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# Industrial Development Report 2004

## Executive Summary



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

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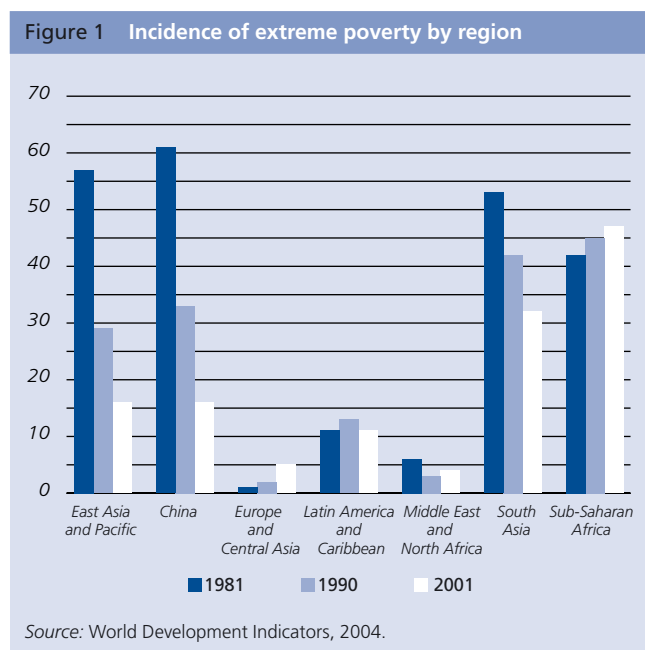
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### Poverty in Africa: the underlying fundamentals

The economies of Sub-Saharan Africa (SSA) have been in decline for a quarter of a century, although with notable exceptions. Consequently, SSA has become the development challenge: while on present trends most of the developing world will continue to converge with the developed world, SSA's decline has not just been relative but also absolute (figure 1). Unless this disturbing trend is reversed, the Millennium Development Goals (MDGs) will be unattainable for SSA.



The MDGs are more than targets set by the international community for minimum levels of human and social well-being in poor countries. They are also basic preconditions for sustained economic development. Most analysts now accept that social and economic development must proceed hand in hand and complement each other in vital ways. The improvements that MDGs envisage in health, education, gender, environment and infrastructure are essential if productive sectors are to grow and create employment. Only such improvements can provide the high-quality inputs needed for the productivity increase that sustained growth requires, and

only the greater equity and opportunities implied in the MDGs can provide the social stability without which growth cannot succeed.

On the other hand, the achievement of MDGs also requires faster economic growth. The greatest shortfall in MDGs will be in the countries where poverty is already the worst, and where it has been rising fastest. The poorest SSA countries are, on average, also those that pose the greatest challenges in terms of required growth rates in order to achieve the MDGs. They have been making the slowest, or even negative, progress towards the poverty goal. In many SSA countries the MDG growth requirements greatly exceed the best they have achieved in the recent past.

Complementing the efforts to overcome adverse social conditions via the MDGs, a number of external and domestic policy interventions are needed to reinforce the relationship between MDGs, poverty reduction and sustained growth. At the top of the list is foreign market access which when complemented with trade capacity building will result in export growth—an important growth pole. Private sector development strategies also play an important role in promoting economic diversification and structural change. Taken together these can result in demographic, productivity and technology transitions, which then enhance economy-wide productivity, reducing the gap between actual and potential economic growth. In this context, the achievement of MDGs and the formulation of national poverty reduction strategies that are in tune with productive capacity building needs of the economy are critical policy shocks needed to break the pervasive poverty trap in which SSA countries are caught.

Industrialization has a critical role to play in helping SSA to raise growth rates. Productive development is the motive force for applying new technologies to production and the most important source and diffuser of technological innovation. It creates new skills and work attitudes, catalyzes institutional change and breeds modern entrepreneurship. It is the best way of modernizing the export structure and creating the base for sustained export growth along with higher wages. Successful industrialization helps create the employment that poor economies need as they release labour from agriculture, both directly and by stimulating the development of modern services.

SSA's weak industrial performance reflects deep-rooted problems in economic structure and governance. Policy-

makers must address the underlying structural problems. Other developing regions have faced such problems in the recent past and overcome them to different extents, some with dramatic success. There is no reason why SSA should not attempt to do the same; even modest success will be better than its current marginalization. The region must shed the growing pessimism about its ability to industrialize at all and improve its investment climate, but it must simultaneously strive to overcome its structural problems.

The international community has so far responded inadequately to the challenge of helping African enterprises build competitive capacities. The reason lies in the way it has chosen to address development needs. A new strategy is needed to catalyze industrial growth in SSA. The first part of this report focuses on the key issues that need to be heeded to overcome that inadequacy.

### Sub-Saharan Africa: diagnosis and strategic options

As is widely recognized, the 'overarching' MDG—the halving of income poverty—is unattainable for the region without the reversal of overall economic decline. Average per capita income is already simply too low to achieve the intended scale of poverty reduction by redistribution alone. Subsequently, SSA's economic opportunities need to be carefully laid out and acted upon.

This, however, cannot be properly gauged by considering the region as a whole. From the point of view of economic opportunity by principal resource endowments, three groups can be distinguished: natural resource economies; economies lacking significant natural resources but with good coastal access; and countries that are landlocked. According to this classification, of SSA's population, 28.2 percent live in natural resource economies, 33.2 percent in the coastal economies, and 38.6 percent—the largest group—in economies that have neither natural resources nor a coastal location. The implications of this development-gear classification differ for countries with small or large populations because of their respective potential for domestic market growth, as well as for those strongly affected by the presence of high-revenue natural resources.

Before a candid analysis of economic opportunities by country groupings is undertaken, it is important to notice that economic decline is both cause and consequence of adverse social conditions. In SSA a number of adverse initial conditions—from geography and colonial legacy to education and health—handicap economic development and weigh down the region's prospects for 'take-off'. One way to illustrate the economic growth handicap posed by initial conditions is to estimate the forgone economic growth due to them vis-à-vis the average for high-performing economies (such as China, India, Indonesia, Malaysia and Thailand) at their take-off. As expected, the adverse non-economic initial conditions translate into a significant loss in potential growth rates—estimated to range from 0.6 percentage points for coastal economies to 1.6 percentage points for landlocked ones. Economic adverse initial conditions cause further losses ranging from 0.4 to 1.1 percentage points. Consequently, any

policy recommendation should be considered in the light of these on a national basis to ensure that the existing resource base and social capabilities as well as the incentive structures implied by these are duly factored into the final design.

Worldwide, most natural-resource economies have not been very successful in transforming rents into sustainable growth. This is true of SSA countries as well—although Botswana is a remarkable exception, having recorded one of the most rapid growth rates in the world. Several SSA countries in this category have simply wasted the opportunity to transform natural-resource rents into sustainable growth. Especially in the case of some of these countries, there is no doubt that the inability to industrialize was not a result of the lack of capital. In fact, a large proportion of private savings have been exported out of SSA by the way of capital flight during the past few decades. For example, by 1999 Nigeria had an estimated \$107 billion of its private wealth held abroad—an amount far larger than the value of private wealth invested in the country. This is both a symptom and an opportunity, since if necessary reforms can be undertaken to improve the investment environment and repatriate large sums, there is a great potential to increase the capital stock significantly. In addition to this, in order to deepen their industrialization, oil-producing countries, in particular, must overcome some of the negative 'Dutch disease' effects of their relatively newfound richness. Policy must change the relative prices that now tend to discourage investment in manufacturing. Investment in the basic infrastructure required by industrial development (power, transport, communications) must be encouraged. Other countries, with relatively large populations, can embark on industrial promotion programs to favour depressed regions, expand exports of manufactures, or induce research and development (R&D) projects in industry.

The growth strategy for coastal economies lacking substantial resource endowments can be expected to differ radically from those of economies with valuable natural resources. Mauritius is one of the few African coastal economies to have followed the East Asian path of transformation through breaking into the global market in manufactured exports. There are opportunities there: coastal SSA is in some respects located as well as, or better than, the rapid-growth Asian economies. Income differentials with other regions, particularly Asia, should give rise to much lower labour costs in SSA—which would make a difference in its favour only as long as SSA can approximately match the labour productivity levels of its competitors. However, the market is highly competitive, working on both narrow margins and tight quality and delivery schedules, and so far coastal SSA countries have not been able to provide an environment in which cost, quality and reliability are all satisfied.

SSA's landlocked economies without significant high-rent natural resources have not had the option of emulating their West European counterparts by integrating into the surrounding region, because SSA's coastal economies have not been yet grown into sufficiently large markets. Hence, the best hope for SSA's landlocked economies rests in growth-oriented reform in the neighbouring coastal economies. Potentially, new developments in global trade could be of

major advantage to landlocked SSA countries. The best opportunities are in airfreight and the use of electronic transmission and telecommunications in the new service economy. Finally, small landlocked countries may get together with neighbouring countries to promote a wider market for manufacturing via free-trade areas or common-market arrangements. In this, full advantage should be taken of World Trade Organization (WTO) regulations that permit promotional policy measures for low-income developing countries such as a majority of those in SSA.

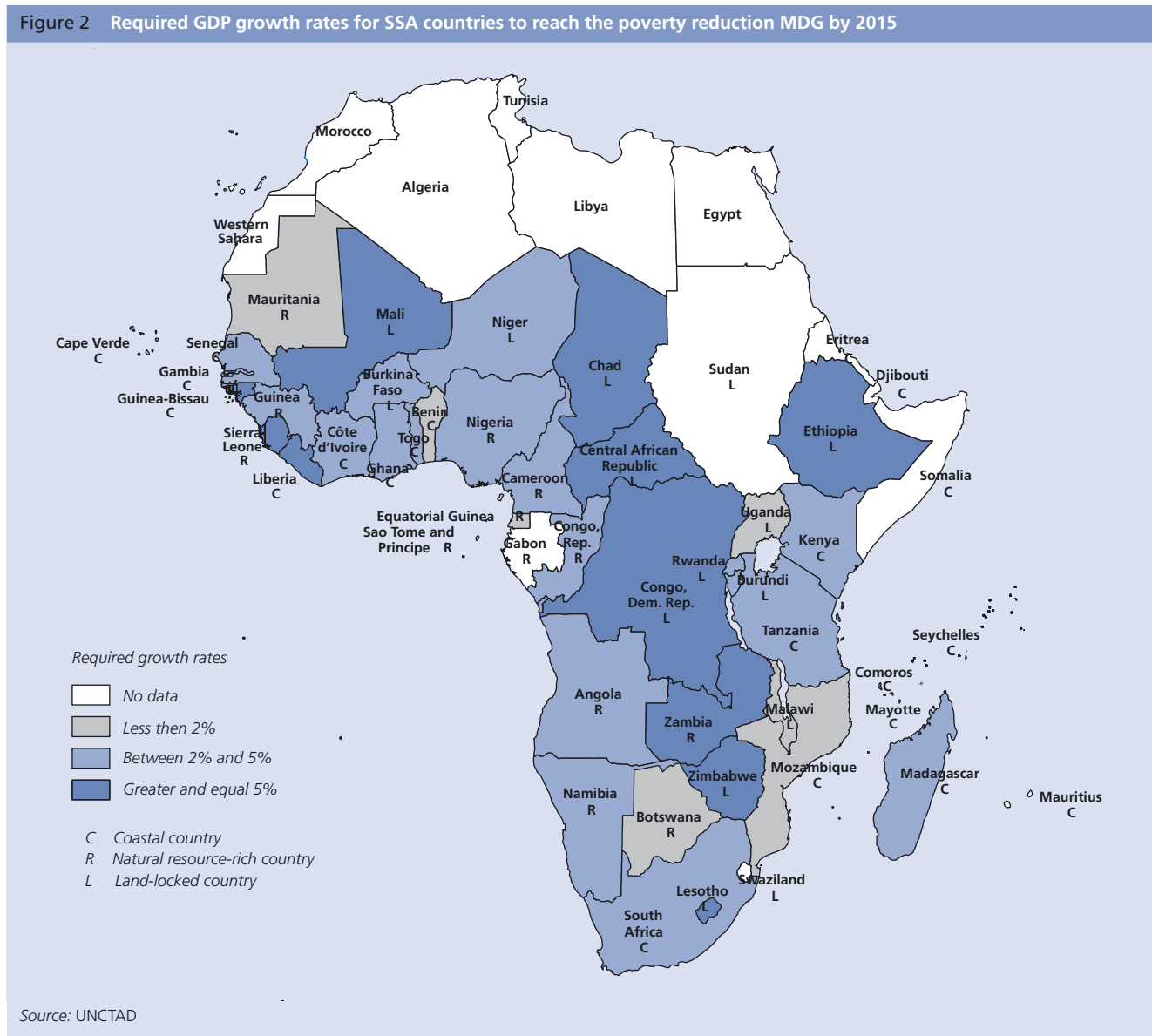
## Breaking with backwardness

### Industrial development in Sub-Saharan Africa

UNIDO's estimates show that 30 of the surveyed SSA countries require annual gross domestic product (GDP) per capita growth rates of 2 to 6 percent to achieve the

income poverty MDG by 2015. The weighted mean economic growth rate required for all the SSA countries with available data is 3.2 percent and the unweighted mean is 4.2 percent. Required growth is lower for countries with oil or mining resources and coastal access as their mean required growth is 3.9 percent in these. The landlocked economies are farthest from the goal: they need to grow by 4.9 percent annually. Six landlocked countries should grow more than 5 percent. On the other hand, achieving the MDGs themselves will reinforce growth—as much as 1.5 percentage points in growth can be expected to follow from the achievement of MDGs in the landlocked economies.

Only a few countries appear to be in their way to reaching the MDGs: Benin, Cape Verde, Equatorial Guinea, Malawi and Uganda have already reduced poverty. Their MDG-required per capita GDP growth is less than 2 percent. Botswana, Mozambique, Mauritania and South Africa also face attainable growth-rate requirements (figure 2).



In order to achieve the sustainable economic growth required, SSA countries have to go through a period of structural change promoted by a demographic transition and supported by policies to ease the absorption into manufacturing and service jobs of the surplus labour released by agriculture following significant gains in agricultural productivity.

The manufacturing value added (MVA) performance of SSA in the last two decades has shown an uneven growth trend, largely driven by small export-platform countries. While the rest of the developing countries have gained significant footing in the world share of manufacturing and manufactured exports during the 1990s, this has largely bypassed SSA countries. The top performers in MVA growth were those countries that relied on low-technology manufactured exports such as Lesotho, Mauritius, Seychelles and Swaziland with a significant accent on textiles and apparel sectors. SSA's inability to move upmarket into export of medium- to high-technology manufactures can readily be explained by the relatively low levels of technological capability-building and existing pool of skills as exemplified by the lack of R&D activity and minimal employment of engineers and technicians by the private sector.

Since SSA countries have largely failed to transform their countries' structures in the last few decades, it is imperative to try to understand what structural change might entail for them. The experience of high-performing economies (Bangladesh, Chile, China, India, Indonesia, Malaysia, Mauritius, Republic of Korea, Sri Lanka, Thailand and Vietnam) that, having started at levels of income similar to those of SSA countries today, managed to achieve rates of growth similar to those required by these countries to reach the MDGs, suggests that:

- When the post take-off period is divided into separate intervals, the first 12 years of high growth are found to be a transition stage regarding structural change in output. This suggests that even if SSA countries manage to set out today on a route of structural change, the full benefits might not be achieved until after the 2015 deadline for MDGs.
- Agricultural development is an important platform for industrialization to take-off. Subsequently, the employment share of industry rises as agricultural employment and output fall. The period of transformation is also marked by increases in the share of industrial value added in GDP and of manufactures in exports. These all point to the accelerating pace of structural change, which is also associated with economy-wide productivity gains.
- Although structural change implies a shift of labor from agriculture to industry, in the long term industrial growth tends to contribute positively to agricultural productivity, as agriculture also becomes more capital- and skill-intensive.
- The reallocation of labour contributed more significantly to aggregate productivity growth where productivity differences across sectors were initially large and where labor shifted more massively to industry. Since the productivity levels in SSA's agricultural sector is currently very low, there is significant potential for productivity gains due to compositional change as well as to technological improvements.

- In countries with characteristics similar to those of many SSA economies, such as lack of natural resources, absence of a large industrial base and initial concentration in labour-intensive manufacturing, there has been a strong positive correlation between investment and the growth in the share of MVA in GDP. In particular, capital accumulation appears to have favoured export-oriented manufacturing activities more than those seeking to serve domestic markets.

This experience provides insights into the kind of structural change that can be expected if SSA countries actually manage to achieve the growth rates required to attain the MDGs. However, it should be noted that some of the policy options that were available to High Performing Economies (HPEs) at the time of their take-off might not be accessible nowadays to SSA countries. In essence, carefully crafted and country-specific policies are required to overcome the relevant hurdles in SSA.

## Forging Ahead

### *Enlisting the private sector in poverty reduction*

Poverty Reduction Strategies (PRS) are the principal national policy tool in the effort to achieve the MDGs. The Poverty Reduction Strategy Papers (PRSP) approach was developed to respond to the developing countries' demand for ownership of policy designs. By end-2003, 28 countries in SSA had produced either final or interim PRSPs and another eight were in the process of preparing one.

Although much progress has been made to ensure countries' broad ownership of the strategies, some problems do persist. Not only there is scant policy coherence among a wide range of initiatives but the timeframe of 3-5 years envisioned most commonly in the PRSPs is inconsistent with the long-term planning required by the achievement of the MDGs by 2015, as has recently been also acknowledged by the International Monetary Fund (IMF) and the World Bank. PRSPs largely reflect the difficult trade-offs that countries face in the implementation of development priorities; they often scale down the budget allocated for essential needs for fear of losing macroeconomic stability. One of the effects of this downscaling is that the private sector and productive capacity development agendas, and subsequent steps to ensure economic transformation, are often neglected.

Achieving the MDGs in SSA will demand large public investment in social overheads. Sustaining them, on the other hand, will depend substantially on the nature and sturdiness of the private sector response to poverty reduction strategies. There is no reason why mobilizing the private sector should wait until the MDGs are achieved. But while it is common to see PRSPs highlighting the private sector as the main driver of sustainable economic growth, scant attention is paid to precisely how this is to come about. Experience shows that there is no 'magic bullet' formula for achieving the strong private sector response needed to halve African income poverty

in little more than a decade, but PRSPs do need to address shortcomings in respect of private sector development (PSD), including industrialization and structural reform and institution-building so that the micro and macro fundamentals can be knitted together.

In order to attract the needed level of private participation, a number of problems must be resolved. Some of these arise from the scale, scope and nature of private activity in SSA. Structurally, the private sector is dominated numerically by small-scale and informal enterprises, with no focal point and no organizational structure for advocacy—which ultimately impacts on how the sector interacts with the other stakeholders in the PRSP process. At the implementation and monitoring stages, constraints on PSD mean that there is little capacity to participate. It is also unclear where the dividing line is drawn between consultation and participation. The fact that there have been consultations doesn't mean that private sector viewpoints are incorporated into the budget or reform program, nor indeed that agreed measures will be implemented effectively.

The relative paucity of private sector goals and targets means that at the implementation stage there is little against which to gauge the participation and effectiveness of private sector efforts to achieve the aims of PRSPs and subsequently the MDGs. In fact, for private enterprises that have an outcome-oriented outlook, the absence of such targets might mean that no action is undertaken—or that the PRSPs are not heeded.

The new generation of PRSPs should build on the emerging good practices on PSD, and ensure that private sector participation is more effective in terms of poverty reduction than in the past. These include measures to advance PSD strategies containing promotion of functional policies for technology and support infrastructure, particularly for the small and medium-sized enterprises (SMEs), informal and rural sector development and export processing zones (EPZs), as well as integrating trade capacity building and shock-coping mechanisms into the PRSPs. In addition, financing of industrial growth and improvements in the public-private dialog and partnership should also be incorporated.

Recent PRSPs include measures to improve the regulatory environment and explicitly target improved governance and reduced corruption as priority measures for stimulating private investment. However, PRSPs need to go further than that by incorporating private sector promotion policies to enhance productive capacity and productivity performance. Here the technological infrastructure institutions and extension services for the SME sector play a vital role. So does the implementation of policies that are gender-sensitive and which can use the opportunities offered by the special and differential rules of the international system. Rural and informal sectors of the economy are vital for poverty reduction and hence should also be addressed.

The integration of trade policy in the overall strategy is still very weak in most PRSPs. This is an important hindrance as many countries now recognize the potentially detrimental effect of trade capacity deficiencies. The ability to tap into global production networks, such as participating in offshoring

and outsourcing arrangements, requires building productive capacities and the provision of technological services such as those related to testing, metrology, certification and accreditation.

Donors can enhance such partnerships by using local inputs and limiting tied aid. Governments need to show true willingness to accept the private sector and civil society as development partners and provide tangible targets to be met in terms of PSD in the PRSPs. In particular the New Partnership for Africa's Development (NEPAD) can be utilized to facilitate deeper forms of business, government and donor cooperation.

An important role of PSD strategies is that of providing further venues and financing opportunities for the implementation of other PRS goals. The experience of private sector capital formation in SSA in the last 20 years is rather bleak: the average rate has been only around 10 percent of GDP. Indicators of trends in technological practices are even bleaker.

Sub-Saharan Africa in the last few decades has been a net exporter of capital. Significantly, capital market development, foreign direct investment (FDI) and repatriation of capital do not get much attention in the PRSPs, whereas invariably (and rightly enough) financial sector restructuring is treated as an important priority.

Finally, it is important that the PRSPs should include market-based mechanisms to absorb shocks in terms of trade or natural disasters to enable the vulnerable real sector to cope with such setbacks during the course of the strategy's implementation. The PRSPs should consider different mechanisms—such as cooperatives, insurance systems and revolving funds—depending on the specific types of shocks to which countries are prone, which can help regenerate productive capacity and bring about stability.

### *Industry and the dissemination of environmentally sound technologies*

The relationship between poverty and environmental degradation is of particular importance in SSA. In its predominantly rural economies, solving environmental problems means ensuring better living conditions for millions.

At present, due to a number of complex factors such as the age of the technologies in use, shop-floor practices and other characteristics of industrial establishments in SSA (size, ownership, embedded skills, etc.) industrial pollution is becoming highly concentrated, with rising intensity, especially around growing urban centres.

Achieving the MDG income poverty-reduction target implies a pattern of structural change consistent with high levels of economic growth. Consequently, policy interventions in SSA countries need to address the problems of environmental degradation associated with rapid increases in industrial activity. A rising income per capita will not, on its own, ensure improvements in environmental performance over time.

Most indicators show environmental degradation first increasing with growing income, and only starting to decline after reaching a critical turning-point. For biological oxygen



demand (BOD) as a measure of water pollution, this turning-point comes only at a very advanced level of development (per capita income of \$20,000). For global pollutants such as CO<sub>2</sub>, the turning-point occurs beyond the observable income range of industrialized countries. All this suggests that without intervention, environmental degradation will get much worse before, and if, it gets any better—a delay SSA countries cannot afford.

The implication of these findings for policy and international technical assistance is that policy interventions have a role in the earlier stages of development. The structural change implicit in attaining the growth rates demanded by the MDGs means that ways must be found to achieve the kind of industrial development that will allow SSA countries to prevent, early, the consolidation of a harmful linkage between industry and pollution.

To undertake an environmentally sound industrial development strategy, countries need to make progress especially in two areas: better integration and cohesion between industrial and environmental policies, and the dissemination, with international assistance, of environmentally sound technologies (ESTs).

First of all, there is a need for a more strategic approach to influencing how changes in scale, composition and technology configuration can reduce pressures on the environment. Countries tend to pursue separate policies in each of these three domains. They have yet to take advantage of their potential synergies for reducing environmental impact.

It is also vital to create and adequately support sectoral and regionally focused technology upgrading programs. These programs would align all the factors, both internal and external to a firm, to address the more serious environmental pollution problems and enhance productivity in the utilization of energy, water and material resources. To be successful, however, these must dovetail with the broader effort of enhancing the technological capabilities of firms to compete in domestic and international markets.

In addition to these, steps need to be taken to eliminate waste in production, as envisioned by the Cradle-to-Cradle strategy for industrial design and technology, which envisages the elimination of waste in production—a potentially revolutionary approach to the environment-industry relationship. Indeed, there is much to be done in terms of designing appropriate policy measures and incentive structures that will gradually help overcome 'degenerative' patterns of industrialization.

### ***Advanced Technologies: from elusive promise to reality in Sub-Saharan Africa***

While the revolution in life sciences and information and communication technologies (ICTs) has brought about new opportunities for wealth creation and hopes for novel development solutions, for the least developed countries (LDCs) the benefits from these technologies have so far been limited. Looking forward, one thing is sure: the SSA countries

cannot afford to focus on upgrading their industrial capabilities along purely conventional lines. They also need to tap into the advanced technologies.

New technologies (ICT, biotechnology, spatial information technologies) provide an array of diverse new applications in agriculture, health, and environmental management that can be of significant value for SSA—provided that the basic infrastructure, human-capacity and institutional constraints are overcome with international technical and financial help. Vital among institutional constraints that need to be eased are those relating to the lack of appropriate incentive systems and the undersupply of public goods.

Undoubtedly, many of these technologies can help provide solutions to basic needs, such as cheaper diagnostic kits and drought-resistant seeds. They can also create aids to better governance via the effective use of data and transparency of public information, and help to improve productivity dramatically both in agriculture and in industry.

The fixed start-up costs of biotechnology laboratories, Spatial Data Infrastructures used for Geographical Information System (GIS), or computer networks, are often inhibitory in Sub-Saharan African LDCs in the absence of external financial and technical help. While most of the financial resources are initially needed to upgrade physical facilities, recurring costs generally require annually more than 10 percent of the initial capital outlays per annum. One further limiting factor is that the adoption, adaptation and eventual innovation related to technological upgrading require the ready availability of threshold skill pools. Apart from the technical skills, managerial capabilities can limit the effectiveness of advanced technologies in developing-country settings. In SSA countries where average gross secondary and tertiary school enrolment are 27 percent and 4 percent respectively, it is clear that the achievement of MDGs will provide an important impetus to raising the potential pool of skilled labour and improving the infrastructure. However, in order for advanced technologies to fulfil their potential in SSA, further investments have to be made specifically to set up and improve the capabilities of the public and private scientific and technological research infrastructures.

Clearly, investing in new technologies entails important policy choices and trade-offs, from the kind of infrastructure needed to support new technologies to the ethical considerations relating to bio-safety. Sub-Saharan Africa country governments, civil society and private sector all need to be informed of the benefits and costs of adopting and adapting new technologies to their circumstances.

Private investment is crucial in the long run to the uptake of advanced technologies in SSA. Given the low level of development of advanced-technology markets in SSA so far, this will require creative policy interventions to ensure that the constraints binding private sector development (PSD) in this field are gradually eliminated. While public initiatives have 'illustration value', more work needs to be done on PSD. In this vein, the extension approach creating explicit links between the public and private institutions such as universities, state R&D laboratories, and firms, that have been successfully employed in other developing countries, can be also encouraged in SSA countries.

Finally, as illustrated by community telecommunication centres and pre-paid mobile telephones, it is possible to profitably bring advanced technologies to poor regions using the right mix of services and a basic level of infrastructure. However, in order to scale up such initiatives to make sure there are pronounced social and economic benefits, the fundamental structural impediments such as human capital must be overcome and the supportive institutional framework must be put in place.

### ***Promoting industrial development in Africa: policy needs***

Current policies do not deal adequately with the structural problems that hobble manufacturing in Sub-Saharan Africa. They do not appropriately factor in the need to endow SSA countries with the capacity to respond to the challenges of technical change, liberalization and shrinking economic distances. There is, however, no universal way or 'quick fix' to develop productive capacity: the process is slow and highly differentiated by activity and by country. To succeed, any strategy must be highly context-specific; sensitive to local needs, environments and resources, and integrated across the factor markets and institutions. Challenging? Yes. Impossible? No.

At the heart of a successful strategy is the building of industrial capabilities, which calls for much more than the essential triad of better macro management, improved governance and a healthy investment climate. The first step in revitalizing African industry is to focus on supply-side policies such as the NEPAD-sponsored Productive Capacity Initiative now under way. The approach must not be implicit: it must spell out policies and measures for strengthening capabilities, based on an understanding of the competitive weaknesses and the institutional needs in each country.

The targets for productive development can be derived from the MDGs, and be made fully consistent with them. In order to cut income poverty by half in SSA, UNIDO estimates that the growth rates required for industrial value-added are between 6 percent and 9 percent. This needs additions to physical capacity; new factories, equipment and so on. But just building capacity is not the answer to SSA industrial problems. More important is to build capabilities—to operate plants at competitive levels, raise quality, introduce new products, upgrade practices and diversify into higher-value-added activities. This also requires investment, but it needs a set of resources more precious than money: skills, organization, knowledge, information, technology and institutions.

Quantifying capability development is not easy, since there is no 'production function' relating inputs of factors to the output of capabilities. One way to go about it is to undertake needs assessments akin to those the United Nations Secretariat's Millennium Project applies to such diverse field as health, education and the environment. Scenarios for institutional and capability development ought to be drawn up as a necessary supplement to the MDGs and in line with MDG-consistent growth rates. Incorporating variegated economic and social objectives to a common operational

platform, to which all bodies of the multilateral system contribute, is probably the only way to respond to the urgent need to integrate them in development practice.

That said, there are a number of policy needs that are relevant to virtually all countries across SSA in terms of improving technological capabilities, infrastructure, business environment, investment opportunities and institutional quality.

Before embarking on a strategy that will enable the endogenous growth process to materialize with the help of private sector, governments need to be aware of the need to upgrade their policymaking capabilities. First and foremost, this requires the formulation of a national development strategy that is agreed by the government, private sector and civil society, to overcome deficiencies in markets and institutions. Then it is necessary to build consensus around this vision in a manner similar to Technology Foresight exercises involving different stakeholders and an iterative process of strengths, weaknesses, opportunities and threats (SWOT) analysis. This will involve evaluating the performance of productive sectors in domestic and export markets with benchmarking against counterparts and will enable the stakeholders to prioritize activities, measures and institutions and monitor progress as conditions change.

As is widely agreed, one of the greatest needs is to build human capital in SSA. Part of the challenge is to raise the quantity and improve the quality of formal education, especially at the secondary and tertiary levels, increasing the focus on technical, entrepreneurial and managerial skills. In order to make the formal education more relevant to the needs of the productive sectors it is advisable to involve the private sector and empower the local communities in the design and content of the curriculum and in monitoring quality and delivery of skills.

At the industrial level, a comprehensive audit of skill needs is necessary to design strategies and set priorities not just at present but also in the future. Improving the functioning of skill levy systems and making their operations credible and relevant to industry as well as launching training institutions directly linked with, and in some cases managed by, industry, are also necessary. In many cases, industry associations can be encouraged by incentives and risk sharing to set up such training centres. SMEs especially require further support to recruit better-trained labour and to invest in formal training through information dissemination and incentive programs.

A complementary strategy to promote a 'technology culture' in private enterprises is also important, so that the demand for capabilities also induces supply. This is not so much a matter of formal R&D (though this is relevant to large firms) as of raising technological effort to improve productivity and quality and develop more competitive products. The effort involves a range of measures like fiscal incentives, subsidized credit and venture-capital provision—but this is not sufficient. It also involves an effort to persuade enterprises of the need for greater technological effort, and for many a change in management outlook, work practices and resource allocation.

Building technological capabilities is particularly important as SSA countries will need to tap into emerging and advanced technologies as well as more traditional ones in order to be able to compete in international markets. For example, if employed more effectively in SSA, an extension approach to creating explicit links

between public and private sectors could help promote private investment in new technologies. Also, governments can help the dissemination of these technologies by simply using them more widely (as in e-government services) and promoting private sector supply. The private sector can be encouraged through outsourcing agreements, credit schemes, licensing regulations and public-private partnerships. Regional networks to build scientific and technological capabilities, as those envisioned already by New Partnership for Africa's Development (NEPAD), represent an important opportunity to tap into regional complementarities and economies of scale. The technical and managerial capacity of the African diaspora, particularly in establishing links with foreign universities and businesses, is undoubtedly an important resource for these purposes.

Another pressing policy need is to improve the infrastructure for metrology, standards, testing and quality (MSTQ), ensuring that industries have access to accredited facilities for testing, certification and calibration. A useful target would be for national MSTQ agencies to meet at least 60-75 percent of industry's needs in these areas. Similarly, encouraging the R&D institutions and universities to associate more closely with industry helps to increase their relevancy for productive sectors. This can be achieved by using catalytic programs to fund enterprise research contracts and inducing institutions to earn more by selling services to industry—for example a 'hard budget' constraint can be established requiring R&D institute to earn 40 percent of their revenues by the sale of services within five years.

In addition to capacity-building efforts in technological skills and infrastructure, physical infrastructure requirements of the SSA economies are often among the most pressing needs. In order to prioritize and develop a comprehensive strategy to overcome the bottlenecks, an analysis of the situation should be undertaken involving the private sector. In some instances, pooling resources with other countries in the region can lead to the development of an efficient infrastructure serving common needs within SSA.

While recommendations of this kind of are being increasingly featured in SSA countries' PRSPs, they need to be fleshed out according to specific country conditions and productive capacity-building needs. It is necessary to conduct more research on and benchmarking of African manufacturing to strengthen existing activities and to understand impediments both by the public and private sector stakeholders. This requires greater involvement of the private sector in the preparation and implementation of PRSPs, including specific time-bound targets to promote productive capacity development, especially in the SME sector. By integrating the trade capacity building agenda into the PRSP strategy, it is possible to ensure that the different aspects of development strategy are better aligned.

Most SSA economies have much to gain from across-the-board measures to improve business environment conditions. Such reforms can be expected to provide the critical mass necessary to attract investment without which few countries can hope to meet their MDGs. Important among these are raising corporate and intellectual property law to current best-practice levels, ensuring that the legal system has the right skills and capacities to implement them effectively. Removing unnecessary barriers to entry, such as ownership

stipulations and cumbersome registration and permit procedures as well as the impediments that arise in import and export procedures, is necessary if SSA countries are to participate in global production networks.

Investment promotion agencies (IPAs) have an important role in actively pursuing foreign direct investment (FDI) and assisting entrepreneurs, foreign or local, who are interested in investing in the country. The funding and staffing of IPAs need to be significantly strengthened, and cost-effective reforms introduced to improve their performance. It is critical to involve more directly the private sector, including the multinational company (MNC) affiliates, in promotion activities, as existing investors are the best ambassadors for investment promotion. This involves strengthening contacts with and knowledge of local enterprise: their investment needs to be promoted just as much as FDI and they need to establish business relations with MNCs. In general they should be encouraged to be proactive, reaching out to enterprises and providing a complete package of services with the minimum of bureaucratic procedures. For many SSA countries, coordinating investment promotion activities with counterparts in the region makes good sense, as much of investment promotion in the region is about getting rid of the bad perceptions about the business environment in the continent. Investment promotion agencies should be enticed and monitored by setting performance targets for attracting FDI. If the current share of IPA-generated FDI is only 10 percent of total inflows, a target of at least 25 percent would seem to be reasonable over 10 years. Efficient EPZs, run on private sector lines (perhaps even by foreign investors) and productivity centres that provide incentives tied to results achieved in productivity and exports, are also among the potential policy tools to leverage investment and private sector growth.

SSA's development efforts require the active support of the international community to succeed. This is why it is so important to correctly understand its development needs and provide the necessary support, not just through financial means, but also with advice, information, skills and assistance.

This Report has emphasized that attaining and then sustaining the MDGs in SSA entails renewed industrialization—and vice-versa. A healthy and competitive real sector of the economy is necessary to drive income, export and employment growth. It is also necessary to move African economies out of their reliance on a squalid economic structure that doesn't deliver sustained development. Only this way Africa can integrate productively into the international economy.

The SSA countries need to articulate coherent packages of policies which meet two standards: first, to effectively tap available sources of growth; and, second, to take maximum advantage of trade opportunities through domestic capacity building and structural change. These efforts have to be guided by assessments of institutional and capability development needs akin to those undertaken for the MDGs. This approach should render what would amount to today's equivalent of the policy interventions that led to the recent successful industrialization experience in Southeast and East Asia. *Mutatis mutandis* and with the necessary equity considerations, this would appear to be the road forward.

### Global industrial performance

The most notable trend in global industrial performance between 1980 and 2000 is the increase in the developing world's share of MVA, from 14 percent to 24 percent. Within this broad trend, though, the performance of regions and countries has varied significantly. Transition economies suffered a large decline in industrial activity in the early 1990s, a result of the shock of rapid liberalization. On the other hand, the 45 LDCs covered by the database improved their industrial growth rates marginally since the mid-1980s, albeit from a low starting point.

The distribution of manufacturing production in the developing world is becoming less unequal overall, but this has been happening mainly through the success of a few large successful economies, with China in the lead. The bottom half of the developing world's population continues to account for a tiny share of global MVA. The gap between the industrially richest and poorest countries has been widening; for the world as a whole in the second half of the 1990s, and for developing countries over the last two decades.

East Asia, excluding China, is now the most industrialized region in the developing world. It has been the engine of recent overall industrial growth, doubling its share of the developing world's MVA from 29 percent in 1980 to 54 percent in 2000. Latin America and the Caribbean (LAC) has been the largest loser: from being the leading region in 1980, with a 47 percent share, it ended the period a poor second with a 22 percent share. Sub-Saharan Africa also lost share, from 1 percent to 0.8 percent. South Asia and the Middle East and North Africa (MENA) increased their shares slightly.

Over the last 20 years, there has been a shift in the technology composition of manufacturing from resource-based (RB) and low-technology (LT) activities to medium- and high-technology (MHT) ones in both industrialized and developing economies. Transition economies exhibit (in the midst of their industrial decline) a growing share of resource-based activities. LT activities grew slowest in both industrial and developing countries.

Developing country exports have grown faster than those of industrial ones in all technological categories and periods except for RB products in the early 1980s. The developing countries' lead is greatest in high-technology (HT) products,

followed by medium-technologies (MT) ones. Export performance is highly uneven in the developing world, more so than MVA. East Asia, including China, accounts for nearly 70 percent of the developing world's manufactured exports in 2000, up from 52 percent in 1981.

### Benchmarking industrial performance

The mapping of industrial activity in this Report covers 155 countries over 1980-2000. It also extends and updates the Competitive Industrial Performance (CIP) index by broadening its definition to include four components: MVA, manufactured exports, industrialization intensity and export quality. Productivity has not been included in the set of industry-specific indicators underlying the CIP index for reasons of data availability. However, the CIP index score is positively and systematically correlated with average labor productivity for the whole manufacturing sector between 1980 and 2000 across a relatively small set of developing countries.

Singapore was the best global performer in 1990 and 2000 (table 1). Next comes Ireland, which leaped to second place in 2000 from ninth in 1990 and 19th in 1980. Interestingly, Singapore and Ireland followed similar strategies, entering high-technology global value chains and developing strong human capital and infrastructure. The next six places in 2000 are held by mature industrial countries, led by Switzerland. Finland follows, having moved up three places in the 1990s, displacing Japan, which has moved down to the sixth position.

On a regional level, there has been a small, steady decline in the CIP index for the industrialized world and a steady, rapid rise in East Asia's. The index for Latin American and the Caribbean countries (LAC) starts at the same level as East Asia in 1980, declines in the 1980s and rises in the 1990s, ending the period slightly higher than at the start. The Middle East and North Africa (MENA) starts with the lowest index value in 1980, improves significantly in the first decade and slows down in the second. South Asia has a consistent but small rise in both decades. Sub-Saharan Africa ends the period more or less where it started, but this time behind the MENA region. That said, regional aggregates do not show the role of 'outliers' in each region, like China in East Asia, Mexico in LAC, South Africa in SSA or India in South Asia.

Among the newcomers to the CIP index database, the transition economies and the SSA countries are of particular interest. Transition economies span a large range in the CIP index, from Hungary at 21 to Kyrgyz Republic at 121. The best performers among the transition countries, such as Czech Republic, Hungary and Poland have relatively high indices for industrialization intensity and export quality performance.

The economies of SSA tend to cluster near the bottom of the CIP index, occupying 19 of the last 30 ranks. There is a clear break in the ranks after the leader, South Africa: the next in line, Mauritius, is 21 ranks lower. The Seychelles has also improved its ranking from 90th in 1980 to 77th in 2000 since its MVA per capita has nearly trebled. Cape Verde has also improved its position.

One of the many factors accounting for sustained success seems to be the ability to develop exports by tapping into global value chains. There are two routes to doing this: building strong local capabilities (in domestic enterprises) or attracting export-oriented FDI. The Republic of Korea and Taiwan Province of China chose to build domestic capabilities first, while Malaysia chose to rely on FDI—but over time there has been growing convergence between them.

If embedded in a broader set of indicators, the CIP can also shed light on the role of industry in overall development and poverty reduction. Although no conclusive evidence is reached about the direct contribution of enhanced competitive performance to poverty-reducing employment and income generation, there is fairly strong evidence about industry's indirect contributions to poverty reduction. A sample of over 50 developing countries examined on the basis of

data for 1990 and 2000, shows a strong positive association between the CIP index and GDP per capita, and suggests that an increase of 0.01 of the former would lead to a rise of between \$250 and \$300 (in 1990 prices) in the latter. This, in turn, implies reduction of poverty—indirectly through improved industrial performance—on the assumption that growth in the aggregate is likely to benefit the lowest incomes too.

The report also benchmarks five leading factors that greatly influence competitive industrial performance: skills, technological effort, inward FDI, technology licensing and modern infrastructure. The idea is not to fully account for national industrial performance but to capture key influences on industrial performance and second, to have comparable quantitative data across a wide range of economies.

There seems to be a clear correspondence between industrial performance and the above-mentioned factors at the regional level. Not surprisingly, industrialized countries do better in all of them, with the largest lead in R&D. In the developing world, East Asia without China has the strongest set of factors, with the exception of FDI per capita and telephone mainlines per 1,000 people, where LAC does better in the late 1990s. Latin America and the Caribbean follows in most variables, but MENA has a higher tertiary technical enrolment rate in 1998. South Asia and SSA without South Africa lag significantly behind. Finally, judging by the results of a regression analysis based on data for 35 countries in 1990 and 51 countries in 2000, the factors accounted for do seem to influence countries' ability to mount competitive industrial performance. In particular, FDI, R&D and royalties achieve significance in both years.

**Table 1 Ranking of core sample by the CIP Index, 1980, 1990 and 2000**

2000		1990			1980			
Rank	Economy	Score	Rank	Economy	Score	Rank	Economy	Score
1	Singapore	0.833	1	Singapore	0.772	1	Switzerland	0.758
2	Ireland	0.738	2	Switzerland	0.748	2	Singapore	0.683
3	Switzerland	0.717	3	Germany	0.683	3	Germany	0.658
4	Finland	0.648	4	Japan	0.661	4	Sweden	0.604
5	Sweden	0.633	5	Sweden	0.611	5	Japan	0.585
6	Japan	0.615	6	Belgium-Luxembourg	0.601	6	Belgium-Luxembourg	0.569
7	Germany	0.594	7	Finland	0.561	7	Netherlands	0.536
8	Belgium-Luxembourg	0.567	8	Austria	0.547	8	Finland	0.519
9	Taiwan, Prov. of China	0.549	9	Ireland	0.530	9	France	0.513
10	Korea, Rep. of	0.537	10	Netherlands	0.525	10	Italy	0.511
11	United States	0.517	11	Italy	0.522	11	Austria	0.497
12	Austria	0.512	12	France	0.509	12	United Kingdom	0.496
13	Netherlands	0.508	13	United Kingdom	0.505	13	United States	0.489
14	France	0.493	14	United States	0.504	14	Denmark	0.480
15	Malaysia	0.492	15	Taiwan, Prov. of China	0.497	15	Norway	0.455
16	Italy	0.488	16	Denmark	0.485	16	Hong Kong, SAR	0.443
17	United Kingdom	0.481	17	Canada	0.455	17	Canada	0.440
18	Canada	0.472	18	Korea, Rep. of	0.440	18	Taiwan, Prov. of China	0.428
19	Denmark	0.460	19	Spain	0.438	19	Ireland	0.426
20	Hungary	0.459	20	Hong Kong, SAR	0.431	20	Israel	0.415
21	Israel	0.458	21	Israel	0.430	21	Spain	0.402
22	Spain	0.426	22	Norway	0.405	22	Poland	0.362
23	Thailand	0.386	23	Malaysia	0.368	23	Korea, Rep. of	0.344
24	China	0.379	24	Hungary	0.354	24	Brazil	0.310

Table 1 Ranking of core sample by the CIP Index, 1980, 1990 and 2000 (continued)								
2000			1990			1980		
Rank	Economy	Score	Rank	Economy	Score	Rank	Economy	Score
25	Philippines	0.377	25	Portugal	0.324	25	Portugal	0.309
26	Mexico	0.375	26	China	0.323	26	Turkey	0.306
27	Hong Kong, SAR	0.343	27	Brazil	0.321	27	Australia	0.303
28	Portugal	0.342	28	Poland	0.317	28	New Zealand	0.302
29	Poland	0.340	29	Mexico	0.297	29	Barbados	0.296
30	Norway	0.333	30	New Zealand	0.286	30	Hungary	0.285
31	Brazil	0.324	31	Australia	0.285	31	Mexico	0.282
32	Costa Rica	0.318	32	Thailand	0.281	32	Iceland	0.281
33	Turkey	0.309	33	Iceland	0.276	33	Argentina	0.281
34	New Zealand	0.304	34	Argentina	0.272	34	Greece	0.276
35	South Africa	0.299	35	Turkey	0.268	35	Zimbabwe	0.248
36	Australia	0.298	36	India	0.262	36	South Africa	0.246
37	Argentina	0.294	37	Greece	0.262	37	Cyprus	0.245
38	Indonesia	0.292	38	Jordan	0.253	38	India	0.243
39	Iceland	0.291	39	Barbados	0.251	39	China	0.240
40	India	0.275	40	Uruguay	0.246	40	Malaysia	0.240
41	Greece	0.263	41	Mauritius	0.240	41	Peru	0.238
42	Kuwait	0.258	42	Zimbabwe	0.239	42	Philippines	0.228
43	Jordan	0.253	43	Philippines	0.235	43	Kuwait	0.224
44	Barbados	0.249	44	South Africa	0.232	44	Mauritius	0.221
45	El Salvador	0.247	45	Morocco	0.225	45	Uruguay	0.219
46	Tunisia	0.241	46	Cyprus	0.222	46	Dominica	0.215
47	Mauritius	0.240	47	Pakistan	0.219	47	Thailand	0.213
48	Egypt, Arab Rep.	0.238	48	El Salvador	0.218	48	Trinidad and Tobago	0.209
49	Pakistan	0.235	49	Tunisia	0.213	49	Bangladesh	0.201
50	Uruguay	0.230	50	Syrian Arab Republic	0.213	50	Chile	0.196
51	Cyprus	0.230	51	Reunion	0.211	51	Reunion	0.194
52	Morocco	0.227	52	Egypt, Arab Rep.	0.200	52	Fiji	0.194
53	Trinidad and Tobago	0.217	53	French Guiana	0.199	53	Pakistan	0.192
54	French Guiana	0.217	54	Indonesia	0.199	54	Costa Rica	0.188
55	Zimbabwe	0.213	55	Guatemala	0.193	55	Tunisia	0.187
56	Bangladesh	0.203	56	Dominica	0.193	56	El Salvador	0.186
57	Reunion	0.203	57	Bangladesh	0.192	57	Guatemala	0.184
58	Dominica	0.200	58	Colombia	0.189	58	Colombia	0.179
59	Guatemala	0.200	59	Costa Rica	0.187	59	Yemen	0.179
60	Senegal	0.199	60	Venezuela	0.187	60	Bolivia	0.176
61	Colombia	0.199	61	Fiji	0.187	61	Jordan	0.173
62	Sri Lanka	0.192	62	Chile	0.186	62	Morocco	0.173
63	Saudi Arabia	0.192	63	Saudi Arabia	0.185	63	Senegal	0.167
64	Chile	0.191	64	Haiti	0.183	64	French Guiana	0.162
65	Peru	0.187	65	Martinique	0.177	65	Martinique	0.161
66	Venezuela	0.187	66	Kenya	0.175	66	Kenya	0.156
67	Bolivia	0.181	67	Trinidad and Tobago	0.170	67	Ecuador	0.155
68	Fiji	0.164	68	Peru	0.169	68	Venezuela	0.154
69	Nepal	0.161	69	Senegal	0.166	69	Haiti	0.149
70	Martinique	0.152	70	Kuwait	0.166	70	Oman	0.141
71	Syrian Arab Republic	0.152	71	Seychelles	0.148	71	Jamaica	0.141
72	Algeria	0.145	72	Nepal	0.145	72	Egypt, Arab Rep.	0.133
73	Oman	0.145	73	Jamaica	0.144	73	St. Lucia	0.132
74	Libyan Arab Rep.	0.145	74	Algeria	0.143	74	Malawi	0.119
75	Honduras	0.144	75	Panama	0.141	75	Indonesia	0.119
76	Ecuador	0.137	76	Papua New Guinea	0.138	76	Panama	0.117
77	Seychelles	0.137	77	Bolivia	0.136	77	Syrian Arab Republic	0.110
78	Jamaica	0.137	78	Malawi	0.132	78	Sri Lanka	0.107
79	Kenya	0.134	79	Sri Lanka	0.131	79	Nicaragua	0.105
80	Haiti	0.132	80	Cameroon	0.131	80	Papua New Guinea	0.104
81	Togo	0.127	81	Ecuador	0.117	81	Saudi Arabia	0.103
82	Papua New Guinea	0.125	82	Oman	0.117	82	Paraguay	0.102
83	Madagascar	0.123	83	Nicaragua	0.114	83	Cameroon	0.099
84	Panama	0.121	84	St. Lucia	0.113	84	Algeria	0.098
85	Nicaragua	0.117	85	Honduras	0.102	85	Central African Republic	0.094
86	Paraguay	0.117	86	Paraguay	0.101	86	Madagascar	0.093
87	St. Lucia	0.114	87	Libyan Arab Rep.	0.098	87	Honduras	0.091
88	Cameroon	0.111	88	Madagascar	0.095	88	Nepal	0.072
89	Malawi	0.105	89	Mali	0.081	89	Togo	0.072
90	Yemen	0.074	90	Togo	0.078	90	Seychelles	0.067
91	Ethiopia (incl. Eritrea)	0.050	91	Central African Republic	0.075	91	Libyan Arab Rep.	0.066
92	Central African Republic	0.043	92	Yemen	0.066	92	Ethiopia (incl. Eritrea)	0.047
93	Mali	0.040	93	Ethiopia (incl. Eritrea)	0.058	93	Mali	0.035

Source: UNIDO Scoreboard database (see part 2 technical notes).