INFRASTRUCTURE DEVELOPMENT

This report focuses on the participation of Africa's seven new and emerging partners (NEPs) in Africa's infrastructural development – Brazil, China, India, Korea, Malaysia, Russia and Turkey (hereafter the NEP7 economies).

The involvement of the NEP7 in infrastructural development in Africa occurs in a context of a disrupted global economy. This disruption involves a change in the centre of gravity of global growth, a sustained boom in energy prices since 2002, and a growing recognition that Africa is emerging as a key strategic site for the expansion of commodity production. Since much economic infrastructure is wholly or partially required to export commodities, the sustained commodity boom has important implications for infrastructural investment, and particularly for investment in economic infrastructure.

Access to commodities is not the only reason why the NEP7 have played an important role in Africa's infrastructural development. Africa represents a rapidly growing market, and construction firms in the NEP7 have distinctive competences developed in meeting the needs of their domestic economies which often have similar operating environments to Africa. Further, in the search to widen their economic and geopolitical spheres of influence, governments in the NEP7 have increased their aid programmes to Africa, often providing support for their private sector to participate in African infrastructural development, and often involving support for social infrastructure as well as economic infrastructure. Moreover, as observed in an earlier UNOSAA Report (UNOSAA, 2009), the mode of involvement of some of the NEP7 (particularly, but not exclusively, China) occurs in a framework which departs from the Washington Consensus which has characterised DAC-economy involvement in Africa and this on occasion provides them with a competitive edge over northern rivals. Often, NEP firms are not subject to the transparency, environmental and labour standards which govern DAC economies operations in Africa. In some circumstances this provides NEP firms with the capacity to underbid firms from Africa's traditional partners,

This Report reviews the operations of the NEP7 in Africa's infrastructure by drawing on the World Bank's PPIAF database and complementing this with an extensive search of the internet and information provided by key informants. This produces a database of 239 projects between 2000 and 2010 – the listing of individual projects is provided in the tables at the end of each of the country Case

Studies However, although this is a unique new database, it only provides a glimpse of NEP7 involvement in African countries. It is not possible to determine the representiveness of this sample, but it is a sample which does provide an important insight into the rapidly growing presence of NEP economies in Africa's infrastructural sectors, and the distinctive character of this involvement.

Three sets of lenses are utilised to assess the character of NEP7 involvement in African infrastructure:

- Their general contribution to the infrastructure sector through the provision of capital goods as reflected in their exports of construction equipment to Africa

- The extent to which NEP7 involvement in infrastructure projects are wholly or partially linked to facilitating the exploitation of Africa's natural resources

- The extent to which NEP7 participation in infrastructure involves the bundling of aid, trade and FDI

General findings

The NEP7 satisfy a growing proportion of Africa's construction equipment needs. As a proportion of total African exports, this rose sharply from 7% in 2003 to 25% in 2011. Most of this increase was a consequence of rising Chinese exports, but substantial export gains were also made by Korea, Brazil and Turkey.

It is widely assumed that "resource hungry" NEP7 are strategically focused on gaining access to Africa's commodities and that this predisposes them to invest disproportionately in the infrastructure dedicated or partially designed to facilitate commodity exports. However, whilst the evidence suggests that NEP infrastructural involvement in the resource-sector is indeed in part explained by the desire to gain *access* to Africa's resources, there is little evidence that it is disproportionately geared to the *extraction and export* of these resources. It is particularly not the case for China's involvement in Africa's infrastructure sectors, since only 6% of the infrastructure projects in our database were wholly linked to resource extraction and export, with a further 3% predominantly so linked.

A number of vectors of NEP involvement were investigated – open tender projects, aid, FDI and direct trade-financed initiatives. Around half of all infrastructure projects are aid- or loan-financed. The proportion is higher for social infrastructure and stadiums (most of these involve concessional loans) and least evident for oil pipelines and airports. The second largest vector of infrastructure projects are those won on open tender which comprise nearly a third of the total. Open tender projects are most evident for housing, airports and oil; pipelines, and least likely in the case of railway projects and stadiums. FDI surfaces as an important vector in the oil sector, and in railways. There are also a

small number of projects which involve a combination of aid and FDI, and this is most evident in the case of sea port infrastructure.

Beyond these categories of aid, loans, FDI and projects won on open tender is an additional vector of involvement which is relatively new in the African context. This involves projects where the repayment of loans and the payments to contractors are explicitly and directly linked to the export of commodities. Nearly 21% - that is, 50 of the 239 projects for which information exists – involved this close link between infrastructure projects and commodity production. All but seven of them involved Chinese actors, and these Chinese trade-linked projects were predominantly in road construction and power plants and involved Chinese state owned companies.

Putting together the data on trade-related repayments and projects involving different vectors of financing, it is possible to explore the extent and character of "bundling" by NEP actors in Africa's sector. Three types of bundling can be identified. The first are cases where only a single vector of activity is involved (aid, or finance, or FDI or commodity-export linked payments). The second are cases where two of these three vectors are involved. The third are where all three vectors are bundled. It is these triple-vector projects which most closely fit the "Angola mode" which is said to characterise much of China's involvement in large scale projects in Africa. Of the 161 infrastructure projects for which data is available, the data shows that nearly 60% of NEP infrastructure projects in Africa involve only a single vector – that is, aid, equity, open market tender or repayment through commodity export receipts. A small proportion - 12% - involves two vectors, but nearly 30% of all infrastructure projects are at the "Angola mode" end of the bundling spectrum. Bundling is most prominent in stadiums, power and roads, and least evident in social infrastructure, the oil sector, ICT and airports.

Country specific findings

We have identified 141 cases of Chinese involvement in African infrastructure projects between 2000 and 2008. They are predominantly state-owned enterprises, with access to funds made available by the Chinese government to its EXIM Bank. Few of these loans have been provided on a concessional basis, and many are tied to purchases of inputs from China and are to be repaid by commodity exports. Moreover, many of the large scale Chinese projects involve a high degree of bundling of aid, trade and FDI. In some cases this bundling involves significant synergies between economic infrastructure, social infrastructure and training in return for access to mineral deposits which will be used to repay China's investments. Although China has a distinctive interest in Africa's natural resources to feed its own economic growth, there is no evidence that its presence in Africa's infrastructural sectors is disproportionately focused on facilitating the extraction and export of commodities. The primary motive appears to be to commercial, that is to take advantage of market opportunities in

Africa. However, there are notable examples of Chinese infrastructural investments in prestige projects such as stadiums and housing which perhaps set the scene for later developments in which Chinese firms gain access to Africa's natural resources. China is overwhelmingly the largest NEP supplier of construction equipment to Africa.

Brazil, the second most numerous NEP7 participant in African infrastructure, has been involved in 38 infrastructure projects in Africa since 2000. Brazilian aid to Africa is in an embryonic form, and most of its infrastructure involvement have been won through open tenders. There is little evidence of the bundling of aid, trade and FDI in Brazilian projects although there is a close synergy in some cases (notably in Mozambique) between Brazilian firms' operations in the resource sector and the provision of economic infrastructure which partially meets the needs of these resource investments, There has been a sharp growth in Brazil's exports of construction equipment to Africa.

Korea is the third most important NEP7 economy participating in Africa's infrastructural sectors. Of all the NEP7, its operations most clearly mirror those of Africa's traditional economic partners, and indeed, Korea is now a member of DAC. Of its 21 infrastructure projects in Africa, 19 are aid-funded and two result from FDI. Given its DAC orientation, a high share of Korean projects are in social infrastructure. Next to China, Korea is the largest of the NEP construction equipment exporters to Africa.

India follows behind Korea in relation to the number of infrastructure projects in which it is involved. Fifteen cases of involvement in Africa's infrastructure since 2000 are identified. These have been concentrated in economic infrastructure, particularly in power and railways. India's aid to Africa is minimal, but there are signs that it is adopting a more proactive and strategic approach towards its presence in Africa. This is evidenced in its involvement in a large railway project in Nigeria which involves some degree of bundling of aid, trade and private sector involvement. Exports of construction equipment to Africa have been minimal.

Turkey has a strong global presence in the construction sector, and it is not surprising therefore that it has been involved in a number of infrastructure projects (14 in total since 2000), particularly in the airport and oil-infrastructure sectors. Although Turkey has a growing aid programme, its participation in Africa's infrastructure sectors has been driven by its private sector winning open tenders. Although most of these projects have been in North Africa, Turkey is now making major push for deeper involvement in SSA. Exports of construction equipment to Africa have been minimal.

Malaysia and Russia have a very limited presence in Africa's infrastructure sectors, each having been involved in 5 infrastructural projects since 2000. Neither country has an aid programme of significance, and relations with Africa

are driven by strictly commercial imperatives. Malaysian firms are concentrated in the oil sector (having divested from the ICT sector), and Russian investments are concentrated in power and oil-infrastructure. Neither economy is an exporter of any significance of construction equipment to Africa.

Policy Implications

The growing role of the NEP7 in Africa's development agenda in general and in its infrastructure sector in particular represents a major opportunity for enhancing the extent of infrastructural investment, its geographical focus, its sectoral orientation and the nature and structure of individual infrastructural projects. As with all disruptive events – and the rapid growth of the NEP7 is indeed a disruptive phenomenon in the global economy – this offers both threat and opportunity. The task for the development of a policy agenda is thus to maximise the positive outcomes and to minimise the negative outcomes.

Key constraints

The policies required to maximise the capacity of African economies to take advantage of the opportunities for infrastructural development opened by the emergence of the NEP economies are necessarily located in the context of key constraints. The first of these constraints is the weakness of strategy development in the continent, visible across the spectrum of individual governments, national firms and regional bodies. Accompanying this gap is a weakness in detailed policy development, particularly with regard to appropriately incentivising policies and ensuring that different policies are mutually supportive.

A second key constraint is that the knowledge base required to develop an appropriate strategy and detailed and effective policies is weak. This pervasive weakness across the continent is particularly apparent with respect to data on the NEP economies, since historically Africa's antennae have been focused on its traditional partners. However, the relevant knowledge gaps are not just evident with respect to the NEP economies. They also relate to the nature and character of Africa's infrastructural deficit and its resource base which can be utilised to leverage greater and more effective participation of the NEP economies in infrastructural development.

The third major constraint arises as a consequence of market failures. Some of these market failures - such as the problems of appropriation and externalities - are intrinsic to all infrastructural development. But others - particularly imperfections in knowledge markets connecting small and medium sized NEP firms with African customers (particularly small and medium sized African firms) - are more marked in Africa's relations with the NEPs than with regard to traditional economic partners.

The fourth constraint concerns the sustainability of NEP contributions to Africa's infrastructural development. The predominant attention has been on rapid

delivery of infrastructure where Chinese firms are particularly affective in shortening project delivery cycles. However, without due attention, the consequence of this short term approach to infrastructure development will be to reduce technology transfer and capability building in Africa.

The fifth and final constraint to taking advantage of the NEPs entry into Africa relates to poorly functioning financial markets. An increasing number of African economies do indeed have capital available for infrastructural development. But in general, this domestic finance is poorly mobilised and financial markets are not focused on the specific character of NEP financial markets, hence reducing the capacity for combining African and NEP financial resources for infrastructural development.

Fashioning a policy response

Appropriate and effective policies need to be developed in the face of these five sets of constraining factors. These policies have differential implications for five different sets of stakeholders – African governments, the private sector in Africa, regional bodies in Africa, external agencies and NEP governments and firms. The Figure below provides a matrix of the policy spaces which need to be filled by the key stakeholders. These cells are not filled in, since the appropriate detailed responses necessarily need to be identified by the stakeholders themselves and must reflect local circumstances. This task should not be addressed lightly since there is a danger that policies will emerge which are insufficiently informed or thought out, which are not mutually supportive or which are unlikely to be implemented effectively.

Tackling the strategic gap is an issue for policy makers across the spectrum. In the context of the disruptive entry of the NEP economies into Africa, and the social and economic importance of infrastructure, these issues need to be addressed at the highest level – within Presidencies in individual countries and inter-governmental discussions and organisations. Key agendas which need to be addressed at the highest level are (a) the capacity to leverage deeper and more appropriate NEP involvement, for example by using access to resources as a carrot, or by fostering links between NEP firms and domestic financial assets (b) the extent to which Africa might use bundling to augment the extent and nature of infrastructure related inflows from the NEP economies (c) being more proactive in taking advantage of the competitive rivalry between potential NEP investors (governments and firms) seeking access to African markets and resources and (d) realising the importance of multi-country negotiations for infrastructure projects that cut across borders but are essential/beneficial to all countries involved. African governments need to include in their strategies the capacity to combine the competences of Africa's traditional and newly emerging partners in infrastructural development. Crudely-speaking, the traditional partners are generally stronger in infrastructure software than many NEP providers,

whereas NEP suppliers area often able to deliver infrastructure hardware quicker and at lower cost. The strategic agenda also has major implications for Africa's private sector which is often still focused predominantly on links with traditional northern partners.

Beyond the strategic challenge lies policy formulation. Individual policies need to be "joined-up" and complementary rather than working against each other. The policies need to be incentivised both with negative sanctions (the stick) and positive sanctions (incentives). Externalities between neighbouring countries pose particular policy challenges. Policies also need to be practical and within the reach of decision implementers.

Effective strategy and policy hinge crucially on knowledge. Here there are a range of challenges required to augment knowledge bases. The required knowledges are diverse, including (a) an understanding of a country or region's infrastructural requirements (b) a knowledge of resource assets (c) a deep knowledge of the competitive strengths and weaknesses of individual NEP economies and NEP firms and their northern rivals and (d) an understanding of domestic capabilities and an appreciation of the wider economic and geo-political environment which sets the context for strategy formulation. Large African economies such as South Africa, Nigeria, Egypt and Ethiopia and a few very large African firms may be able to go some distance themselves in building these knowledge bases, but even they may require support from African regional bodies and external parties. The challenge facing smaller and poorer African economies in building and utilising knowledge bases are of course much more daunting and the role to be played by regional bodies and external agencies will be more important. PIDA may have a particularly important role to play in acting as a knowledge base for these smaller and poorer economies, as will support from traditional donors, The World Bank and the NEP economies.

Addressing the market failures required to make maximum advantage of the entry of the NEP economies into Africa is primarily a policy challenge for national governments, or for groups of neighbouring governments when cross-border externalities are involved. Governments need to be aware of the nature and causes of market imperfections and to take appropriate remedial action. For example, insofar as there is a knowledge gap with regard to links to SMEs in NEPs or in relation to the capacity of domestic SMEs in the infrastructure sector to generate knowledge of NEP infrastructure providers, NEP embassies in Africa and African embassies in the NEP economies may take particular steps to bridge this market gap. In the case of smaller and lower income African economies who may face particular problems in addressing these and similar market failures, regional bodies within Africa may be required to play a more proactive role.

There is now a growing understanding of the factors which determine the breadth and depth of industrial and service sector linkages into the commodities sectors

in Africa (Morris, Kaplinsky and Kaplan, 2012: Kaplinsky et. al. 2012; ECA, 2013 forthcoming; OECD Africa Economic Outlook 2013 forthcoming). Although the determinants of linkage development obviously vary between individual sectors and economies, four sets of factors stand out in importance – (a) the ownership of lead resource firms and their suppliers (b) the nature of skills development and the National System of Innovation (c) the nature and quality of infrastructure and (d) the nature and quality of policy formulation and delivery. These four determinants of effective linkage development are equally important to Africa's infrastructural sector which shares many of the characteristics of the resource sector. They require equivalent policy responses from national governments, from Africa's private sector and from Africa's regional bodies. There are also derived implications for external agencies and NEP governments, but these are probably of a lower order of importance. However the policy implications to promote linkage development are not confined to governments and external agencies. Lead firms in the resource sector are equally challenged, since the provision of local low cost and high quality inputs and efficient processing is important to their profitability.

Finally, there is a need to develop policies to promote the mobilisation of domestic resources, the leveraging of external resources and the enhancement of the quality of the finance provided for infrastructure development. In addition to national governments, action is also required by Africa's private sector, regional bodies (such as the AfDB) and external agencies. But, given the distinctive nature of financial markets in many NEPs, NEP governments have a particularly important role to play in promoting the development of these financial markets.

Structure of Report

Part I of this Report outlines the context in which the NEP7 are playing a growing role in Africa in general, and in its infrastructure sector in particular. It highlights the slowdown in growth rates amongst Africa's traditionally dominant economic partners and the growing and significant role which Africa plays in a world of growing scarcities of many commodities. It further observes a tendency for key NEP7 – particularly China – to participate in African economic growth by bundling aid, trade and FDI. It documents the extent and nature of Africa's trade with the NEP7 and Africa's deficit in both economic and social infrastructure. Based on the survey of 236 reported NEP7 infrastructural projects, The Report summarises the key elements of this overall pattern of involvement, focusing on NEP7 exports of construction equipment to Africa, the links between infrastructure involvement and resource extraction, and the extent of bundling of aid, trade and FDI. Part I concludes by reviewing the nature of participation of Africa's traditional partners in infrastructure development, and contrasts this with NEP7 involvement. Based on the foregoing analysis, policy recommendations are made.

Part II provides a detailed picture of these issues for the individual NEP7. Each country case-study is accompanied by brief descriptions of all of the

infrastructure projects with which the country is involved. Annex 1 provides a description of the trade categories utilised in the analysis of NEP7 construction equipment exports to Africa.

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