Human Development Reports 1999 and 2001*, UNDP, New York.

<sup>16</sup> For a critique of the transfer of technology paradigm and the virtues of participatory technology development (PTD) or farmer-led experimentation, see Reij, C. and Waters-Bayer, A. (ed) (2001) *Farmer Innovation in Africa: A source of inspiration for agricultural development*, Earthscan, London. For a discussion of participatory rural appraisal, see Chambers, R. (1997) *Whose Reality Counts? Putting the First Last*. Intermediate Technology Development Group Publishing, London.

<sup>17</sup> Government of South Africa (1996) *White Paper on Science and Technology: Preparing for the 21st century*, Department of Arts, Culture, Science and Technology, Pretoria. [www.dacst.gov.za/science\\_technology/](http://www.dacst.gov.za/science_technology/)

<sup>18</sup> Besanzon, K. et al (1999) *Viet Nam at Cross Roads: the Role of Science and Technology*, IDRC, Ottawa.

<sup>19</sup> Bortei-Doku Aryeetey, E. et al. (2002), *National Human Development Report 2000: Science, Technology and Human Development*, Government of Ghana/UNDP. [http://hdr.undp.org/reports/detail\\_reports.cfm?view=502](http://hdr.undp.org/reports/detail_reports.cfm?view=502)

<sup>20</sup> UNDP (2001) *Human Development Report 2001*, Oxford University Press, pp.110-111.

this lack of follow-up:

- Many pressing problems in the South require research at the global or regional levels. Examples include the development of a tuberculosis vaccine, the preservation of the germplasm of indigenous plant varieties, or the application of digital satellite monitoring techniques for the early detection of environmental damage due to natural and human disasters. However, donors have been slow to respond to such challenges in the form of programmes with regional or even global approaches; many of them still have to develop their ‘toolbox’ of procedures for processing, assessing and monitoring global and regional programmes.
- Many donor agencies have ‘mainstreamed’ S&T and have to find funds to support research projects under other budget lines. The absence of separate budget lines for S&T in donors’ programme planning systems, and in the Development Assistance Committee’s reporting system for donor assistance, often causes bureaucratic problems in allocating funds to S&T projects, in providing information on their efforts, and in encouraging greater attention to their results.
- Current politics and the short-term planning horizons of many bilateral and multilateral donor agencies limit investments in S&T and technology-based development programmes that require long-term experimentation before they show results.
- Donor agencies tend to favour small, low-risk initiatives that are easy to monitor and control. This tendency often leads to the fragmentation of efforts supported by many donors, at the expense of projects that are strategically important but require bigger S&T investments and effective coordination (often among recipient countries too).

With a few exceptions, advances in S&T for development still take place exclusively in high-income countries according to the research priorities that are dictated by the market in those countries. Developing countries therefore urgently require their own, *locally contextualized* applications of the new technologies originating in the North,<sup>21</sup> and need to mobilize and strengthen their own S&T infrastructures and capabilities to address their development problems from their own policy perspectives.

## 4 ACP–EU Policy Dialogue on RTD

The European Commission recently turned its attention to supporting the mobilization and reform of RTD<sup>22</sup> infrastructures and capabilities in developing countries. In 1997 a new RTD programme support policy<sup>23</sup> was adopted and later (in March 1999) endorsed by the European Parliament<sup>24</sup> and then by the ACP–EU Assembly<sup>25</sup> (in April 1999). In this RTD programme, the Commission opted for two lines of action:

- supporting RTD policy reform and capacity building with special attention to ‘creating a facilitating environment for science and higher education, including universities’ in the 77 African, Caribbean and Pacific (ACP) countries with which the EU collaborates under the Cotonou Agreement (see Annex 1); and
- strengthening research collaboration between the European scientific community and its partners in developing countries.<sup>26</sup>

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<sup>21</sup> Bell, R.M. and Pavitt, K. (1993) ‘Technological accumulation and industrial growth: contrasts between developed and developing countries’, in *Industrial and Corporate Change*, vol.2 (2).

<sup>22</sup> In this and following sections, the terms S&T and RTD (research and technology for development) are used interchangeably.

<sup>23</sup> European Commission, Communication to the European Council and Parliament, *Scientific and Technological Research: A Strategic Part of the European Union’s Development Cooperation with Developing Countries*, COM (97) 174, final, 25 April 1997.

<sup>24</sup> Parliament of the European Union, Resolution A4-0089/99 on *RTD in Development Policy*, dated 9 March 1999.

<sup>25</sup> ACP–EU Assembly, 28th Session, Resolution ACP/EU 2749/99/fin on *The Contribution of Research and Science – including ICTs – to Sustainable Development*, 1 April 1999.

<sup>26</sup> Council Resolution on research and technological development in the context of the EU’s development cooperation policy, paragraph 8, dated 5 July 1997.

## 4.1 Towards a Policy Dialogue on RTD

In pursuit of these intentions, the EU initiated a *dialogue on policy* between the Commission, EU Member States and ACP countries. It determined that a number of policy issues required further consideration and that a number of actors should become involved.

### *Issues requiring further consideration*

The Commission recognized a number of issues that required further consideration, including the following:<sup>27</sup>

- the inadequate policy framework for RTD in developing countries, which has muted the impact of dispersed, often excellent RTD work;
- insufficient involvement of technology end-users and civil society organizations in setting RTD policy priorities, with the result that projects are perceived as being too academic;
- the need for adequate modalities of effective collaboration between RTD research institutes and the private sector in ACP countries;
- the weak impact of North–South research cooperation on development due to (i) the frequent asymmetry in these partnerships, which operate to the detriment of the partners in ACP countries; and (ii) the exclusive focus (frequently at the behest of European donors) on three areas (sustainable management of natural resources, agriculture and health), thus effectively excluding new technologies (educational technology, biotechnology, biomedical technology, energy technology, and ICTs in particular); and
- the absence of a shared vision among European donors and developing country governments about the crucial role of RTD in the development process.

This policy dialogue on RTD was to focus on the following four principal challenges:

- the development of appropriate national RTD policies in ACP countries, to address their inadequate and often inappropriate research capacity;
- the formulation of strategies for supporting institutional reforms of RTD infrastructure and for strengthening the national RTD capacities in ACP countries;
- the intensification of scientific cooperation at national, regional and international levels; and
- the identification of innovative funding mechanisms to develop and sustain appropriate RTD infrastructure in developing countries

### *Actors to be involved in the policy dialogue*

It was thought to be appropriate to involve a wide range of actors in the RTD policy dialogue. These actors, all of whom represent constituencies with differing responsibilities, policy agendas, and scientific and commercial interests, would include:

- public authorities responsible for (i) formulating and implementing national (and regional) RTD policies, and (ii) reforming and strengthening national RTD infrastructure and capacities, in both public and private sectors of ACP states;
- donor agencies, including the Commission and EU Member States;
- RTD communities (universities, research institutes and networks) in ACP countries, who should play an active role in (i) establishing priorities in RTD policies, (ii) developing sustainable sources of funding for their implementation, and (iii) promoting (innovative) forms of collaboration with universities, research institutes and the private sector both within their regions and with high-income countries; and
- civil society organizations, which are increasingly acting as conduits between the local producers and end-users of technology, and the private sector (including, where appropriate, multinationals) that have built up dominant positions in basic and applied RTD.

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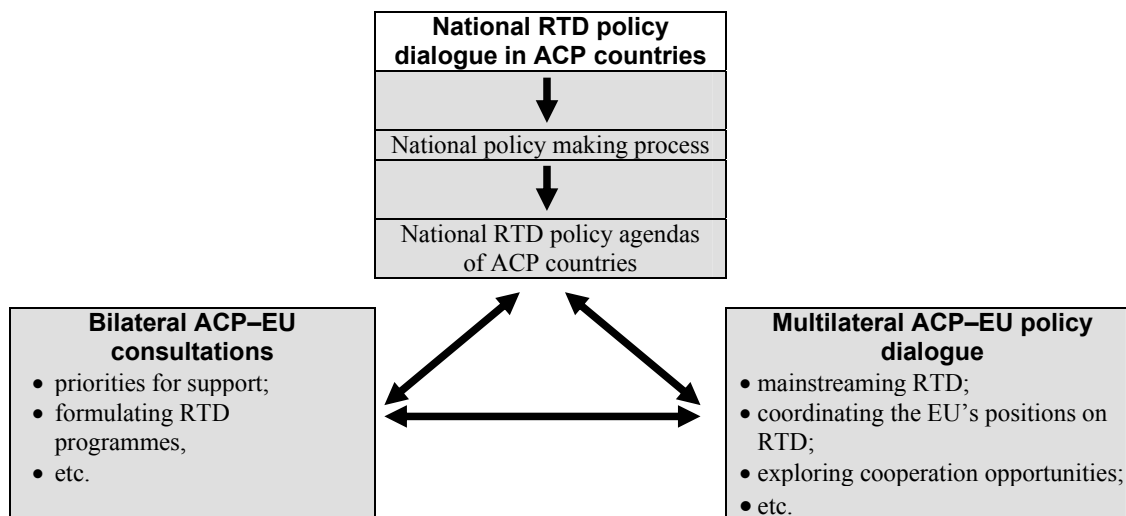
<sup>27</sup> European Commission (1997), *Scientific and Technological Research*, COM(97)174, *ibid*.

## 4.2 Developing a Framework for the ACP–EU Policy Dialogue on RTD

In the past, or to be fair, perhaps at any time, constructive policy dialogue involving such a wide range of interests and expertise – spanning policy makers and RTD practitioners, captains of industry and end-users – has proven to be elusive. The Commission’s DG Development, with funds from the Netherlands government, assigned to the European Centre for Development Policy Management (ECDPM, Maastricht) a unique project to develop a framework for such a policy dialogue.<sup>28</sup>

This framework sought to establish the environment for *energizing and articulating the knowledge and expertise* that exists among the wide range of RTD stakeholders. This process of dialogue on RTD therefore needed to be carefully orchestrated. There were to be three components: (i) a national RTD policy dialogue in ACP countries; (ii) bilateral consultations between the governments of ACP countries and the Commission; and (iii) ‘multilateral’ ACP–EU policy discussions on RTD.

In developing the framework for the policy dialogue, a sharp distinction was made between ‘policy making’ and ‘policy dialogue’. Whereas policy making could be a formalized process, managed in stages and directed by procedures, the policy dialogue envisaged under this proposal is intended to be a much less structured or stylized mechanism. It would consist of expert consultations, workshops, seminars, roundtable conferences and public debates in the media. If well orchestrated, a national RTD policy dialogue could do much more than gather inputs from stakeholders. It could be designed to enable stakeholders to endorse policy goals, to build consensus around priorities, and to develop fully supported implementation strategies. In short, a national RTD policy dialogue is a mechanism that could enable RTD stakeholders in ACP countries to organize themselves around a common RTD policy agenda, with jointly defined priorities, to address the actual development needs in each country.



**Figure 1:** Three components of the ACP–EU policy dialogue on RTD reform

The ‘National RTD Policy Dialogue’ as a mechanism for formulating a widely supported national RTD policy agenda was considered to be a critical cornerstone of any replicable framework for RTD reform in ACP countries. Therefore, in order to learn from past experiences and to ascertain how the process might best be undertaken, it was decided to carry out four concise assessments of the national

<sup>28</sup> ACP–EU Policy Dialogue on RTD, was implemented by ECDPM with the assistance of the University of Maastricht, in 2000–2001. For a description of the set up of this project see: Engelhard, R.J. (1999) *Research and Technology for Development (RTD): support to the ACP–EU policy dialogue, a funding proposal version 3.1* for the European Commission’s DG Development, the Netherlands Ministry of Foreign Affairs (DGIS-DCO/OZ) and ECDPM.



RTD policy dialogues as had been conducted in Ghana, Senegal, Uganda and Vietnam.<sup>29</sup> In addition to the work in these four countries, the project team decided to monitor the work of an ongoing RTD diagnostic study in the Dominican Republic that had been funded by the Commission and implemented with professional advice from ECDPM.

### 4.3 Assessing National RTD Policy Dialogues

The findings of the assessment studies were compiled in four country reports<sup>30</sup> by Professor Ernest Aryeetey of Ghana,<sup>31</sup> Dr Moussa Cissé of Senegal,<sup>32</sup> Dr Nguyen Ha of Vietnam<sup>33</sup> and Dr Alex Tindimubona of Uganda.<sup>34</sup> In these studies the researchers focused on the national dialogue on RTD in their countries rather than on research infrastructure and capacities. They placed the national policy dialogue in an *historical perspective*, described the *salient features* and investigated the extent to which the activity itself was an *open, ongoing learning process*.<sup>35</sup>

#### *Historical context of current national RTD policy dialogues*

In the early post-independence era all four countries made notable efforts to develop their own scientific and technological capacity to support socio-economic development efforts. As early as the 1950s, Vietnam established a national coordinating agency for S&T that has remained operational ever since, even at the height of the American War. Senegal established a body for implementing S&T policies in 1960. Uganda and Ghana undertook similar initiatives in the 1960s and early 1970s.

During the 1970s and 1980s, however, these early efforts to build S&T or RTD capacities suffered serious setbacks, primarily as a result of national political events: in Uganda, there was the economic and social collapse during the Idi Amin era and subsequent years; in Vietnam, the American War and its legacy of devastation; and, in Ghana and Senegal, the effects of economic stagnation and institutional instability. Since the mid-1980s, however, political interest in building national S&T capacities has been on the increase. In Vietnam, *Doi Moi* (political renovation introduced in 1986) had far-reaching consequences for S&T policies, which until then had been based on the Soviet ‘science-push’ model. In Uganda, the Museveni government prepared the first draft of a national S&T policy (1991). In Ghana, a Ministry of Environment, Science and Technology was created, with a Minister having cabinet status. Some programmes have been cut back under structural adjustment programmes. In all four countries, however, RTD policy development has recently regained considerable momentum and S&T policy-making processes are taking place supported by national policy dialogue.

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<sup>29</sup> The choice of these countries was guided by pragmatic criteria such as: (1) similar levels of socio-economic development and similar populations; (2) different scientific cultures and different recent histories; (3) the availability of recent RTD diagnostic study reports; and (4) the presence of a highly qualified researcher who would be available to carry out the assessment at short notice.

<sup>30</sup> The four country reports are available at [www.demanding-innovation.org](http://www.demanding-innovation.org).

<sup>31</sup> Aryeetey, E. (2000) *The National Policy Dialogue on Research and Technology Development in Ghana*, ISSER, University of Ghana, Legon.

<sup>32</sup> Cissé, M.K. (2000) *Étude sur le dialogue politique en matière de recherche et de technologie pour le développement, Cas du Sénégal*, ENDA, Dakar

<sup>33</sup> Ha, N.T. *et al.* (2000) *The National Policy Dialogue on Research and Technology in Vietnam*, NISTPASS, Hanoi.

<sup>34</sup> Tindimubona, A.R. (2000) *The National Policy Dialogue on Research and Technology for Development in Uganda*, ASTEX, Kampala.

<sup>35</sup> For the four assessment studies, the ‘RTD policy dialogue’ was conceptualized around four basic elements: (i) *the activity*, i.e. an ‘open’ ‘ongoing’ ‘learning’ ‘process’; (ii) *the actors*, i.e. the ‘RTD stakeholders’ and their ‘mutual power relations’; (iii) *the content*, i.e. the ‘issues that are being addressed’; and (iv) *the level*, i.e. ‘intra-national’ ‘inter-regional’ and/or ‘inter-national’. The methodological framework itself was developed in Bijker, W. *et al.* (2000) *On a Methodology for RTD Diagnostic Studies in ACP Countries*, University of Maastricht.

### *Salient features of current national RTD policy dialogues*

The researchers identified the fact that the national RTD dialogues have taken a wide variety of forms, each with its unique institutional arrangements and associated problems of coordination and participation.

#### *Institutional arrangements to encourage and coordinate the policy dialogue*

In all four countries, the governments have made specific institutional arrangements to encourage and coordinate the national RTD policy dialogue. In Vietnam, the RTD policy-making and national policy dialogue processes are intricately entwined. An elaborate and highly formalized bureaucratic structure is in place to ensure that at appropriate moments in the policy-making process the opinions, suggestions and advice of relevant organizations and individual experts is garnered (through seminars and workshops, or the circulation of draft policy documents or position papers).

In the African countries, the two processes are less tightly interwoven. Governments have commissioned specific bodies (a Science and Technology Policy Research Institute in Senegal, an Inter-ministerial Committee on Scientific and Technical Research in Vietnam, and a Council for Science and Technology Research in Ghana) to coordinate the dialogue. However, the dialogue has been rather *ad hoc* in nature, its occurrence dependent on ‘events’. In Ghana, the focus on ‘Science, Technology and Human Development’ in the National Human Development Report 2000 and in the drafting of the Medium-term Development Plan 2001–2005 has resulted in a plethora of workshops on the role of RTD in various development processes, and of discussions in cross-sectoral planning groups on whether or not RTD should become a priority policy area of the government. The authors of the reports on Uganda and Senegal reproach the coordinating bodies for the rather static national RTD policy dialogue. It is argued that these bodies may have functioned well in the past but that for some years they have experienced a kind of lethargy, aggravated by coordination and articulation problems between the various components of their national RTD systems.

#### *Coordination problems between hierarchical levels and among RTD stakeholders*

All four country reports, especially those on Africa, point to problems between various hierarchical levels in the national policy dialogue and among the various participating RTD stakeholders. Typically, the conclusions and recommendations formulated in a workshop are subsequently taken up one step higher in the (government) hierarchy, where the arguments underlying the conclusions may not be understood or accepted, and consequently the recommendations are ignored. Furthermore, in the absence of active national networks of RTD stakeholders, lateral linkages are structurally weak and policy workshops are rarely followed up. The Ghana report clearly shows that if such coordination problems are not adequately addressed, the RTD stakeholders may justifiably start questioning the relevance of their participation and lose faith in the applicability of the final outcome of the policy-making process.

#### *Participation of RTD stakeholders, particularly the private sector*

In the past, national policy dialogues have been dominated by the relevant government departments and the research community. Since the mid-1990s, however, coordinators have been required to bring the private sector into the dialogue. It was hoped that private sector involvement would result in the establishment of public–private partnerships that would supplement government and donor funding. However, in all four countries, the involvement of the private sector (and other end-users of technology) has remained insignificant, although there have been some interesting exceptions. The authors offer a litany of reasons for this situation, including weak linkages between research institutes and productive sector organizations; and the incidence of industrial enterprises wholly owned by foreign corporations that do not engage in technology transfer to any significant degree, let alone contribute to an RTD policy dialogue.

#### *An open, learning and ongoing process?*

The four researchers examined qualitative aspects of their national RTD policy dialogue, such as

*openness* (the extent to which policy goals and priorities are amenable to revision during the dialogue); *learning* (the capacity for the outputs of the policy dialogue, such as arguments, decisions, results, etc., to be widely disseminated); and *process* (both the process of reaching decisions on RTD policy and the formulation of the policy itself).

#### *Openness*

All four reports provide evidence that current approaches are much more open than those of the 1960s and 1970s. They are all relatively flexible, and the policy goals and priorities are amenable to revision and even radical change during the course of the dialogue. But the ‘openness’ of the process in countries such as Ghana has been limited to what are referred to as ‘stakeholders’. There are few opportunities for the ‘wider public’ to become involved and express their opinion effectively. The mass media in general, and the press in particular, may have been part of the consultative process, but in none of the four countries have they contributed to broader, public discussions about RTD in the development process.

#### *Learning*

The effectiveness of the dialogue process stood or fell in line with the availability of reliable means of recording and disseminating the results of the various consultations, workshops and other discussion fora. In particular, the ‘mode of dialogue’ needs to include feedback systems that allow for ‘old’ information to be processed faster, and for ‘new’ information to be internalized. The experience in Vietnam has much to offer regarding the efficient organization of recording and distribution. Similarly, much can be learned from Ghana about the desirability of treating the process as a holistic one.

#### *Ongoing process*

It is evident from the reports that a national policy dialogue is costly in terms of time and organizational resources at the level of coordination as well as of stakeholders. This aspect of dialogue – and of democratic processes in general – is commonly grossly underestimated. In this context, Vietnam’s experience with consensus building is very instructive. The heavy dependence of national RTD policy dialogue on donor funding for their activities (diagnostic studies and expert advice, national RTD workshops, cross-sector roundtable conferences) is a common feature of all the countries. There are many inherent risks in such dependence, but the authors highlight the donors’ preference for short-term, activity-focused funding as the principal cause of the recurrent discontinuities in the national RTD policy dialogue processes.

### *Recommendations from the assessment studies*

The four researchers were asked to consult stakeholders in proposing strategies to improve the national RTD dialogue. Although many of the recommendations are understandably ‘country-specific’, the more general recommendations have been isolated for further consideration and discussion.

Aryeetey recommends that the national RTD policy dialogue be conceptualized as an ongoing process of ideas being developed with as wide a range of participants as possible, with no limitation on the issues to be covered. In similar vein, Cissé argues that there are inadequate links between research and development. Centralized government organs, he argues, that direct national RTD policies will increasingly be replaced by more decentralized, flexible policy-making mechanisms. At the same time he urges exploration of processes that make increased allowance for local and regional concerns as well as of international perspectives. Recognizing the same need in relation to the private sector, Tindimubona calls for enhanced political and media support for the dialogue process, and for the introduction of incentives to encourage greater private sector contributions at all levels. Interestingly, Cissé also recommends that greater attention be paid to the development of coherent innovation systems in the private sector, and in industry in particular.

Ha recommends that the dialogue focus on identifying means to ensure that scientific and technological priorities are more closely integrated with the country's socio-economic development. Finally, and more controversially, Ha recommends that international agencies and foreign institutions be involved 'in a more pro-active manner, for example by participating in policy discussion meetings [...], rather than only seeking reference material from them'.

#### **4.4 ACP Policy Workshop on RTD in Legon, Ghana**

In January 2001, 40 researchers, policy makers and representatives of civil society and private enterprises from ACP countries attended an ACP Policy Workshop on RTD in Legon, Ghana.<sup>36</sup> The aims of this workshop were:

- to discuss the findings of the assessments of past and ongoing national RTD policy dialogues in Ghana, Senegal, Uganda, Vietnam and the Dominican Republic; and
- to set the stage for bilateral and multilateral ACP–EU policy dialogues on RTD between ACP countries, the Commission and EU Member States.

The workshop participants made a strong case for linking RTD and general development policies. This approach was considered particularly relevant given the aim of the Cotonou Agreement (Art. 30D) to make research a cross-cutting concern, to be incorporated into ongoing programmes. Such a 'mainstreamed' role for RTD would permit individual countries to make a case for RTD priorities in their ACP–EU cooperation programmes (National Indicative Plans, NIPs) or regional strategies (Regional Indicative Plans, RIPs). However, the workshop noted that the Commission and regional organizations (such as COMESA and CARICOM) had yet to confirm the importance of national and regional RTD capacities for self-sustained development in ACP countries. Worse still, in the autumn of 2000, the Commission had downgraded the priority of RTD and subsumed it under 'institutional development'.

The workshop therefore called for an all-out effort to lobby appropriate regional organizations such as COMESA and CARICOM to ensure that RTD is included in the RIPs, as well as to ensure that national authorizing officers and ED Delegations in the Dominican Republic, Ghana, Senegal and Uganda push for the inclusion of RTD in their NIPs. References to RTD in these documents would provide the necessary framework for further bilateral and regional ACP–EU policy dialogues on RTD, and for replicating assessment (diagnostic) studies in as many countries as possible. Such studies could be undertaken as part of a larger initiative such as the 'research bridging fund' proposed at this workshop. In conclusion, the workshop participants established an informal 'ACP Informal Working Group on RTD' that would function as a 'discussion partner' in an existing EU Informal Expert Group on RTD (in which all EU Member States, plus Norway and Switzerland, are represented) in the future multilateral ACP–EU policy dialogue on RTD.

This ACP Informal Working Group on RTD consisted of a number of like-minded senior research policy makers, distinguished researchers and representatives of civil society organizations and private sector networks. The group had no formal status, nor was it recognized by governments or multinational organizations. The Informal Working Group undertook to launch a multinational, multi-stakeholder effort to enhance national policy dialogues on RTD, to raise the priority of RTD in national development policy plans, and to promote a multilateral ACP–EU policy dialogue on RTD.

In the first half of 2001, in support of the ACP Informal Working Group, CTA (the Technical Centre for Agricultural and Rural Cooperation) established a website, 'Knowledge for Development', to make available practical information for ACP advocacy work. ECDPM devoted the ninth issue of its web

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<sup>36</sup> The ACP–EU Policy Workshop on Research and Technology for Development, held in Legon, Ghana, 29–31 January 2000, formed part of the ACP–EU Policy Dialogue on RTD project and was organized jointly by ECDPM and the Institute for Statistical, Social and Economic Research (ISSER) of the University of Ghana. The proceedings of the workshop in can be accessed at [www.demanding-innovation.org](http://www.demanding-innovation.org).

journal 'Capacity.org' to capacity building for policy dialogue on RTD.<sup>37</sup> The members of the ACP Informal Working group succeeded in establishing the formal basis for ACP–EU bilateral policy dialogue by including a reference to the priority to be given to RTD reform in Uganda's NIP and the RIPs of the Southern Africa Region and the Caribbean. They used the Ghana Human Development Report 2001, which focused entirely on the urgent need to develop a national RTD capacity, to intensify the national policy dialogue in Ghana.

**Legon Statement**  
**On Science and Technology for Development in ACP Countries**  
**ACP–EU Policy Workshop on Research and Technology for Development**  
University of Ghana, Legon  
29-31 January 2001

***Bridging the Technological Divide***

*A technological divide increasingly separates rich and poor nations.* Most developed nations devote 2.5-4 per cent of their GNP to research and development. In the developing world generally and in countries in Africa, the Caribbean and the Pacific (ACP) particularly, the average is only 0.5 per cent. This huge investment gap is illustrated by several indices such as the number of scientists and engineers in research and development. In Europe and Central Asia, there are 2,534 scientists per million people. This contrasts with only 15 in Nigeria and 3 in Senegal. The average figure for ACP countries is less than 10. Another striking indicator of technological output is the number of patent applications. In 1997, 800,000 applications were filed worldwide. Only 38 came from sub-Saharan Africa, of whom 23 from one country, Kenya.

*Economic development is most likely to occur in societies that succeed in linking their knowledge base to innovation systems.* Knowledge, indigenous and external, needs to permeate all aspects of social life and production. The above statistics clearly illustrate the challenge provoked by the technological divide.

*The developing countries have a long history of research collaboration with Europe.* The importance of Science and Technology (S&T) collaboration has been recognized in resolutions by the European Parliament such as the proposal by Michel Rocard, the former President of the Development Committee, to create a European Foundation for Research and Development. In addition, European Union policy statements and the recently signed Cotonou Agreement have confirmed the commitment to long standing S&T partnerships between developing countries and EU Member States, Norway and Switzerland.

*The European Commission is presently formulating an S&T development policy to strengthen such partnerships.* In this context, five country studies (Dominican Republic, Ghana, Senegal, Uganda and Vietnam) were undertaken to assess national S&T policies, including policy dialogues that led up to them. The studies were discussed during an ACP–EU workshop on S&T.

The workshop acknowledged the crucial role that S&T plays in economic development. Therefore, policy makers need to accord higher priority to S&T on their national and regional development policy agendas. *Policy dialogues involving different stakeholders are crucial in the development of such policy agendas.* The workshop accepted a methodology for assessing national S&T policy dialogues and noted its results in the various countries.

<sup>37</sup> [www.capacity.org/9/content.html](http://www.capacity.org/9/content.html)

### Recommendations

Greater recognition should be accorded to the critical role of an *open dialogue* in the preparation of S&T policies for development.

- ACP countries are therefore urged to formulate *national S&T policy agendas* through enhanced national policy dialogue. The dialogue is seen as an open learning process that ensures ownership and continuity of the S&T policy agenda. All stakeholders need to be involved, including the private sector, civil society, the grassroots, the research community and policy makers.
- ACP countries are recommended to undertake *studies* that analyse the S&T landscape. By promoting participation of stakeholders in such studies, ownership of the results is enhanced. The countries are encouraged to refine and apply the methodology mentioned before and to promote training and capacity building to do such studies.
- ACP regions are recommended to establish an *S&T Observatory* (clearing house) to collect and share information on latest developments in S&T and their applications. The Observatory will have antennae in each region to link with the private sector, civil society and regional networks.
- The Commission is recommended to finance a study for the establishment of a mechanism for *information dissemination on S&T*, recognizing the importance of advanced knowledge management systems for development.
- The ACP States and the Commission are recommended to ensure due recognition for S&T priorities within the chosen priority areas in the national and regional support strategies, which form the basis for national and regional indicative programmes. In practical terms, EC Delegates and the ACP National Authorizing Officers are urged to include S&T as an agenda item in their policy dialogue in the months to come.
- The Commission is recommended to establish a *research bridging facility* along the lines of similar existing mechanisms for the private sector. This Facility could provide seed money to activities designed to bridge the gap between policy makers, end-users and researchers. The aim of the Facility would be to generate the conditions and to develop the capacity for S&T in ACP countries. A feasibility study should be completed in 2001 preferably by Southern researchers and in cooperation with regional research networks and end-users. The Facility could promote capacity to undertake S&T diagnostic studies and national and regional policy dialogues in developing countries.
- An ACP *Informal Working Group for S&T* should be established for mobilizing intellectual and political support. This group could be composed of regional representatives and include policy makers, end-users and researchers. The ACP participants in the workshop requested the Technical Centre for Agriculture and Rural Development (CTA, Wageningen) to function as focal point for this Working Group.
- The Swedish International Development Agency (Sida) is planning an international conference on 'Advanced Knowledge Systems in Development Cooperation'. It is recommended that the results of the feasibility study for the recommended research bridging facility be presented at this conference in the presence of a strong ACP delegation.

At the Legon workshop, the representatives of DG Development had suggested that the Commission would be interested in establishing a 'research bridging fund'. The ACP Informal Working Group followed up this suggestion, and COMESA and CARICOM wrote to the Commission expressing their interest in such a 'research bridging fund' and requesting a study of its feasibility. ECDPM funded a study to determine the feasibility of establishing an S&T Observatory in East Africa. In short, the Legon workshop participants undertook what they had promised – to prepare the ground for bilateral and multilateral ACP–EU policy dialogues on RTD in the spring of 2001.

### 4.5 The ACP–EU Policy Dialogue on RTD that never was

Representatives of the Commission's DG Development, Austria, Denmark, France, Sweden and the UK also attended the Legon workshop. They showed great interest in the various components of the framework (of an ACP–EU Policy Dialogue on RTD) that were being developed, and concluded that donors should assist the ACP Informal Working Group, by providing the following:

- funding for diagnostic studies of the national policy dialogues and agenda setting on RTD in ACP countries that they already assist;
- support for in-country RTD policy dialogue; and most importantly
- political support in Brussels for the ‘Legon Statement on S&T for Development’.

In spite of this undertaking by the EU Member States, in autumn 2000 DG Development had ‘mainstreamed’ RTD and had lost most of its political and programmatic interests in RTD policy dialogue in the process. It appears that the Commission representatives had been unable to convey their interest in the initiative to their colleagues and Permanent Representatives of Member States in Brussels. At the same time, DG Development introduced substantial operational changes in the delivery of aid and its focused its attention on developing new ‘toolboxes’ of procedures to facilitate these internal changes. The requests from COMESA and CARICOM for a study of the feasibility of the ‘research bridging fund’ were ‘misplaced’. The other initiatives of the ACP Informal Working Group also received little political support within the Commission.

In the spring of 2001 Sida (Sweden) shelved its plans for an international conference on Advanced Knowledge Systems in Development Cooperation, and with it an important potential platform for promoting a multilateral ACP–EU policy dialogue on RTD. Much more important, however, was the fact that European donor agencies lost faith in DG Development’s commitment to RTD reform in ACP countries. In the late 1990s, they had strongly supported DG Development in developing a new policy for RTD reform in ACP countries. They considered it unacceptable that – only 18 months after its inception – DG Development had abandoned this policy in order to ‘mainstream’ RTD. Perhaps to demonstrate their feelings about this change of approach, the EU donor agencies declined an invitation to attend a DG Development meeting in mid-June 2001. Instead, they attended a World Bank consultative meeting, organized at very short notice, to introduce and seek support for its new S&T policy.

## 4.6 Demanding Innovation

Following up on the work of the ACP Informal Working Group, ECDPM organized the international policy seminar ‘Demanding Innovation’ in Maastricht in October 2001.<sup>38</sup> During this seminar, 49 researchers, research policy makers and research users from the South and 28 academics and representatives from donor agencies for the North focus on articulating policies for demand-led research and research capacity building and on identifying clear objectives and specific initiatives for improving the South-North policy dialogue on Science and Technology for Development.

In their Maastricht Declaration, the participants concluded that research users, including representatives of the private sector, researchers and their institutions in the South should build a constituency for demand-led research committed to the production of knowledge that can address poverty, inequality and environmental degradation, and thus contribute to the overall development and social transformation of Southern societies. Among their many recommendations, the participants emphasized the need that:

- research policy makers and their governments in the South should take full responsibility for directing science and technology in their respective countries and for ensuring that research would become genuinely demand-led; and
- donors and research funding agencies in the North should address the asymmetric character of North-South research collaboration by granting greater autonomy to programmes initiated in the South, in the spirit of more trust and less prescription;

<sup>38</sup> The international policy seminar ‘Demanding Innovation: Articulating Policies for Demand-led research and Research Capacity Building’ in Maastricht, the Netherlands on 10-12 October 2001 was funded by the Directorate-General for Development Cooperation (DGIS) of the Netherlands Ministry of Foreign Affairs and hosted by the European Centre for Development Policy Management (ECDPM). Visit the website [www.demanding-innovation.org](http://www.demanding-innovation.org) for more information, preparatory reports and the proceedings.

This international seminar further urged the Commission

- to reconsider recent decisions with respect to the organization and funding of development research; and
- to meet with relevant groups to discuss the implications of the proposed changes in the Commission's system of research funding.

The representatives of the Commission who attended this international seminar took this powerful message of 77 prominent Southern researchers and Northern academics and donor representatives with them to Brussels.

## 5 Science and Society: Towards a New Partnership

Judging from its recent action plan, *Science and Society: Towards a New Partnership*,<sup>39</sup> the Commission heard very well the urgent messages. This plan presents a challenging strategy to enhance institutional research capacities and technological innovation systems by

- strengthening the relationship between science, technology and innovation on the one hand, and society on the other, by increasingly focusing scientific activities to meet the needs of research end-users; and
- giving science and technology a higher profile in the media and education in order to stimulate young people's spirit of enterprise and to whet their appetites for scientific studies and careers.

Within the framework of this action plan, the Commission intends to implement a wide range of programmes,

- to raise public awareness regarding the importance of science and technology in economic progress and sustainable development;
- to institute an ongoing policy dialogue on S&T involving stakeholders from research organizations, public authorities, the media, civil society, and private enterprises;
- to increase the number of people who choose a career in science;
- to foster gender equality in science; and
- to include an enhanced ethical dimension in policy making for S&T.

This high-profile initiative 'to pool efforts at the European level to develop stronger and more harmonious relations between science and society' would seem to be a strong, imaginative response to the earlier criticism of its handling of RTD policy for international cooperation. However, nothing could be farther from the truth. The Commission has not formulated this new 'Science and Society' action plan to bridge the current technology divide between EU Member States and ACP countries. Rather, the action plan spells out what the Commission intends to undertake in support of the strategic goal for the *European Union* to become the world's most competitive and dynamic knowledge-based economy by 2010. If this action plan actually achieves its objectives, it may well serve to widen further the technology divide between the EU Member States and the ACP countries.

The Commission recently prepared a statement on 'Rural Development and Agriculture: Key Priorities for Overcoming the World's Sustainable Development Challenge'<sup>40</sup> for the World Summit on Sustainable Development in Johannesburg in August 2002. In this statement, DG Development announced the overhaul of its rural development policy. Any notion that S&T is an essential ingredient for developing countries to create dynamic knowledge-based economies that can compete in a globalizing world, seems to have disappeared. Rural development policies will be mainstreamed, that is, 'integrated in all other issues' [*sic*] and Commission will focus its support to developing countries on:

<sup>39</sup> European Commission (2002) *Science and Society Action Plan*. Luxembourg: European Commission, Office for Official Publications.

<sup>40</sup> See [www.europa.eu.int/comm/development/doc/rural\\_development.pdf](http://www.europa.eu.int/comm/development/doc/rural_development.pdf).



- supporting economic policies to enable broad-based growth;
- ensuring more suitable access to productive assets, markets and services;
- investing in human capital;
- promoting more sustainable natural resources management;
- managing risks and providing safety nets; and
- building more effective, accountable, decentralized and participatory institutions.

Rural development policy priorities, which for most ACP countries represent the backbone of their economic development plans and their efforts to become an integral part of the world economy, will now have to be integrated into these seven key areas. In this way, the Commission will organize its response to the rising poverty levels, to deadly infectious diseases that cripple labour forces and thus the economic prospects of many developing countries, and to massive environmental degradation. The Commission ignores the fact that even with existing technologies food security in many countries can be enhanced, millions of people can be saved from deadly diseases and vital ecosystems can be preserved. However, to extend such existing technologies to ACP countries will require more imaginative aid policies and more substantial financial assistance from donors such as the Commission to enable them develop their institutional research capacity and technological innovation systems.

## 6 Cape Town Declaration on Research for Sustainable Development

The Commission's neglect of S&T as an essential ingredient in economic prosperity contrasts with ACP governments' increased interest in the key role that RTD could play in their development plans. The conclusions of an ACP Ministerial Forum on Research for Sustainable Development, in Cape Town, South Africa, in July 2002 are instructive in this regard. The meeting was convened by the ACP Secretariat and the Commission, and hosted by the government of South Africa.<sup>41</sup> The participants generated the 'Cape Town Declaration on Research for Sustainable Development'. This declaration articulates a strategic RTD policy, in which the ACP Group of States undertook:

- to pursue all necessary measures to ensure that the resources required to promote research, development, technology diffusion and innovation are made available. They pledged to review current budget allocations for research and development, and to seek to achieve a minimum investment of 1% of GDP within a period of 10 years; and
- to conceive and support research programmes that strengthen their states' capacity to participate effectively in the global economy while encouraging the protection of their intellectual property rights, indigenous learning and the preservation of biodiversity.<sup>42</sup>

Interestingly, the declaration also contains some elements that feature prominently in the Commission's 'Science and Society' action plan, such as:

- bolstering sustainable development processes with the results of demand-led S&T policies;
- strengthening national research capacity by encouraging and facilitating careers in science; and
- promoting regional integration of S&T policies, to foster centres of excellence, and to enhance cross-border sharing of research capacity and expertise.

But the Commission's propensity to send conflicting signals to its collaborators has not helped what may be common goals. As mentioned in the previous sections, DG Development has 'mainstreamed' its RTD policies, and in the process has seemingly lost all interest in supporting the development of RTD capacities and technological innovation systems in ACP countries. In August 2001, however, Mr

<sup>41</sup> The forum was well attended, with delegations from 41 of the 77 ACP countries, 25 of which were represented by the ministers in charge of their country's S&T policies.

<sup>42</sup> The full text of the Cape Town Declaration, adopted by the ACP Ministerial Forum on Research for Sustainable Development, Cape Town, South Africa, 28 July 2002, can be found at [www.acpsec.org/capetown/capetown-en.pdf](http://www.acpsec.org/capetown/capetown-en.pdf).

Philippe Busquin, Commissioner for Research, proposed to the ACP Group of States the formation of a dedicated ACP–EU partnership in S&T. Thus in Cape Town on 29-30 July 2002, 18 months after DG Development had buried RTD as a priority in its development cooperation policies, another branch of the Commission – DG Research – initiated a policy dialogue with the ACP countries to explore the contours of a dedicated partnership.

DG Research came to the ACP–EU Technical Forum on Research for Sustainable Development in Cape Town well prepared. Six of the invited representatives of EU donor agencies attended the Technical Forum. A draft ACP–EU Shared Vision for Research for Sustainable Development and a Preliminary Plan of Action had been prepared and the draft text of a ‘Brussels Declaration on

Scientific and Technological Cooperation’ provided. The latter text was to be discussed and adopted by an ACP–EU Ministerial Meeting, planned for November 2002.<sup>43</sup>

For ACP countries interested in developing their institutional research capacities and technological innovation systems, the fact that the ACP–EU Technical Forum on Research for Sustainable Development took place at all may be regarded as a welcome breakthrough. So may the plan to launch an ‘ACP–EU Partnership in S&T’ at an ACP–EU Ministerial meeting in Brussels in late 2002. One can only hope that unlike the Technical Forum (which was diverted by much political posturing and lengthy explanations of the procedures to be followed for the effective utilization of the funding instruments in the 6th Framework Programme and in the 9th European Development Fund), the proposed ACP–EU Ministerial meeting will provide for a healthy exchange between the parties. Of course, agreement on procedures are essential for the success of any future ACP–EU partnership in S&T, but it would be ironic if the dialogue that the two sides deem essential for effective RTD policies is relegated to RTD stakeholders only.

## 7 Conclusions

Development economists such as Jeffrey Sachs continue to hammer their drums and argue that modern economic growth is dependent on science-based technologies. They demonstrate that the failure to invest in institutional research capacities and technological innovation systems in developing countries is in fact undermining their efforts to fight poverty, disease and environmental degradation. They warn against the belief that the invisible hand of market forces will magically produce the technology for sustainable development, when and where needed. ‘Unfortunately, the notion of a self-sustaining torrent or private-sector-led technological progress is a myth. Innumerable major technologies of recent decades – the Internet, pharmaceutical products, synthetic materials, improved seed varieties – have their roots in government-sponsored research programmes’<sup>44</sup> and in national innovation systems created and maintained by governments. However, this unrealistic belief in the beneficial effects of market forces dies hard, as it justifies a policy of inaction and piecemeal aid packages. The overall result of such misconceptions has been the dramatic under-investment in research capacity and innovation systems in developing countries that has led to the seemingly unbridgeable technology divide between high- and low-income countries (see table 1).

The Commission’s proposal to establish and support a dedicated ACP–EU partnership in S&T is welcome. The ACP Ministerial Forum on Research for Sustainable Development in Cape Town demonstrated an important commitment to the change in approach to formulating RTD policies. Creating a partnership around these welcome developments is admittedly another ‘first step’ in a process already characterized by many false steps and wasted efforts.

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<sup>43</sup> The full text of these documents can be found on the website of the South African Department of Science and Technology: [www.dst.gov.za/programmes/acp\\_eu/acp\\_eu.htm](http://www.dst.gov.za/programmes/acp_eu/acp_eu.htm)

<sup>44</sup> Sachs, Jeffrey (2002) ‘The essential ingredient’. Essay in *New Scientist*, 17 August 2002.

Each of the three main actors in the exercise needs to do its part to ensure that the intentions materialize. On the ACP side, the poor investment in, and returns on RTD over the past 25 years cannot be rectified overnight, let alone by a single declaration. The orientation of ACP policies, and the mechanisms for effective networking among RTD actors, need to be radically improved. The Cape Town Declaration seeks to place *demand-led* research at the forefront of development, and emphasizes the need for national and regional S&T policies and plans in this context. ACP Ministers recognize the need for national S&T policy dialogue involving non-state partners and the private sector to inform the policy-making process, and to build consensus regarding national S&T policy priorities. Success in this endeavour will be dependent on the political will to engage in effective dialogue, the skill in orchestrating the dialogue process, the stamina to follow the process through to the end, and budgets that cater for the entire process and not just one or two initial consultative workshops. In this context, much could be learned from the diagnostic studies discussed in this paper, and from the methodology on which they were based.

The Commission, for its part, will have to review its financing strategies and procedures. Support to the implementation of ACP research policies should include funding for capacity building and regional research networks, backing up national technological innovation systems and creating or strengthening centres of excellence. With this initiative, the Commission will enter a jumble of existing partnerships between research institutions and universities in the EU Member States and those in the ACP countries they support. The Commission will need to exercise the Wisdom of Solomon if it is to avoid becoming bogged down in 'turf wars'. The challenge will be to create optimal synergy between these existing partnerships and the new partnership that Commissioner Busquin envisages.

Plans to launch the ACP-EU partnership in S&T at an ACP-EU Ministerial meeting in Brussels in November 2002 had to be postponed because the Commission had not processed 'the preparatory work in the proper way through the Council'. The chances are slim that such a dedicated ACP-EU partnership in S&T can be accommodated during the Greek Presidency during the first half of 2003. Therefore, the earliest opportunity to arrange for a follow-up to Mr Busquin's proposal of August 2001 will be the Italian Presidency in the second half of 2003. Procrastination is the thief of time and it can only be hoped for that the Commission, the EU Member States and the ACP countries will at that time still view this initiative as a special opportunity for ACP countries to enhance their research capacities and to bolster their technological innovation systems. The challenge will be to ensure that the Commission's stated intentions do not again fall victim to its tendency to lose its way.

## Annex 1: DAC List of Aid Recipients and ACP Countries

*ACP countries are indicated in italics.*

Part I: Aid to developing countries and territories (official development assistance)						Part II: Aid to countries and territories in transition	
LICs	Other LICs (per capita GNP <\$765 in 1995)	LMICs (per capita GNP \$766 - \$3035 in 1995)		UMICs (per capita GNP \$3036- \$9385 in 1995)	HICs (per capita GNP >\$9385 in 1995)	CEECs/NIS	More advanced developing countries and territories
Afghanistan <i>Angola</i> Bangladesh <i>Benin</i> Bhutan <i>Burkina Faso</i> <i>Burundi</i> Cambodia <i>Cape Verde</i> <i>Central African Republic</i> <i>Chad</i> <i>Comoros</i> <i>Congo Dem. Rep.</i> <i>Djibouti</i> <i>Equatorial Guinea</i> <i>Eritrea</i> <i>Ethiopia</i> <i>Gambia</i> <i>Guinea</i> Guinea Bissau <i>Haiti</i> <i>Kiribati</i> Laos <i>Lesotho</i> <i>Liberia</i> <i>Madagascar</i> <i>Malawi</i> <i>Maldives</i> <i>Mali</i> <i>Mauritania</i> Myanmar Nepal <i>Niger</i> <i>Rwanda</i> <i>Sao Tome and Principe</i> <i>Sierra Leone</i> <i>Solomon Islands</i> <i>Somalia</i> <i>Sudan</i> <i>Tanzania</i> <i>Togo</i> <i>Tuvalu</i> <i>Uganda</i> <i>Vanuatu</i> <i>Western Samoa</i> Yemen <i>Zambia</i>	*Albania *Armenia *Azerbaijan Bosnia and Herzegovina <i>Cameroon</i> China <i>Congo, Rep.</i> Côte d'Ivoire *Georgia <i>Ghana</i> <i>Guyana</i> Honduras India <i>Kenya</i> *Kyrgyz Rep. Mongolia Nicaragua <i>Nigeria</i> Pakistan Senegal Sri Lanka *Tajikistan Vietnam <i>Zimbabwe</i>	Algeria <i>Belize</i> Bolivia <i>Botswana</i> Colombian Costa Rica <i>Cuba</i> <i>Dominica</i> <i>Dominican Rep</i> Ecuador Egypt El Salvador <i>Fiji</i> <i>Grenada</i> Indonesia Iran Iraq Jamaica Jordan *Kazakhstan Korea Dem. Rep Lebanon Macedonia Marshall Islands <i>Micronesia</i> *Moldova (1) Morocco Namibia Niue	<i>Palau Islands</i> Palestinian admin areas Panama <i>Papua New Guinea</i> Paraguay Peru Philippines <i>St Vincent &amp; Grenadines</i> Suriname <i>Swaziland</i> Syria Thailand Timor =Tokelau <i>Tonga</i> Tunisia Turkey *Turkmenistan *Uzbekistan =Wallis and Futon Yugoslavia Fed Rep	Brazil Chile Cook Islands Croatia <i>Gabon</i> Malaysia <i>Mauritius</i> =Mayotte Mexico <i>Nauru</i> <i>South Africa</i> <i>St Lucia</i> <i>Trinidad &amp; Tobago</i>  Uruguay Threshold for World Bank Eligibility (\$5295 in 1995) Antigua and Barbuda Seychelles Argentina Oman Barbados Saudi Arabia Slovenia +Aruba Bahrain Greece Libya Malta +Montserrat St Helena St Kitts and Nevis Turks and Caicos Islands	=Aruba =French Polynesia =Gibraltar Korea Rep of =Macao =Netherlands <i>Antilles</i> =New Caledonia Northern Marianas =Virgin Islands	*Belarus *Bulgaria *Czech Republic *Estonia *Hungary *Latvia *Lithuania *Poland *Romania *Russia *Slovak Rep *Ukraine	Bahamas =Bermuda Brunei =Cayman Islands Chinese Taipei Cyprus =Falkland Islands =Hong Kong-China Israel Kuwait Qatar Singapore United Arab Emirates

• Part I countries are listed in ascending order of GNP. Countries whose GNP is not accurately known are grouped below the dotted line in the category in which they are estimated to fall, in alphabetical order.

Part II as from 1996: until 1996, aid to these countries was accounted as ODA, in line with the decision of 1992. More advanced countries and territories in this category are retained on the list even where aid receipts are minimal, to ensure comprehensive reporting of financial flows.

\* CEEC/NIS; + territories.

(1) Moldova was included in Part I of the list as of 1 January 1997; it is classified as an LMIC.

= Territory.

Source: OECD/DAC, Development Cooperation: Efforts and Policies of the Members of the Development Assistance Committee, 1998 Report, Paris, 1999.