

LDC Report Highlights



BASED ON THE
LEAST DEVELOPED COUNTRIES REPORT SERIES

No. 5

December 2007

Knowledge Aid: Scaling Up and Broadening Out

Knowledge and learning are at the centre of economic growth. Increasing and better targeting of official development assistance for science, technology and innovation (“knowledge aid”) could be the basis for a radical break with past aid failures.

The scale and composition of aid are critically important for economic development and the achievement of substantial poverty reduction in least developed countries (LDCs). The justification for aid usually centres on the limited financial resources with which most LDCs are trying to meet a range of pressing economic, social and political objectives. But the role that aid can play in building up the knowledge resources and systems in LDCs is also of fundamental importance to their development objectives.

Knowledge accumulation and technological learning through international market linkages, such as trade, foreign direct investment and technology licensing, are currently weak in the LDCs (see *LDCR Highlights* Nos. 2 and 3, “Innovation in the least developed countries: going beyond intellectual property rights” and “Policy action is needed to leverage more learning from foreign direct investment”). As knowledge becomes increasingly important in global competition, there is a real danger of fur-

ther socio-economic marginalization for the now-open LDC economies. Aid can play an important role in developing a minimum threshold level of competences and learning capacities which will enable LDCs to overcome this threat.

There is no agreed definition of “knowledge aid”. Here, the term is used to refer both to traditional forms of aid for science and technology and to support for promoting innovation capabilities and innovation activities in the enterprise sector. Knowledge aid can support innovative efforts not only in productive sectors but also in social services such as health and education. It may also enhance the capacity of policymakers to formulate and implement effective science, technology and innovation (STI) policies.

Effective knowledge aid is an essential component of aid. It is not a hand-out, but rather a hand-up.

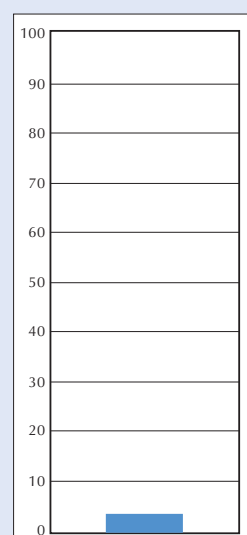
Donor policies and the composition of aid

New thinking about knowledge aid is particularly important to ensure enhanced aid effectiveness. Throughout the 1990s, it was believed that aid worked where recipient countries had the right policies and institutions in place. Now, it is recognized that, while good domestic policies are needed, what constitutes the “right” policies is not as clear-cut as was once thought. Moreover, by emphasizing the importance of recipients’ policies, the role

of donors’ policies in the effectiveness of aid was left out of the picture. Since the adoption in 2005 of the Paris Declaration on Aid Effectiveness, which addressed the harmonization, alignment and accountability of aid practices, much more attention has been paid to the role of donor practices in aid effectiveness. But there is still insufficient discussion about the impact of the composition of aid on aid effectiveness.

Despite its key role in development, estimates based on OECD data for the period 2003–2005 indicate that aid for STI (including both multilateral and bilateral aid) accounts for only 3.6 per cent of total annual aid disbursements to LDCs (see chart 1).

Chart 1. STI share of OECD aid to LDCs, 2003–2005
(Percentage)



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Within aid for STI, financial resources have traditionally concentrated on particular types of activities, particularly human capacity-building. Other activities include research and development (R&D), agricultural and industrial extension, and support for metrology and standards compliance. In the 2003–2005 period, higher education was the single largest beneficiary, with over 50 per cent of total STI aid commitments to LDCs. In the same period, the share for vocational training fell to 12 per cent from 16 per cent in 1998–2000, with the combined share for agricultural training and extension dropping from nearly 9 per cent to less than 3 per cent (see chart 2).

In recent years, the share of STI aid commitments for research has also

dropped below 11 per cent, and there has been a major shift in its composition. Commitments for agricultural research in the LDCs halved, in favour of medical and environmental research. There was also an increase in the share for industrial technology research and development (R&D), which includes industrial standards, quality management, metrology, testing, accreditation and certification, but this category still only accounted for around 8 per cent of total research commitments in 2003–2005 (see chart 3).

Quality of aid for STI

There are four major strategic orientations in donor support for STI:

1. Global/regional public goods initiatives, such as funding the Con-

sultative Group on International Agricultural Research (CGIAR), a research network;

2. Initiatives to deepen domestic STI capacity, including in the areas of education, training, centres of excellence, R&D and STI decision-making;
3. Collaborative activities, including North–South, South–South, sectoral and cross-sectoral activities, and cooperation between individuals or institutions;
4. Integrated activities, such as national systems of innovation and integrated innovation initiatives.

In LDCs, projects and programmes to deepen domestic STI capacity have been by far the most numerous. but these tend to be ad hoc, disjointed and, in general, weakly coordinated with sector development projects. Global linkage initiatives are becoming an increasingly important aspect of donor support for developing countries in general, but LDCs tend to be excluded because of the lack of a critical minimum level of capability for collaboration to take place. Global and regional public goods initiatives are important, but they do not appear to be sufficiently responsive to the needs of LDCs.

It is clear that there needs to be a more systemic and strategic approach to supporting the development of STI capabilities in the LDCs. Such support needs to go beyond ad hoc projects to strengthen part of public STI-related infrastructure, such as universities, and to support innovation at the enterprise level – in firms, as well as farms.

Developing innovation capacity within enterprises is the key to economic dynamism in the LDCs. Aid for STI should go beyond the traditional boundaries, and support enterprise-based learning and innovation. This includes, for example, enterprise-centred training activities, the development of domestic business linkages and the development of STI-related international linkages, including scientific cooperation and commercial linkages.

In the future there will be a need for more and more effective aid for STI.

Chart 2. Percentage share of ODA for STI in LDCs

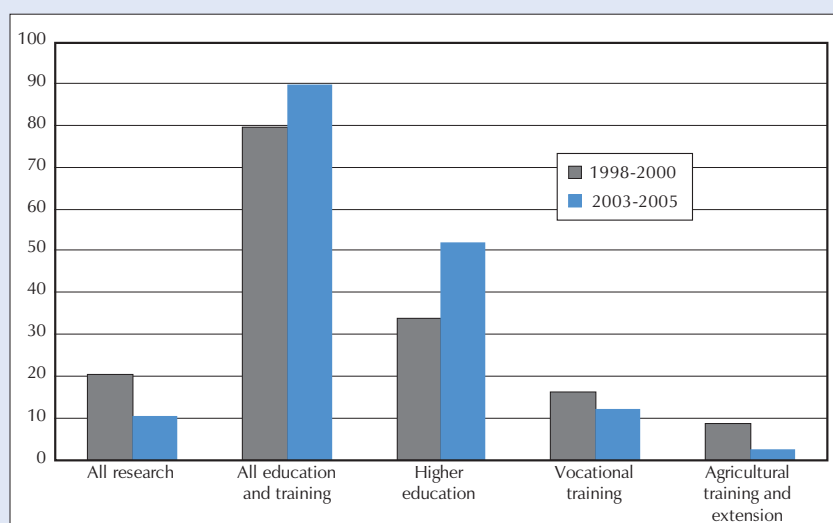
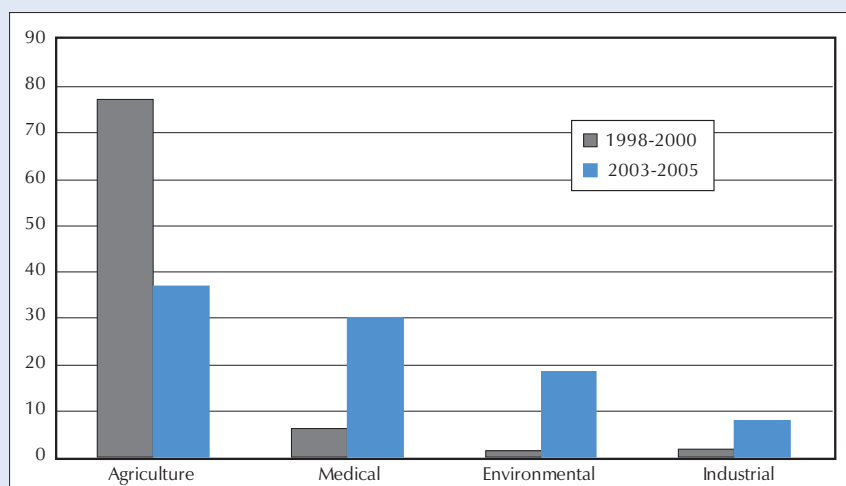


Chart 3. Percentage share of ODA for STI research in LDCs



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This should support both agricultural and non-agricultural sectors as well as the development of international trade.

Aid for STI in agriculture

The low level of donor support for agricultural research in LDCs makes it very difficult for LDC Governments to sustain sufficient public investment in this area. Agricultural research investment as a percentage share of agricultural output – the agricultural research intensity ratio – in LDCs now amounts to 0.47 per cent, down from one per cent in the late 1980s (see chart 4).

There may be some reluctance to increase levels of funding, owing to disappointing results from past aid for agricultural R&D. However, there is now a better understanding of the weaknesses in national agricultural research systems, and the emphasis is now being placed on a system-based approach to agricultural innovation. Important reforms are taking place in some African national agricultural research systems, including the decentralization of agricultural research, greater stakeholder participation, a shift from block grants to competitive research funds, and the strengthening of national innovation system linkages.

LDCs. Besides increasing total funding, a second key priority for aid for STI in the agricultural sector is to ensure that the work of the CGIAR remains relevant to LDCs.

Aid for STI in industry and infrastructure

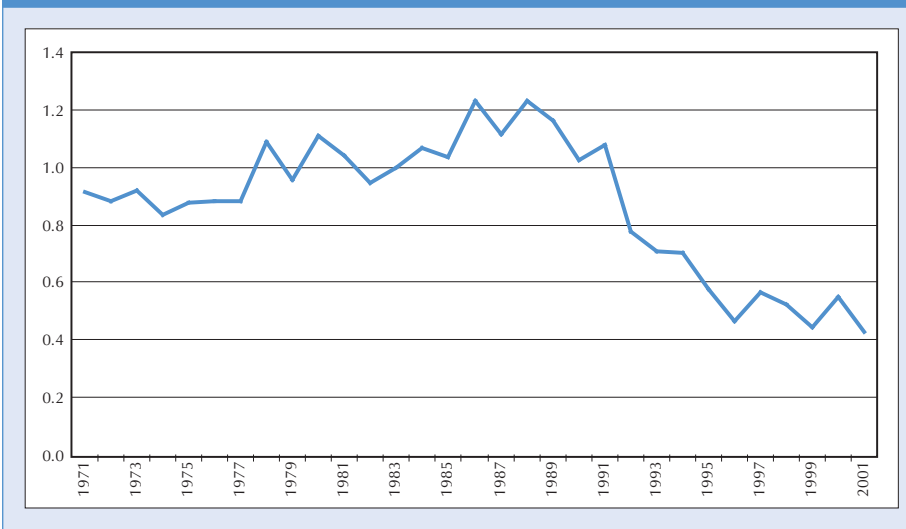
At the same time, donors should not neglect aid to build STI capacity outside agriculture. Three broad directions for an ODA strategy in industry and economic infrastructure have been identified.

First, it is necessary to strengthen and reorient aid to STI-related infrastructure development. The major objectives should be to increase the scale of support, reorient activities so as to increase their relevance for industrial development and physical infrastructure development, and improve their effectiveness. Reorientation might involve, for example, increasing support for engineering in university education. But beyond that, there is a need for technical and business support to move away from direct provision of services to enterprises towards strengthening domestic innovation capacity.

Second, it is important to develop new, modified or substantially expanded forms of ODA for fostering enterprise-based technological learning and capability-building. This requires novel forms of ODA which recognize that there is a need for investment in knowledge assets (particularly design and engineering capabilities) and that those assets must in large part be created through the training and learning activities of enterprises. Such reorientation is necessary because there are limits to what can be achieved through formal learning. Addressing this issue requires grants and soft loans for investment in the relevant types of knowledge assets. That could be achieved not by initiating totally new activities but by “stretching” existing donor activity to include STI capability-building in enterprises. For example:

- Value-chain development schemes, including contracts with large firms;
- Innovative mechanisms for ex-

Chart 4. Agricultural research intensity in LDCs, 1971–2001



Some increase in funding could come from the private sector. However, past patterns are not encouraging. The key problem is that where markets for the outputs from agricultural R&D are small, or where the type of research needed has little immediate commercial potential, the private sector is unlikely to invest. In these cases, public and other non-profit investment are needed to fill the gap. Therefore, whilst the private sector can make a small contribution and there are certainly opportunities for some kinds of public-private partnerships, increasing the agricultural research intensity ratio in LDCs will require increased public R&D expenditure. This will, in turn, require increased official development assistance (ODA) for agricultural R&D to levels much higher than the current ones.

Finally, the CGIAR is particularly important in undertaking scientific research relevant to increasing agricultural productivity in LDCs. In the 1990s there was a broadening of the CGIAR research agenda away from research into agricultural production of staple foods and towards research into post-harvest handling, food-processing, food safety and environmental issues. This was accompanied by a stagnation of donors' financing. The change in goals reflects the developed countries' concern about environmental and agriculture-related issues that are not strictly related to subsistence farming improvements, as well as the rise of new and powerful lobbying groups. By contrast, agricultural research should be oriented to reflect the reality of subsistence-oriented smallholder agriculture in

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- exploiting the learning potential of physical infrastructure investment projects with which donors are already involved, especially in relation to building design and engineering skills and fostering public-private partnerships;
- Cost-sharing partnerships with transnational corporations' subsidiaries investing in LDCs in order to forge new supply linkages with domestic firms and strengthen the capabilities of existing suppliers. Transnational corporations may be more willing to collaborate in skills development activities if they

are reimbursed for conducting expanded training activities;

- Supporting professional associations and non-governmental organizations, such as the World Federation of Engineering Organizations and Engineers without Borders, to engage in specific technical training and capacity-building at the local level.

Third, greater donor support is required for STI policy formulation and implementation by LDC Governments.

Technological learning and Aid for Trade

Technological capacity-building is currently marginal to the ongoing discussions about the Aid for Trade framework, and is given only scant consideration in the action matrices of the Integrated Framework for Trade-related Technical Assistance. Moreover, there has been little diffusion of technological capacity as a result of LDC preferential market access preferences. Against this background, it may be useful to consider the creation of a targeted technology fund – perhaps as part of Aid for Trade provisions – to support technology diffusion and technological upgrading at the local level in LDCs.

This issue of *LDCR Highlights* is based on UNCTAD, *The Least Developed Countries Report 2007: Knowledge, Technological Learning and Innovation for Development*, chapter 5. The Report is available on the UNCTAD website (www.unctad.org).