



CHAPTER **5**

**STRUCTURAL TRANSFORMATION  
AND SUSTAINABLE  
DEVELOPMENT IN AFRICA:  
MAIN FINDINGS AND  
RECOMMENDATIONS**

## A. INTRODUCTION

Over the past decade, African countries have had a relatively good economic growth performance, with real output growing at an annual average rate of about 5.8 per cent over the period 2002–2008 (AfDB et al., 2011). There are, however, indications that the current pattern of growth in the region may not be sustainable, because it is based on the use of non-renewable or exhaustible natural resources and has not been associated with significant improvements in employment. UNCTAD has consistently argued that structural transformation is necessary to address these current as well as emerging development challenges facing Africa. However, structural transformation is a double-edged sword. While it lays the foundation for high and sustained economic growth, it will also lead to deterioration in environmental quality, unless deliberate action is taken to ensure environmental sustainability during the transformation process.

Against this background, the *Report* examines how African countries could promote structural transformation without jeopardizing the objective of environmental sustainability, paying particular attention to how the relative decoupling of resource use and environmental impact from economic growth could contribute to the structural transformation process. Furthermore, the *Report* shows how resource use and environmental impact change during the development process. It also presents stylized facts on resource use and efficiency in Africa, which are crucial for understanding the nature and scale of the sustainable development challenges facing the region. Finally, the *Report* provides a strategic framework for sustainable structural transformation and identifies policies that could be adopted to promote it in Africa. The main findings and messages of the report are highlighted below.

## B. MAIN FINDINGS

1. *The level of domestic material extraction per capita in Africa is very low compared to the global average.* In 2008, domestic material extraction per capita in Africa was 5.4 tons, which is quite low compared to the global average of 10.2 tons. There are, nevertheless, major differences between African countries. For example, Algeria and South Africa had per capita extraction levels of 10.4 and 14.4 tons respectively, while Côte d'Ivoire and Malawi had per capita extraction levels of 2.7 and 2.0 tons respectively.
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2. *There has been a significant increase in domestic material extraction in Africa over the past three decades, but a decline in per capita terms.* Although Africa has a very low level of domestic material extraction per capita, total domestic material extraction in the region increased from 2.8 billion tons in 1980 to 5.3 billion tons in 2008, representing an approximately 87 per cent increase in extraction over the past three decades. However, in per capita terms, domestic material extraction declined by about 8 per cent over the same period.
  3. *Biomass accounts for over half of the material extraction in Africa, but the share of non-renewable resources in total material extraction has increased from 1980 to 2008.* In terms of material categories, biomass accounts for the bulk of domestic material extraction in Africa, although its share of extraction decreased from 62 per cent in 1980 to 53 per cent in 2008. Consequently, the share of non-renewable resources in total extraction increased from 38 per cent to 47 per cent over the same period.
  4. *Fossil fuels are the dominant material export and import of Africa. Furthermore, Africa is a net exporter of non-renewable resources and a net importer of renewable resources.* In 2008, the share of fossil fuels in total exports was 75 per cent, which is well above the global average of 50 per cent. Other material categories, such as metals, non-metallic minerals and biomass, accounted for 11, 7 and 2 per cent of total exports respectively in 2008. On the import side, fossil fuels accounted for about 37 per cent of total imports, biomass 32 per cent, non-metallic minerals 18 per cent, and metals 13 per cent. When materials are classified into renewables and non-renewables, it turns out that Africa is a net importer of renewable resources (biomass) and a net exporter of non-renewable resources. However, within the non-renewable resources material category, it is a net exporter of fossil fuels and metals, and has almost a balanced-trade position for non-metallic minerals.
  5. *The level of domestic material consumption per capita in Africa is about half the global average and has decreased slightly from 1980 to 2008.* In 2008, per capita domestic material consumption in the region was 5.3 tons, compared to the global average of 10.4 tons per capita. Furthermore, there has been no significant change in domestic material consumption per capita in the region, due largely to high population growth. While average per capita domestic material consumption in Asian and Latin American countries
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increased during the period under consideration, it decreased slightly in Africa from 5.6 tons in 1980 to 5.3 tons in 2008. Although Africa has a low level of domestic material consumption per capita, total domestic material consumption in the region increased from 2.5 billion tons in 1980 to 4.9 billion tons in 2008, representing an approximately 90 per cent increase in material consumption over the period under consideration. Furthermore, in 2008 Africa accounted for about 7.2 per cent of global material consumption, compared to 6.8 per cent in 1980.

6. *Non-renewable resources account for a large share of domestic material consumption in African countries that are at a relatively higher level of industrial development.* Among the 16 African countries for which we have good-quality data by material category, the countries that have higher domestic material consumption per capita than the African average of 5.3 tons also have a relatively higher level of industrial development. For example, Algeria, Egypt, Morocco, Seychelles and South Africa have high per capita domestic material consumption, and, in addition, have manufacturing value added per capita, above the regional average of \$125.
  7. *Material productivity in Africa is the lowest for any region in the world, but has improved over the past three decades.* Over the past three decades, the level of material productivity in Africa has been very low compared to the global average. For example, in 2008, the average level of material productivity in Africa was about \$520 per ton of material, which is quite low relative to the global average of \$950 per ton of material. It should be noted, however, that although the level of material productivity in Africa is low, it has increased significantly over the last three decades, from \$338 per ton of material in 1980 to \$520 per ton of material in 2008.
  8. *Energy use in Africa is low, and has been increasing much less rapidly than material use.* In 2009, per capita electricity consumption in Africa was only 561 kilowatt-hours (KWh), compared to 741 KWh for Asia, 1,884 KWh for Latin America, and 2,730 KWh for the world. Nevertheless, the level of energy use in Africa increased by about 16.3 per cent over the period 1980–2008. This increase in energy use is far below the 92 per cent increase in material use over the same period.
  9. *Africa has contributed the least to global greenhouse gas emissions but is the region most affected by climate change.* In 2009, emissions of carbon
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dioxide (CO<sub>2</sub>) from Africa totalled 928 million tons, compared to 10,030 million tons from Asia and 12,045 million tons from the countries of the Organization for Economic Cooperation and Development (OECD). Africa accounted for only 3.2 per cent of global CO<sub>2</sub> emissions in 2009, reflecting the fact that it is at a much lower level of industrial development and so has lower levels of income and energy consumption. With regard to the impact of climate change, it is estimated that agricultural yields will decline by as much as 50 per cent by 2020. It is furthermore expected that between 75 and 250 million people in Africa will be at risk of increased water stress as a result of climate change.

*10. Land use processes are inefficient over large parts of Africa.* Land use efficiency is very low in sub-Saharan Africa, due primarily to large-scale land cover changes (deforestation) and land degradation. In several African countries, the productivity losses associated with human land use are much higher than the harvested biomass. Furthermore, in contrast to many European and Asian countries, many African countries have not been able to improve land use efficiency (e.g. increase crop yields per land area) over time. For example, in the Democratic Republic of the Congo, Senegal and Uganda, land use efficiency has declined over the past decades. Egypt and South Africa, both with relatively advanced agricultural production systems, are among the few countries in the region that do not follow this trend.

## C. MESSAGES AND RECOMMENDATIONS

The *Report* argues that although structural transformation is necessary to address Africa's key development needs and challenges, it should be carried out in a manner that is consistent with environmental sustainability. In this regard, it recommends that African countries should not follow the development path adopted by currently industrialized economies, which involved promoting economic growth at the expense of the environment. The main message of the *Report* is that *achieving sustainable development in Africa requires deliberate, concerted and proactive measures to promote structural transformation and the relative decoupling of natural resource use and environmental impact from the growth process.*

The *Report* emphasizes the need for sustainable structural transformation, defined as structural transformation accompanied by the relative decoupling

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of resource use and environmental impact from the economic growth process. There are several reasons why African countries should promote SST now. The current pattern of economic growth is unsustainable in the medium and long term, and current trends of resource depletion and ecosystem degradation are likely to accelerate in a future with increasing populations, rising living standards and structural transformation. Infrastructure and technology choices have a lock-in effect, in which countries get stuck on a particular development path. Consequently, delaying the implementation of SST may become extremely costly in the future, particularly if worsening environmental conditions force the early replacement of past investments. And yet, at the same time, there are potential economic benefits from decoupling, which are in particular associated with increased resource productivity.

The Report stresses that African countries are heterogeneous, and so the optimal choice of policy instruments for decoupling will vary across countries. Furthermore, it suggests that decoupling lies at the heart of sustainable structural transformation, but argues that given Africa's special development needs and its low level of resource use, the focus of African policymakers should be on relative rather than absolute decoupling. Relative decoupling implies that resources may be increasingly used but at a rate lower than the rate of increase in output, while absolute decoupling requires a decrease in the absolute quantity of resources used irrespective of the output level. African countries should continue to use their natural resources to propel growth, but they should do so in a more efficient and sustainable manner. In this regard, the Report recommends that African countries should give priority to three sectors critical to promoting resource productivity and mitigating the environmental impact of resource use, namely (a) energy; (b) industry; and (c) agriculture.

*(a) Energy.* Fostering sustainable structural transformation in Africa requires better access to modern energy sources, improving energy efficiency, and facilitating a switch from non-renewable to renewable energy sources. Policy options for increasing access to modern energy sources include rural electrification programmes and using economic incentives to lower the relative cost of modern energy to households and firms. Regional cooperation in energy production and distribution is also crucial in enhancing access to modern energy in the region. In terms of improving energy efficiency and the use of renewable energy, the *Report* suggests that better access to technology is a crucial factor. This can be achieved

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through technology transfer from developed and emerging partners to Africa and through building national capabilities to access, use and adapt existing technologies, and also, when possible, to create needed technologies.

(b) *Industry.* Making structural transformation compatible with environmental protection requires improving resource productivity and reducing the environmental impact of industrialization. The *Report* recommends that African countries should incentivize domestic firms to improve resource productivity through, for example, subsidizing the adoption of clean or environmentally sound technologies and promoting low-carbon foreign direct investment (FDI). It also suggests that African countries should pay more attention to mitigating the environmental impact of resource use in the industrial sector through, perhaps, using economic incentives and regulatory measures to induce firms to adopt recycling technologies. In addition, it suggests that the removal of fossil fuel subsidies could also play an important role in inducing substitution away from fossil fuels to renewable energy sources. The *Report* also suggests that African governments should use fiscal, trade and regulatory instruments to create and build competitiveness in producing and exporting environmental goods and services (such as solar water heaters, recycling products, fluorescent lamps etc.).

(c) *Agriculture.* The effective promotion of sustainable structural transformation in Africa requires both increasing agricultural productivity and promoting environmentally sustainable agricultural practices. In this regard, the *Report* suggests that African governments should subsidize access to productivity-enhancing technologies and also improve the sustainable management of land and natural resources through reform of land tenure systems, better definition and enforcement of property rights, and restriction or regulation of imports of hazardous chemicals, pesticides and other pollutants.

The *Report* emphasizes the importance of technology and innovation in promoting sustainable structural transformation. In this regard, it suggests that strategies geared towards relative resource and impact decoupling should encompass science, technology and innovation policies. These policies should emphasize the acquisition, application and adaptation of clean and efficient technologies and also develop the capacities of African countries to leapfrog into such types of technology. The emergence of sustainability-oriented innovation

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systems can support this objective. But technological leapfrogging will require more technology transfer from developed and emerging partners to African countries, greater domestic absorptive capacities, and a stronger domestic science and technology base.

Other messages and recommendations emanating from the *Report* include:

- (a) *The State has to play a crucial role in promoting sustainable structural transformation.* Given the externalities associated with promoting sustainable structural transformation and the long-term nature of the required investments, it is unlikely that firms (or the private sector) will on their own commit to making these investments. Consequently, there is a need for deliberate action by the State to initiate the transformation process. More specifically, the State should exercise the following functions: (i) play a lead role; (ii) liaise with other local stakeholders to identify priority areas or activities; and (iii) support these priority areas using available instruments. While the State is expected to play a lead role in promoting sustainable structural transformation, it is important to stress that it should make a genuine effort to involve other local stakeholders in the process in order to enhance the likelihood of success.
  - (b) *Environmental problems in Africa should be treated as a development issue.* The *Report* contends that African countries should not deal with environmental problems in isolation. These should be addressed as part of overall efforts to promote development. Far too often, there is very little coordination between government departments dealing with environmental issues and key departments such as finance, trade, agriculture and energy. This has led to incoherence in policy design and implementation. There is a need for African governments to strengthen inter-ministerial collaboration on environmental issues to ensure that these are addressed in a holistic manner. This calls for mainstreaming of the environment into national development strategies.
  - (c) *Better management of natural resource rent.* The mobilization of financial resources is critical to success in promoting sustainable structural transformation. It allows local ownership of the transformation and development process, and provides access to much-needed long-term finance. In this regard, the *Report* suggests that African countries should make better use of their natural resource rent, by, for example, putting
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a certain percentage of such rent in a Special Fund meant to finance public investments in infrastructure, human capital formation, technology development and acquisition, energy development, and protection of natural capital. Transparency and accountability are important in ensuring that the Special Fund is not misappropriated but used for the purpose for which it is intended.

- (d) *Monitoring and evaluation of policies is important.* There is a need for African countries to put in place an effective system for monitoring and evaluating progress in the implementation of sustainability programmes and policies. This will require strengthening domestic capacity in collecting environmental statistics, which are necessary for designing sustainability indicators and also for evaluating the impact of environmental policy measures.
- (e) *International support is needed.* While African governments must play the leadership role in formulating and implementing strategies of sustainable structural transformation, it is essential that an appropriate enabling environment, including support measures, be established at the international level. The international enabling environment should seek to apply the principle of common and differentiated responsibilities which was articulated at the 1992 United Nations Conference on Environment and Development. In broad terms, this implies that African countries should not be constrained in their pursuit of accelerated economic growth and structural transformation, and should seek to enhance environmental sustainability through relative decoupling rather than absolute decoupling, as absolute decoupling is much more relevant for countries that have already achieved high living standards. It also implies that developed countries should provide financial support, particularly aid for developing the energy sector, facilitate technology transfer to support sustainable structural transformation, and design the international trade regime and intellectual property rights regime in a way that facilitates the sustainable development process.
- (f) *Policy space is needed at the international level.* The international trading, monetary and financial systems affect Africa's capacity to promote sustainable structural transformation, because they determine the set of feasible policy instruments that countries could use to support the transformation process. Consequently, the *Report* stresses the need for
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the international community to provide African countries with enough policy space to promote sustainable structural transformation. For instance, reforms under the Doha Round of trade negotiations should not restrict Africa's ability to use trade instruments to promote sustainable structural transformation. There is also a need for international trade rules to be made more coherent with the objectives of environmental protection and poverty reduction. Furthermore, the intellectual property rights regime should be geared more towards facilitating technology transfer to poor developing countries.

*(g) Policy coherence is also needed at the regional and international levels.*

Africa's efforts to promote sustainable structural transformation will have maximum impact if policies at the regional and international level are consistent with those at the national level. For example, it is often the case that African countries compete among themselves to attract FDI in the extractive industries by offering generous incentives to foreign investors without due consideration of the environmental consequences of these investments both at the national and the regional level. There is a need for African countries to avoid a "race to the bottom" and also to put into place regional environmental standards that foreign investors have to comply with. There is also a need for the international community to have more coherent trade, finance, investment and environmental policies towards Africa to ensure that these complement national efforts to promote sustainable structural transformation.

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