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The Role of Public-Private Partnerships in Innovation for Development: Lessons from Africa

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ABSTRACT The UN Sustainable Development Goals aim to "leave no one behind", and developed countries are being urged to increase aid to poor countries. While this is a worthwhile effort, however, the key to genuine and sustainable development of poor countries lies not in aid, but in the development of their private sector. Unlike aid which is limited in scope and time, a well-performing private sector puts a country on a more sustainable development path: It provides governments income without strings, and helps generate higher employment. To be able to play this role, poor countries need to build the innovative capacities of their private sectors. This brief identifies public-private partnerships as the most viable policy instrument for building innovation capabilities of the private sector.

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INTRODUCTION

Least Developed Countries (LDCs) are characterised by higher levels of poverty in both relative and absolute terms. Economically and politically, they have the following common characteristics: 1) low per capita income; 2) dependence on agriculture and the export of primary products, and therefore high level of unemployment; 3) low level of technological and innovation capabilities, and therefore low level of productivity and negative balance of payments; and consequently 4) high dependence on aid for development projects. While the tendency is to advocate for more aid (OECD, 2019)[1,#] a more sustainable solution is in building the science, technology and innovation (STI) capabilities of their private sector. In a way, the role that STI plays in development has been recognised, both at the national and international levels. At the national level, many countries in Africa— a region hosting more than half of the world's LDCs — have put in place STI policies to boost their national productivities, while at the regional and global level there are a number of programmes aimed at building capabilities of LDCs in technology and innovation. One such programme/organ at the global level is the UN Technology Bank (TB) for LDCs, which was created as part of the achievement of the Sustainable Development Goals (SDGs). The creation of the TB is one of the first targets of the SDGs to ever be achieved; the major objective being to build technological and innovation capabilities of LDCs.

The above efforts, notwithstanding, at the design and implementation levels—especially the choice of policy instruments—many programmes and policies have missed the point by putting more emphasis on the supply side of knowledge for innovation, i.e. on science and research (public R&D). The demand side of this knowledge (i.e., the productive private sectors) is often neglected. Indeed, this side is even more crucial for innovation, especially in the situation of LDCs where innovation to a large extent is achieved, not so much through R&D, but through learning by doing, using and interacting during the production and marketing processes.

This brief is an attempt to bring the private sector (productive sectors) into the centrestage of the innovation process as a viable means to rescue LDCs from the poverty trap. It discusses the crucial role of the innovative private sector in national developments, and argues that the most appropriate STI policy instrument is public private partnership (PPP).

THE PRIVATE SECTOR IN DEVELOPMENT

In any country in the world, the private sector is not only a key stakeholder in development, but also an indispensable anchor. A well-performing private sector is a major contributor to the Gross Domestic Product (GDP) and growth of countries, which are basic conditions for addressing issues related to poverty. For instance, through well-

OECD. Net ODA (indicator). 2019. doi: 10.1787/33346549-en (Accessed on 23 February 2019). A long-standing United Nations target is that developed countries should devote 0.7% of their gross national income to ODA. This indicates that, the more developed countries commit more resources to ODA, the better for the LDCs.

designed policies, the private sector can contribute to job creation, including for the poorest sections of society. In addition, the government, through the tax it collects from the private sector, can provide much needed public services such as education and healthcare, and develop both physical and knowledge infrastructure required for further innovation. It is unfortunate, therefore, that most LDCs have not seriously focused on developing their private sector and making them competitive in the global economy. ODI (2015),[2] also holds the same view, arguing that in many cases, the private sector in LDCs has been excluded from development planning.

Unlike most forms of aid, government earnings from the private sector are used according to the specific priorities identified by the state. To be sure, aid can be useful, especially in the short and medium terms. In the long run, however, aid can work against a state's sustainable development goals. According to Albiman, under most aid programs, development priorities are determined not according to economic rationale, but political agendas.[3] A good example is the African industrialisation agenda as expressed in Agenda 2063[4] and technological and innovation capability building as expressed in the Science, Technology & Innovation Strategy for Africa2024.[5] However, while these are at the top of the development agenda for most African countries, very little aid —apart from infrastructural projects — seems to be going into these areas. Currently much of the aid in Africa is concentrated on the global issues (the so-called "grand challenges") such as health, environment and food security. Locally, much of the aid interventions appear to be targeted at micro level social challenges such as malnutrition, water, and sanitation, symptoms of much broader and systemic failures that if correctly addressed can remove these micro level symptoms, and generally put the countries on more sustainable development paths. Even the well-meant TB for LDCs might not achieve the desired outcomes – given the low level of importance attached to technological and innovation capability building by both the LDCs themselves and international actors such as development partners.

Generally high dependence on aid — especially in the long term — has been found to create major economic problems, supporting unproductive projects, which in turn results in negative impact on economic growth. Existing studies find that increase in foreign aid tend to distort domestic savings, increase domestic consumptions, and discourage tax revenue in poor countries, therefore reinforcing the vicious cycle of poverty and aid.[6,7,8,9,10]

While poor countries do not have full control over aid, i.e., full decision-making powers over where aid should go in development, they have control over earnings from the private sector, which if fully developed, can cater to all the social and economic needs of the country. For LDCs, greater private-sector participation in development is therefore key. Ahalstrom argues that economic growth is a considerably more important mechanism than foreign aid and welfare redistribution programmes in improving people's wellbeing.[11] A well performing national private sector grows GDP, generates millions of jobs, and thereby

increases per capita income; it also generates revenues for the government through taxes to enable provision of much needed services, such as education and healthcare. Most importantly, development financed through tax revenues ensures sustainability, and liberates countries both economically and politically.

However, for the private sector to be able to do this job properly, it has to be innovative and competitive. Innovation in terms of marketing of new and improved products, and use of new and improved processes, buttressed by new and improved marketing and management strategies, is extremely important in the currently competitive and globalised world environment. The most basic cause of underdevelopment and poverty is lack of a sustainable and broad-based growth that hinges on endogenous technological and innovation capabilities; it is a root cause of many of the social, economic, environmental and political problems observed in LDCs. Poverty eradication — which is central to Agenda 2030 — in essence should be understood as a process of capability building. According to Lee et al., the variance in income levels across countries comes basically from differences in capabilities in many aspects, including in the production and selling of internationally competitive products for a prolonged period of time. In other words, poverty eradication is about building endogenous technological and innovation capabilities, including the capability to address environmental issues.[12] This should be understood as the true meaning of sustainable development, and therefore solutions to most problems of the LDCs – whether economic, social or political – lie in enhancing their technological and innovation capabilities. As suggested by Bartels, et al.: "Current debates on innovation are orienting research, technology and innovation policy solely towards societal challenges rather than towards economic growth objectives", and in the process, the concept of innovation has lost its proper meaning, greatness and power in driving the social and economic development of nations.[13]

STATUS AND BARRIERS TO INNOVATION IN LDCs

Status

One of the major consequences of underdevelopment is lack of reliable and well-organised data and information. This is even more so in the area of technology and innovation, where there is lack of expertise for poor countries, making it difficult to depict both the real-time status and the barriers to innovation. However, since most of the LDCs perform at largely the same level in major development indicators, the sparse information available in some of these countries can serve the purpose of painting even a rough picture. This brief will make reference to Africa, specifically two Africa-wide innovation surveys carried out by the New Partnership for Africa's Development (NEPAD) and a World Bank study on innovation paradox on developing countries.[14] Other sources include few studies in individual countries, largely Ghana and Tanzania. These studies and surveys indicate that although the proportion of firms that are innovative is appreciable – around 60 percent of the sample firms – innovations are of low degrees; i.e., there are largely minor modifications of

products and processes, and adoption of low-tech products and processes that are new to the firm.[15,16,17,18,19] For the NEPAD, 2014, the proportion of innovative firms from 21 African countries ranged, on average, from 41.1 percent to 77.0 percent, mostly differentiated by incremental degrees and generally characterised by the adoption of low tech imported machinery.

The NEPAD surveys also included the research and development (R&D) survey, largely focused on the amount of funding that goes into R&D activities and human resources involved in these. One of the major indicators of the utility value of R&D in the innovation process is the use of its outcome by the firms. This use is normally gauged by the percentage of R&D funding that comes from private firms, the indicator that was also captured in the NEPAD R&D survey. The survey showed that African investment in R&D is still far below the established bar of one percent of GDP. In addition, according to the report, 68 percent of participating countries performed R&D overwhelmingly in the public sector, with serious under-investment in the business sector, except for South Africa where about 40.1 percent of R&D funding came from the business sector. On the contrary, for most developed countries, over 60 percent of R&D funding comes from the private sector. For the rest of Africa, governments continue to be the main source of funding for R&D activities, and to a large extent R&D remains divorced from productive activities. This is, however, not surprising given the status of the technological and innovation capabilities in these countries. It is well known that minor incremental innovations that are largely achieved through learning by doing, do not require much of the R&D input. This is subsequently a major reason why the business sector rarely invests in R&D in LDCs. Economic agents driven by profit motives, especially in poor countries, invest in R&D, and indeed any other ventures, only if there is a promise of obvious economic return. However, given the current intensive competition in the global economy coupled with rapid technological change accompanying the fourth industrial revolution, LDCs do not have options other than moving up the innovation capability ladder; and to do so more rapidly than contemporaries during earlier industrial revolutions, where countries took their time to catch up because there were no impending threats of rapid technological change and competitiveness. Catching up under the current messy global environment — especially by poor countries who have both market and system failures —cannot be done without serious public interventions in terms of policies with right instruments, basically to speed up the process and influence the direction. Given the systemic nature of the innovation process, requiring adequate interaction between the supply side of the knowledge (public) and the demand side (the private), an important innovation policy instrument is PPP.

Barriers to innovation in LDCs

As discussed earlier, information on innovation activities for most LDCs is extremely scarce; this also includes information on barriers to innovation. This situation notwithstanding, there is some information available in a few of the LDCs; especially those on the two NEPAD surveys and the World Bank (WB) study earlier mentioned. According to both the NEPAD

surveys, lack of funds within the enterprise or group of enterprises was the barrier to innovation most frequently reported by both innovation-active and non-innovation-active firms. "No need to innovate" and "lack of expertise" were also cited by both types of firms as barriers to innovation. With regard to the point on expertise, while NEPAD studies indicated technological skills of the workforce, the WB study was concerned more with the managerial skills that actually determine all other factors of innovation in industrial firms, including technical expertise of the workforce. According to the World Bank study,[20] good managerial and organisational practices are central to the process of upgrading and quality control.

This is corroborated by specific country studies in Africa. For instance, an innovation study in Ghana identified four major barriers to innovation that are similar to the NEPAD's study findings, but with slightly different magnitudes. While lack of expertise is third for the NEPAD study, it is top on the list for the Ghanian one;[21] similarly, while funding is top for the NEPAD study, it is third for the Ghanian study. Second for the Ghanian study is "sophisticated demanding customers", which corroborates a Tanzanian study that indicates that a major barrier to firms moving up the innovation capability ladder is the absence of or limited number of sophisticated demanding customers of appreciable size (market size) that trigger firms to mind the market and therefore invest in innovation of higher degrees of novelty.[22] This corroborates NEPAD's findings on "no need to innovate". These findings, however, can easily be interpreted in terms of limited information on markets — to a large extent indicated by the Ghanian study. But the Tanzanian study eliminated this possibility by asking a question on information on markets for innovative products, which turned out to be not a hurdle. A major innovation challenge, however, that seems to also be rooted in managerial problems as identified in the WB study, is the lack of proactive search for avenues for innovation. According to this study, firms in the Tanzanian metal sector innovate largely through routine activities of production and selling — largely in response to customers' dissatisfaction. In addition, this study has put qualified human resources as the barrier to innovation that is least worrisome; the findings have been interpreted in terms of the fact that since there is huge absence of sophisticated demanding customers, firms do not have incentives to invest in high-calibre expertise that is necessary for the innovation of higher degrees of novelty.[23]

There are three major challenges that are preventing firms in LDCs to move up the innovation capability ladder: lack of sophisticated and demanding customers, lack of finance for innovation, and lack of managerial and technical expertise to effect innovation.

PPPs as answer to innovation barriers in LDCs

Public Private Partnership (PPP) is popularly understood as a contractual arrangement between the public and private sectors to provide public goods. It was traditionally understood as a special kind of contract between the public and the private sectors in the provision of infrastructure such as the building and equipping of schools, hospitals,

transport systems, water, and sewerage systems. However, as the practice of PPP gained momentum, it took a more general form, and so did its definition. For instance, PPP has been defined as a relationship in which public and private resources are blended to achieve a goal or set of goals judged to be mutually beneficial both to the private entity and to the public.[24] As against the traditional understanding, this definition seems to also accommodate issues beyond the provision of the public goods, such as the infrastructure, to include things that are of direct benefit to the profit oriented private sector as well. Using specific references to science, technology, and innovation, OECD defines PPP as "any formal relationship or arrangement over fixed term or indefinite period of time, between public and private actors, where both sides interact in the decision making process, and co-invest scarce resources such as money, personnel, facility, and information in order to achieve specific objectives in the area of science, technology, and innovation." According to OECD, the space in which PPPs operate is one where neither government nor the private sector can achieve their objectives without the active participation of the other.[25] This is the definition being used in this brief, focusing on addressing innovation barriers previously identified. By helping firms overcome various barriers to innovation, PPPs can contribute to the development of industrial processes, products, and services that might not otherwise be possible without the involvement of the government in one way or the other. In this way, PPPs also help in addressing government missions of raising the GDP of their countries and generating further employment for the population, including the poorest through an innovative private sector. Through PPP, governments can also influence the direction of investments and innovation towards more socially relevant sectors of the economy, and achieve a much needed innovation policy goal of linking research carried out in public organisations to the activities of the productive sector.

PPPs in financing innovation

One of the barriers to innovation mentioned by African firms is, unsurprisingly, funding. Innovation always requires some form of financing. Firms and, indeed, many businesses can start with resources as low as those from personal savings, but as they grow, they find it extremely difficult to survive and expand without further external financial assistance.[26] This is especially true for innovation-related projects, including even those that are low tech, i.e., adopting existing technologies and introducing incremental changes. Firms, especially small ones, always need some form of external financial support for the import of machinery. A popular form of access to external finance by firms is borrowing from banks. However, with a weak financial system, the dependence on borrowing from financial institutions as the main source of finance for the firms in LDCs tends to be a major barrier to innovation. A study by Buera and Kaboski has shown that countries with weak financial systems— including many LDCs — tend to divert finances from emerging firms with new ideas and transferring financial resources to bigger companies which have less potential for innovation.[27] Lenders do this to avoid risks in recovering money borrowed and as a result the situation distorts the effective allocation of finance to innovative activities.

It is also true that sometimes even when finance is provided to the targeted firm in the form of credits or even grants by the government, given multiple challenges faced by these firms, the funds do not necessarily go into financing innovation-related activities. A Tanzanian study on finance and innovation in small agro-processing firms, indicates a limited correlation between innovation and availability of credit to small and medium firms. The study concluded that making credits available to firms is not a panacea for innovation, proposing well thought out and targeted policies for innovation to be tied to credits availability.[28] One such policy instrument can be public private partnership (PPP), where government – as a partner – can have an influence where the money should be put; this can be in areas such as the managerial expertise that has been found to be so fundamental for firms to successfully invest in innovative activities.[29] According to experience, PPPs are more adaptive and flexible policy instruments than subsidies and tax credits in addressing specific needs of industries and sectors at a larger scale[30]— in a way supporting the Tanzanian findings.

A popular PPP in financing innovation is support to R&D. In this case the public-private partnership agenda is driven by public organisations that seek complementary (private) funding, and by private entities that seek to profit from knowledge and technology provided by public R&D services. On the part of the government in question, this is normally pursued not only for financial support from the private sector, but also as a policy tool for connecting research outcomes to use —useful for LDCs as there is major disconnect between research and use. PPP also has the potential to influence the direction of R&D — to be able to tilt it towards areas with more public interest, such as health or one with high employment generation.[31]

PPPs and Demand-side innovation policies

Generally, technological innovations always accompany non-technological ones, such as marketing and new organisational forms. When technological innovations are of an appreciable degree of novelty, their market introductions are met with barriers of different kinds — as observed in the African case studies. What other countries have done in such instances is put in place policies that induce or trigger demand for innovations of higher degrees of novelty, and /or increase diffusion of such innovations. These are of different kinds, depending on the demand side challenge. One popular demand-side innovation policy is public procurement. Because of their strong purchasing power, governments can pull demand for innovative products and processes — especially in areas that are predominantly public service oriented, such as health and education. For instance, African governments — being responsible for purchase of essential drugs — can build innovation capabilities of their pharmaceutical sector through public procurement. Starting from low-level manufacturing of final formulation and packaging of drugs, with PPP and other supporting policy instruments, African pharmaceutical firms can move into higher levels of technological capabilities such as manufacturing of active ingredients to achieve international standards. Given the fact that a large number of medicinal plants are found in Africa, there should be strong incentive for

African governments to invest in the pharmaceutical sector.

Governments can also act as "lead users" for products that are inherently for private consumption, but with public interest such as employment generation. Here the major role of the lead user is to cover high product costs at the beginning of the product life cycle by purchasing the product at relatively higher prices. This is because products are normally expensive at the beginning of the product life cycle owing to the additional development and learning costs; and normally cannot be afforded by many users. This cost can easily be met by the State, instead of individuals. As against traditional public procurement, the major focus for public procurement for the purpose of inducing innovation is not short-term price reduction, but rather quality concern and incentives for innovation, and increased size of demand that will eventually sustain lower prices.[32] This can apply to innovation where government is also a major customer, such as in the furniture industry.

PPPs in building expertise for innovation

PPP for expertise building for innovation is not only about pooling financial and human resources in the environment of inadequacy on the part of the either the government or the private sector, but also, and perhaps above all, to improve the level of mutual information sharing on the job market, making recruiting more efficient and workforce qualification closer to real labour market needs, which is an issue that is of utmost importance for Africa. Generally — in Africa — there is an outcry about skills mismatch; for engineering professionals for instance, while industrial firms are complaining about the inadequacy of qualified engineers, the engineering graduates are complaining about not being able to find appropriate jobs in industrial firms. This implies that even among the few engineers the continent is producing, there is problem of skills mismatch — further aggravating the problem of inadequacy of engineering professionals to match the Africa-wide agenda of structural transformation that emphasises adding value to the abundant natural resources the continent is blessed with. Generally, according to the World Economic Forum, employers across the African region identify inadequately skilled workforces as a major constraint to their businesses, including 41 percent of firms in Tanzania and 30 percent in Kenya.[33]

Addressing the problem of skills inadequacy through PPPs does not only help to pool public and private resources, but also, and above all, help in addressing the supply and demand challenges in an interactive fashion, making the produced labour more attuned to the needs of the private sector, while minimising wastage of resources on the part of the government. According to the OECD, the private sector in a PPP can play a role in several areas to foster skills development,[34] such as:

1. Participation in public-private consultations to help define current skills needs, increase matching with skills supply, forecasting future skills needs, and revising skills production accordingly;
2. Providing workplace training by participating in vocational education and training through internship or apprenticeship schemes;

3. Delivering continuing education and training of the workforce, which can be through purely private initiatives or can leverage public institutions and schemes;
4. Setting up special, sectoral programmes involving enterprises, governments, and educational institutions to address specific situations.

To be effective, such proposed PPP instruments must be buttressed by much needed firm-level managerial training as proposed in the World Bank study.

CONCLUSION

LDC governments that are cash-stripped, with low economic outputs from their private sector because of low level of innovation propensity, face challenges in financing development in their countries. Most of these countries have consequently relied on aid to fund development projects —which has not shown any success towards long-term sustainable development. This brief argues that a long-term development solution for LDCs lies not in aid, but in productivity increase of their private sector, especially in building their technological and innovation capabilities. Given the fact that technological and innovation capabilities are better achieved through creative interaction between the supply and demand sides, this task is better done through PPPs, rather than either sector in isolation. However, PPPs have not yet taken deep root in Africa – they are hardly used, nor clearly understood. As demonstrated by the Tanzania study by ESRF carried out in 2016,[35] of the few existing PPP, many are faced by number of challenges, including the following:

1. Lack of comprehensive policy, legal and institutional frameworks that provide clear guidelines and procedures for development and implementation of PPPs.
2. Lack of analysis capacity to assess investment proposals leading to poor project designs and implementation.
3. Inadequate enabling environment, which includes lack of long-term financing instruments and appropriate risk-sharing mechanisms.
4. Insufficient capacity in negotiations, procurement, implementation and management of PPPs.
5. Inadequate risk-sharing mechanisms that often lead to the public sector carrying the full burden of potential risks.
6. Inadequate mechanisms for recovery of private investors' capital as well as impact on national development programmes that depend on the projects' performance.
7. Lack of public awareness about PPPs and their benefits.[36]

LDCs must endeavour to address these challenges that are blocking the beneficial use of PPPs in the development process, especially the unique use of PPP in spurring innovation. ORF

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