Input on LDCs to GDSR 2015

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The science-policy interface

The science-policy interface (SPI) is a complex process where in principle scientific evidence guides policymaking, while at the same time national priorities inform scientific and technological research. In other words, it is a bidirectional relationship in which influence and causality go in both directions. First, evidence based on scientific research is supposed to be combined with other forms of information to enable policymakers to design, implement and evaluate evidence-based policies. Conversely, policymakers directly influence scientific production through budget allocations, scientific, technology and innovation (STI) policy, educational policy, industrial policy[1] and other means.

While this relationship is apparently intuitive and mutually beneficial, it is actually a very complex one. It is beset by the divide between science and policymaking, which makes this theoretical relationship more difficult to work in practice. This divide is due mainly to: 1. Differing communities and world views, cultures, goals, reward structures and career paths on either side; 2. Different accountability patterns and vested interests; 3. Poor communication and lack of mutual engagement between scientists and policymakers; 4. Limited responsiveness of research to current policy concerns (especially in natural sciences); 5. The demand for certainty from policymakers versus the inherent and risk-oriented nature of much of scientific research; 6. Different pace, time-frames andactivity cycles on both sides; 7. The complex relationship between knowledge and power; 8. The politicisation of science and the scientization of policy; 9. The need to promote specialized expertise versus calls to democratize knowledge so as to encourage greater public participation in science-related debates (Strydom et al., 2010; Jones et al., 2008).

These inherent difficulties are found in all countries, including those where both STI is most sophisticated and /or where the policymaking process is most developed.

SPI in LDCs

It is widely recognized that there is a dearth of studies on SPI in developing countries (Strydom et al., 2010; Jones et al., 2008) and this is even more true of least developed countries (LDCs). Nevertheless, research on these countries' STI system and on their state capacity allows us to argue that in these countries, SPI is beset by the structural and institutional deficiencies which characterize the major

[1] Industrial policy is here understood in its broad sense, i.e. "targeted government actions aimed at supporting production transformation that increases productivity, fosters the generation of backward and forward linkages, improves domestic capabilities and creates more and better jobs" (Prigent, 2013) or still "Industrial Policy is any type of intervention or government policy that attempts to improve the business environment or to alter the structure of economic activity toward sectors, technologies or tasks that are expected to offer better prospects for economic growth or societal welfare than would occur in the absence of such intervention" (Warwick, 2013: 47).

agents of the SPI relationship, i.e. the policymaking and the STI side. They both suffer from structural weaknesses which render them less apt to collaborate. This, in turn, jeopardizes policymaking to further development goals.

The STI system in LDCs – The science, technology and innovation system of LDCs has suffered from a long-term neglect since the inception of structural adjustment programmes starting the late 1980s. The focus of socioeconomic policy was placed on increasing efficiency and boosting the role of market forces in driving economic and social development, while reduce the economic role of the state to that of market regulation.[2] In this context STI fell back in the order of priority of economic policymaking of LDCs (UNCTAD, 2007: chap.2). This led to the weakening of the STI institutions (universities, research centres, laboratories, extension services, etc.) (Gaillard et al., 2005).

The situation has not been substantially reversed since then. 34 of the 48 LDCs are located in sub-Saharan Africa. Overall, investment in science and technology (S&T) is low in the region, which results in poor infrastructure development, a small pool of researchers and minimal scientific output. There have been many regional attempts to reverse this trend, the most recent being Africa's Science and Technology Consolidated Plan of Action (CPA), created by the African Union in January 2007. The continent, both publicly and privately, has not invested sufficiently in science, technology and innovation (STI) towards economic growth and long-term sustainable development. However, the need for change has been acknowledged by many African head of states. During the past decade, many African countries have enhanced their S&T capacity to achieve economic growth. The investment in research is persistently low in Africa, as is the number of researchers and technicians. Many of the concerned countries have decided to concentrate their S&T policies on education initiatives. In addition, there is a need for proper co-ordination and integration of programmes and activities in the innovation system into all national socio-economic planning issues. Today, STI programmes and activities are the responsibility of ministries of science and technology. These activities should be woven into a single national system. This will help to avoid resource wasting and duplication of effort, and encourage interaction and linkages. There is very little interaction between academia, government and industry (Urama et al., 2010).

Four LDCs are located in South Asia. The countries of the region have exercised budget cuts in human development and scientific research, as investment is weak in the region, due to a shift in investment to the region of South East Asia. The technology gap between these two regions is rapidly widening and will continue to do so unless South Asia takes action to increase investment in human development, develop infrastructure for scientific research and information technology (IT), introduce incentives to build the absorptive capacity of firms through contract research, and promote entrepreneurship. South Asia contributes to only 4% of the total expenditure in R&D worldwide. Most of this comes from public development budgets and is used to fund public universities and research bodies. The private sector use of R&D expenditure is low. South Asian countries follow a linear S&T policy which encourages research in public institutions, but provides no incentive for university-industry collaboration or for the promotion of contract research by industry. There is little promotion of R&D in the private sector. This is a vital for innovation and economic development and remains an important challenge. In accordance with this, South Asian countries

[2] This was in essence the programme of the so-called Washington Consensus (Rodrik, 2006).

should foster public policies that support a continuous learning process in firms. Existing knowledge is poorly integrated in the development system because the institutions that transfer knowledge to economic advantage are underdeveloped in most Asian countries. The region trains a large number of scientists and engineers, but all countries face an extreme shortage of highly skilled university teachers and researchers, managers and other skilled personnel (Naim, 2010).

The situation is slightly different in the LDCs of South-East Asia. Science remains a low priority in national strategic plans in South East Asia in general. However, science policy is changing. There are common trends in science policy making: all countries depend on the science systems of the global scientific Triad (USA, Europe and Japan), all countries want to attract scientists and engineers, the growing cost of scientific infrastructure has led to increased international collaboration in S&T, science policy has been brought in to play a central role in innovation policies, coordination of in STI has become essential within a government, and groups of countries have created collaborating networks and regional structures that offer greater scientific capacity. Overall, there is rising national investment in R&D, but these investments are not at pace with growth in GDP. Although there is a considerable diversity across the region in human resources and expenditure on S&T, in both Cambodia and Timor Leste, investment in S&T has focused on institution-building and on developing human resources. They also face difficulty in spreading internet access across the country. Concerning R&D output, international co-authorship of scientific papers is commonplace for scientists in South East Asia. Cambodia for example has been almost entirely dependent on international co-authorship. Most of the country's output is specialized, as it concentrates on medical sciences (Turpin et al., 2010).

Occasionally calls are made to reverse the situation of the STI system of LDCs and to strengthen it (e.g. UNCTAD, 2007). In order to gauge the level of the STI system in LDC policymaking an analysis has been prepared to its role in national-level policy planning. The poverty reduction strategy papers (PRSPs) provide a privileged source of information. PRSPs are a mid-term policy planning and execution framework and supposedly they embody the policy priorities of national governments. The direct or indirect presence of STI issues in LDCs' PRSPs provides a good indication of the level and intensity of priority given to the issues in these countries' domestic policymaking.

An analysis of was of the PRSPs of a sample of the latest generation of PRSPs of 37 LDCs from Africa, Asia and the Americas. The full results are presented in Table 1. How S&T is treated in the PRSP of selected LDCsTable 1. The exercise has yielded the following findings:

- Only 14 of the 37 LDCs include science and/or technology as priority policy for poverty reduction;
- Only nine countries (Bangladesh, Ethiopia, Lesotho, Malawi, Mozambique, Rwanda, United Republic of Tanzania, Uganda and Zambia) include a specific section or paragraph on science and technology issues;
- Only 16 of the 37 LDCs include explicit and specific science and technology initiatives to enhance technology transfer and acquisition through either international trade or foreign direct investment (FDI);
- Only 13 of the 37 countries include specific initiatives to support basic research;
- Only eight countries (Bangladesh, Madagascar, Malawi, Mozambique, Sudan, the United Republic of Tanzania, Uganda and Zambia) include specific science and technology initiatives in all three levels of education - primary, secondary and higher;

- Only 18 of the 37 LDCs make explicit reference to the need to expand business development services that support technological upgrading efforts by local firms;
- The same number (18) of countries include policies to promote best practices and quality standards by local firms, typically through the creation and capacitation of local standards and metrology institutions;
- Only 18 of the 37 countries include specific initiatives for applied research outside agriculture.

There are nevertheless some science and technology-related areas which the PRSPs do address, most notably:

- 24 of the 37 countries include some reference to initiatives aimed at agricultural research;
- 25 LDCs include initiatives to promote agricultural extension;
- 25 of the 37 countries include specific initiatives to expand technical and vocational education and mention its importance;
- The vast majority (33) of the countries in the sample identify the need to extend and upgrade electricity networks, and 27 of them also stress the importance of rural electrification;
- 30 LDCs acknowledge the importance of improving general telecommunications networks, but only 25 mention the importance of extending this infrastructure to rural areas;
- 28 of the 37 countries acknowledge the importance of ICT extension, but only twenty-three mention its importance in rural areas.

As can be concluded from the analysis above, there is a low level of policy priority which is given to STI in most LDCs. This keep the system is a weak and underperforming state. In turn, this situation weakens the capacity of national researchers to interact with policymakers and engage in meaningful dialogue to improve policymaking in LDCs.

SPI in many LDCs is also hampered by the fact that in most of these countries the STI system has very weak linkages with national productive systems. This means that the results of scientific research are translated to the enterprise / farm / health system only to a very limited extent. This disconnect limits between scientific activity and the production of goods and services limits the scope for SPI. If the S&T system where better integrated to the productive sphere, the latter would interact with policymakers in order to press for more, better and more better targeted funding of S&T activities. By the same token, the interaction between the scientific community and policymakers would likely be much stronger.

State capacity in LDCs –While having these negative effects on the S&T system of LDCs, the reorientation of public spending and of economic policy strategy of the 1980s and 19902 also had an adverse effect on state capacity itself and on the quality of state bureaucracies in general in LDCs. This was a consequence of reducing public employment and limiting pay increase along several years, which reduced the attractiveness of public employment and the capacity of the state to attract qualified personnel (UNCTAD, 2009: chap.1). Under the impulse of the PRSPs and of the Millennium Development Goals social areas of policymaking were boosted and received additional funding, especially areas such as health, education, water, sanitation, etc.[3] However, areas which had

[3] This was part of the reorientation of

traditionally received policymakers' attention continued to be neglected, as is the case of agriculture, industrial policy, long-term planning, STI policies, etc. These are areas in which the scope for SPI can be great, but where the development of SPI is hindered by the relatively little policy attention and resources directed to them.

Overall LDCs continue to suffer from weak state capacity for policymaking. This includes policymakers' weak understanding of scientific issues, limited openness of politicians to uptaking STI research findings and lack of incentives to policymakers to engage in dialogue with the STI community. All of these factors have been pointed as obstacles to the uptake of scientific information in development policymaking in survey on the subject (Jones et al., 2008).

An aspect of weak state capacity in LDCs is the weakness of its resource mobilization capability and limited tax base, which leads to strong reliance on foreign sources of financing in order to finance a significant share of public expenditure. This confers power to bilateral donors and international financial institutions, which exert strong influence on policy choices and design in these countries and therefor reduces state's policy space. This situation acts as a further barrier to *domestic* SPI in LDCs. It also has as a consequence the common perception that multilateral institutions and bilateral donors are best suited to act as knowledge intermediaries in order to intensify SPI in these countries, rather than domestic institutions. Therefore, "Government officials […] seek to please their superiors through political alignments and by delivering on donor agency priorities" (Jones et al., 2008: 22).

By the same token, in Zambia multilateral institutions were identified as the ones pushing most for the uptake of scientific research in policymaking, rather than domestic agents. Similarly, in Cambodia research found that research priorities needed to be aligned with multilateral donors in order to achieve uptake of STI evidence. Additionally, in a survey with policymakers, intermediaries and researchers of developing countries (including LDCs) these three communities pointed to international organizations as the most effective mediators between S&T research and policymaking (Jones et al., 2008).

Existing points of contact between science and policy in LDCs

Despite all the caveats and institutional difficulties mentioned above, there are some forms of the science-policy interface in LDCs. Beyond the features already mentioned above, SPI in LDCs tends to have some of the following characteristics (Jones et al., 2008):

- Tensions between modern scientific paradigms and traditional knowledge, whereby these two forms of knowledge tend to mutually ignore each other and fail to create synergies (UNCTAD, 2006: chap.6). Often the former is seen and patronizing over the latter and not given it's the space and appreciation it deserves;
- The degree and quality of science-policy interaction depends on the subjects in question, as well as on a related matter, i.e. the institutions responsible for policy design and implementation in different areas. Although science-policymaking interaction is poorly institutionalized in all areas, it takes place somewhat more regularly in the field of socioeconomic policymaking (e.g. poverty, social policies). These areas are considered as priority in LDCs. In the same vein, there is some degree of uptake of evidence form natural sciences in areas that are more directly relevant to

the economic structure of these countries, e.g. medicine, agriculture, environment, natural resource management and food security. By contrast, concerning the long-term issues typically addressed by other field of natural sciences, they tend to be considered as less priority by LDC policymakers;

- The uptake of scientific evidence is relatively stronger in “scientific” ministries (agriculture, environment) in the policy design and formulation stage, while for the other ministries it is stronger at the implementation and evaluation stages. This means that the influence of science is stronger and deeper in the scientific ministries;
- The politicisation of science (whereby research findings are use or disseminated selectively in order to boost policymakers’ priorities, rather than stimulating policy recommendation) tends to be stronger than in other countries.

Gaps that need to be addressed

For SPI to become effective in LDCs and play more of its potential role in development policymaking, the structural deficiencies of their STI system and of the states need to be addressed. STI systems need to become more performing and to undertake research which is more relevant to both policymakers and to the productive sphere of countries, so as to be able to increase the linkages with them.

Most African leaders agree that science-driven development is essential for their nations to overcome poverty. However, several levels of action have to be taken towards this. The first is to create national science policy based on the technological and industrial needs of society, with the collaboration of key actors. Secondly, the policy should be fully integrated in the country's development plan. Third, adequate and stable funding must be provided. Fourth, world-class research and training institutions must be created. Fifth, emphasis should be put on postgraduate education and science scholarships. Sixth, secondary and higher education in science must be a priority. Lastly, scientific literacy must be increased for both children and adults. African governments should encourage and support the establishment of interdisciplinary research and training centres within universities in those areas of S&T most relevant to the development of local industry. Great importance should be given to the development of strong linkages between engineering institutions, small-scale industries and the agriculture sector (Urama et al., 2010).

Strengthening the STI system in LDCs will have two types of consequence: to reinforce the development of productive capacities and hence accelerate the overall development of these countries, and to strengthen the S&T system which can become more of a partner for policymakers. Both types of consequences will reinforce SPI in LDCs.

At the same time, state capacity for policymaking needs to be strengthened across ministries, departments and government levels. This includes raising policymakers’ awareness of STI issues and of STI culture and *modus operandi*.

Beyond these long-term structural improvements, empirical results points to the following elements which can usefully be put in place in LDCs in order to strengthen SPI and boost is contribution to development policies (Jones et al., 2008):

- Institute intermediary organizations that intermediate between STI researchers and policymakers, act as knowledge brokers and carry out capacity-building activities for both scientists and policymakers;
- Translate research findings in products (briefs, articles, presentations…) that suit the timing and needs of policymakers at different hierarchical and geographical levels;
- Institute channels and mechanisms for face-to-face interaction and dialogue between policymakers and researchers on a long-standing basis;
- Develop efforts to create synergies between modern scientific research knowledge and traditional (or indigenous) knowledge (UNCTAD, 2007: chap.2);
- The institutionalization of long-term planning can contribute to the convergence of the time horizon of policymakers and scientists, which are usually in conflict due to the formers short-term cycles as compared to the latter's long-term work cycle.

New partnerships for building productive capacities among LDC in the areas of physical infrastructure, agricultural value chains and energy

Developmental regionalism aims at maximizing the benefits of regional cooperation with the goal of achieving an advantageous insertion of the members' economies into world markets, in order to accelerate economic, social and human development. It is concerned with internal economic development and domestic integration, as well as strategic integration of the regional trading blocs into the world economy. The Greater Mekong Subregion (GMS) is a successful example of developmental regionalism and is the only regional cooperation programme specifically targeting all LDCs in the region. It was started in 1992 and involves all the major actors around the Greater Mekong area, such as Thailand, China, and all the LDCs in the region, ASEAN and ASEAN's development partners. The aim of GMS is to enhance the infrastructure of industrial development in the region by implementing programmes in areas of transport, telecommunications, energy, tourism, trade facilitation, investment, human resource development and agriculture. The main strategy is to attract private investment to the region and facilitate cross-border trade, investment and tourism by strengthening infrastructure linkages. By 2009, The GMS Program had completed 44 projects with a total investment of $11 billion, starting with economic corridor projects with the aim of enhancing transportation linkage over the region (UNCTAD, 2011: chap.3).

The project was formed by and involves powerful international actors who tend to have major control over the flows of goods, investment and technology. Their interests often contradict the wider developmental goals of LDCs and people's immediate needs within the subregion. The risk is that, instead of satisfying the needs of people in the subregion, LDCs will be substituted into roles that enhance the power and influence of these big players. Furthermore, the second phase of the GMS project is the promotion of private sector participation, which could lead to the GMS end product becoming island industrial zones dominated by transnational players, connected by and taking advantage of public-funded infrastructure.

Developmental regionalism assumes the need for gradual and sequenced trade liberalization together with conscious and planned policy actions, including political and institutional infrastructure, as well as RSMs. This guarantees balanced regional development by promoting industrial capacity of LDCs and addressing the needs of LDCs, while minimizing the development gap between key actors.

In Africa some regional economic communities have taken initial steps that point in the direction of regional developmentalism. ECOWAS and EAC have adopted a regional industrial policy, which aims at the common and joint development of productive capacities, investment in border-crossing infrastructure, common R&D activities etc. If the institutional, financial and political resources are actually deployed in this sense, these policies have the potential to create synergies and bosst the development of member countries, which include several LDCs.

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Table 1. How S&T is treated in the PRSP of selected LDCs

Country	Afghanistan	Bangladesh	Benin	Bhutan	Burkina Faso	Burundi	Cambodia	Central Africa Rep.	Chad	Comoros	Djibouti	DR of the Congo	Ethiopia	Gambia	Guinea	Guinea-Bissau	Haiti	Lao PDR	Lesotho
Was S&T considered a priority area in the PRSP document?	No	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	No	Weak	Yes
Is there a specific section/paragraph covering S&T issues?	No	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	Yes
Are specific S&T initiatives included at the level of:																			
Trade Policies	No	Yes	No	No	No	No	No	No	No	No	No	No	Weak	No	No	No	No	Weak	Yes
FDIs	No	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes	Yes
Does the PRSP include specific S&T initiatives in																			
Primary Education	No	Yes	No	No	No	No	No	No	No	No	Weak	No	No	No	No	No	No	Weak	No
Secondary Education	No	Yes	No	No	Yes	No	No	Yes	No	Weak	Weak	No	No	No	Yes	No	No	Weak	No
Higher Education	Weak	Yes	No	No	No	Yes	No	Yes	No	Weak	Weak	Yes	Yes	No	Yes	Weak	No	Weak	No
Are infrastructural technology concerns treated in the PRSP?																			
* Electricity networks																			
general	Yes	Yes	Weak	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
rural	Yes	Yes	Weak	Yes	Yes	Weak	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	Weak	No	No	Yes
* Telecommunication networks																			
general	Yes	Yes	Yes	Weak	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Yes	Yes	No	Weak
rural	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Weak	No	Yes	Yes	Yes	No	Yes	Yes	No	No	Weak
* ICT extension																			
general	Yes	Yes	Yes	No	Yes	Yes	Weak	Yes	Weak	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes
rural	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	No	No	No	Yes
Are there projects aiming at increasing technological awareness through:																			
basic R&D activities	No	Yes	No	No	No	Weak	No	No	No	No	No	No	Yes	No	Yes	Yes	No	No	Yes
applied R&D activities in agricultural research	Weak	Yes	Yes	Weak	Yes	Yes	Weak	Yes	No	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes
applied R&D in industrial/engineering research	Weak	Yes	No	No	No	Yes	No	Weak	No	No	No	No	Yes	Yes	Yes	No	No	No	Yes
technical and vocational eduction training	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Weak	Yes	Yes	Yes	No	Yes	Weak	Yes	Weak	No
Are there sector-specific technology extension programmes:																			
in agriculture	Weak	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Yes	No	No	No	Yes	Yes	Yes	No	Weak	Yes	Yes
in business development services	No	Yes	No	Weak	Weak	Weak	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	No	Weak	Yes
in product standards and best practices	No	Yes	No	No	No	No	Yes	Weak	No	No	No	No	Yes	Weak	No	Yes	Yes	Yes	Yes
Latest PRSP publicaiton date	2008	2013	2011	2004	2008	2012	2006	2009	2007	2013	2012	2013	2011	2011	2013	2011	2014	2008	2012
Source: UNCTAD secretariat compilation.																			

Table 2. How S&T is treated in the PRSP of selected LDCs (continued)

Country	Liberia	Madagascar	Malawi	Mauritania	Mozambique	Nepal	Niger	Rwanda	Sao Tome and Principe	Senegal	Sierra Leone	Sudan	Tanzania	Timor Leste	Togo	Uganda	Yemen	Zambia
Was S&T considered a priority area in the PRSP document?	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	Weak	Yes	No	No	Yes	No	Yes
Is there a specific section/paragraph covering S&T issues?	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes
Are specific S&T initiatives included at the level of:																		
Trade Policies	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes
FDIs	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No	No	Yes	No	Yes
Does the PRSP include specific S&T initiatives in																		
Primary Education	No	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	Yes
Secondary Education	No	Yes	Yes	No	Yes	No	Weak	No	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes
Higher Education	No	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes
Are infrastructural technology concerns treated in the PRSP?																		
* Electricity networks																		
general	Yes	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
rural	Yes	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
* Telecommunication networks																		
general	Yes	Yes	Yes	Yes	Weak	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Weak	Yes	Yes	Yes	Yes	Yes
rural	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Weak	Yes	Weak	Yes	No	Yes	Yes	Yes
* ICT extension																		
general	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
rural	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Are there projects aiming at increasing technological awareness through:																		
basic R&D activities	No	Weak	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	No	Yes
applied R&D activities in agricultural research	No	Yes	Yes	Weak	Yes	Yes	Yes	Weak	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
applied R&D in industrial/engineering research	Yes	Weak	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Weak	Yes	Weak	Yes
technical and vocational eduction training	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Are there sector-specific technology extension programmes:																		
in agriculture	Weak	Weak	Yes	No	Yes	Yes	Yes	Weak	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
in business development services	Weak	Yes	Yes	Weak	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Weak	Yes
in product standards and best practices	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	Weak	Yes	No	Yes
Latest PRSP publicaiton date	2011	2007	2012	2013	2011	2003	2013	2013	2014	2013	2005	2013	2011	2005	2004	2010	2005	2007
Source: UNCTAD secretariat compilation.																		