Observatoire Europe-Afrique

Case study #14-2

Complexity of arbitrations in the fight against deforestation, desertification and global warming in Africa

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Given the scale of the challenges posed by desertification, deforestation and global warming in Africa, the budgets available through sustainable development and energy assistance programs are by nature constrained[1]. Complex arbitrations are therefore necessary to optimize the choice of solutions to be implemented.

The objective of this note is to show, on the basis of a few examples, the complexity of these trade-offs in the light of criteria such as “local versus global”, “sustainable development versus satisfaction of demand” or “foreign know-how versus local know-how”. We will see that the solutions that seem to have priority are not necessarily the most relevant.

Three different types of arbitration may arise:

The first type of arbitration arises when choosing between a "local" solution and a "non-local" solution. To illustrate this problem, let’s take the case of the Great Green Wall of the Sahara and the Sahel project[2]. Overexploitation of soils, poor management of water resources and excessive consumption of firewood are recognized as key factors of desertification in the

[1] Regional Initiative for Sustainable Energy (IRED), Sustainable Energy Fund for Africa (SEFA), Africa-EU Energy Partnership, Energy4 Impact….

[2] The Great Green Wall for the Sahara and the Sahel is the African Union's flagship initiative to combat the effects of climate change and desertification in Africa. It aims to create a mosaic of green and productive ecosystems in North Africa, the Sahel and the Horn of Africa. It was initially designed as a long corridor 15 km wide crossing the whole African continent for 7,800 km passing through 11 countries. This will represent approximately 117,000 km².

Sahel. But besides these “local” factors, other causes are part of geographic scales that go far beyond the limits of the Sahel, primarily deforestation on the scale of the African continent and global warming on a global scale. Beyond the measures implemented at the local level to counter the desertification process[3], it also appears essential to fight against more global causes. Thus, deforestation in the coastal and central areas of Côte d'Ivoire, Nigeria and Cameroon is causing "holes" in the forest cover that extends from the Gulf of Guinea to the Sahel. This has the effect of hampering the circulation of cloud masses and contributing to the decrease in rainfall in the Sahel[4].

In this context, the fight against deforestation in the tropical hinge zones between the Gulf of Guinea and the Sahel with a view to restoring the continuity of the forest cover appears to be a priority over the planting of trees in the Sahelian zone bordering the Sahara.

The second type of arbitration occurs when the choice is between a solution that favors "sustainable development" and a solution that favors "market satisfaction." For example, many African countries produce most of their electricity with power plants that generate significant amounts of carbon dioxide. The investment projects for 2030 show that the share of fossil fuels will remain dominant[5]. However, one third of the expansion of the Sahara would be directly related to global warming[6]. In addition, most of these countries benefit from sunlight conditions particularly conducive to the development of photovoltaic energy and there is also a high potential for wind power generation in East Africa[7].

In this context, it seems preferable to give priority to the dismantling of fuel oil plants by replacing them with photovoltaic plants or hybrid mini-grids, rather than keeping these polluting plants in service and building photovoltaic electricity production capacities to meet the high demand for electricity.

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[3] The measures of the "Great Green Wall of the Sahel" project relate in particular to assisted natural regeneration, optimized management of water resources and, in general, rational management of ecosystems.

[4] The reduction in forest cover leads to a 40% decrease in rainfall in the Sahel during the rainy season. The rainforests of the West African coast, which receive abundant amounts of rain from the Atlantic Ocean, have helped maintain rainfall in the arid lands of the interior. At the start of the 20th century, these forests covered approximately 500,000 km². Since then, up to 90% of them have disappeared to make way for human activity. When forests are destroyed or degraded, evaporation is reduced, which affects rainfall in inland areas prone to drought (source: Sahel and West Africa Program in support of the Great Green Wall initiative - “To develop sustainable land and water management in targeted landscapes and climate-vulnerable areas” - TerrAfrica / World Bank / GEF - May 2011).

[5] Africa's electric power will double by 2030, with a forecast of 269 GW of plants to come. Fossil fuels will remain predominant and provide more than half of the electricity produced. (Source: "A machine-learning approach to predicting Africa's electricity mix based on planned power plants and their chances of success" - University of Oxford - January 2021).

[6] According to a study published in March 2018 in "The Journal of Climate" and conducted by researchers from the University of Maryland (United States) the Sahara gained 10% in area between 1920 and 2013. This means that it extended by 900,000 km² in 93 years, or over 9,677 km² per year. The analyzes take into account various factors such as the drying up of the Sahel in the 1950s and 1980s, but also the stability of the rainfall network. While the biggest causal factor in desert growth is due to natural changes, a third of the expansion can be directly linked to global warming.

[7] Wind resources are found in much of North Africa, in the mountainous regions of southern Africa, and in parts of East Africa, particularly in the Horn of Africa and along of the Great Rift Valley (source: Institut Montaigne).

The third type of arbitration corresponds to situations where several technological and industrial choices coexist. For example, the market for hybrid mini-grids, solar power plants and wind farms is exploding in sub-Saharan Africa. Rather than importing "turnkey" units taking advantage of the know-how of American, European and Chinese suppliers, it seems preferable to promote the emergence of "green" African industrial sectors, combining R&D and manufacturing capacities. and construction of solar power plants, hybrid mini-grids and wind farms[8].

At a time when the AfCFTA is beginning to take shape, these "local" industrial sectors could be joined by several African states. They would present many potential assets: slowing down the spiral of indebtedness and the deterioration of the trade balances of the African states concerned, allowing African companies to appropriate know-how in strategic sectors and allow European companies to remain competitive in the face of Chinese competition through a strategy of co-production with African partners.

The examples described above obviously do not claim to provide definitive answers to these issues, but to highlight the complexity of the choices. Arbitrations are all the more complex as they often require to put into perspective solutions whose potential effects occur on very different scales, both spatially and temporally. In addition, they need to link the multiple existing programs together in order to maximize synergies.

Mixing complementary solutions may be a way to achieve balanced responses between the "urgent" (eg meeting the demand for electricity) and the "essential" (eg halting deforestation of tropical forests).

International financial institutions have a key role to play in these arbitrations. They own the appropriate analysis and modeling tools to suggest optimal solutions to the African states concerned, in terms of human and financial resources allocation.

[8] On this subject, see the case study of the Europe-Africa Observatory 2030 entitled "Promoting a design / manufacturing / installation sector of third generation mini-grids in Africa" - August 10, 2020.