

Antananarivo: Using nexus for tackling the challenge of extreme poverty



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Food-Water-Energy Nexus in Antananarivo

“Everything is challenging in Tana” [2]. In Antananarivo, few technical and financial partners intervene in the field of food, water and energy. In this urban context, the synergy of actors is still insufficient. Factors are many and diverse, which shows that development solutions can only be effective if they are cross-sectoral and multi-stakeholder, based on a shared understanding of the drivers of change.

When it comes to food and nutrition, the City of Antananarivo is confirmed to suffer from 49.3% chronic malnutrition, slightly higher than the national average of 47% [3]. Underlying poverty, exacerbated by the lack of access to drinking water (only 74% of households in the Analamanga Region have access to drinking water), and access to health services are among the major challenges that affect the food and nutritional situation of the population. In fact, food insecurity has increased in the capital from 13% to 18.7% between 2010 and 2012 [4], due to the economic slowdown linked to the 2009 political crisis. However, this situation cannot only be attributed to the consequences of poverty. Access to good-quality products is a huge challenge. Food producers use unapproved phyto-sanitary products and in the wrong way, impacting the health of consumers (increasing cancer and other related illnesses). In addition, the products offered for sale may be altered voluntarily, such



Facts & Figures

Population
1,556,654

Annual population growth rate
3.58%

GDP per Capita
USD 401,8

Population Density
18,325 persons/km²

Land area
85 km²

as milk (addition of water by sellers). The hygiene conditions of products presented on market stalls without protection is an important source of contamination. The health risks for the producers (overuse of phytosanitary products) as well as for the consumers (by the consumption of the products) are then greater. Food accessibility is also an issue, particularly for protein-rich products such as meat, fish and eggs. However, “products are not lacking, the problem is: how to make them nutritious” [5]. Indeed, consumers still lack interest or knowledge for cooking diversified diets. Cooking habits need to be adapted so that products can keep their nutritional value.

As for water, accessibility for all households in the city is the main issue. In some areas of the city, supply is only available for short periods during the day. Moreover, the city of Antananarivo faces problems of flooding due to slow water drainage during the heavy rainfall season. Even in the city’s new master plan, there is no sewage disposal plan for flood-prone neighborhoods, and there is only one evacuation system serving both rainwater and wastewater (subsequently irrigating rice fields with potentially contaminated water). On the sides of these channels, industries dump waste, plastic, black water, heavy metals, and more. Toxic residues easily make their way into these channels. Furthermore, the upstream channels traverse urban areas and join the rice fields located on the northern part of the city. Water flows directly into the Ikopa River without any treatment and is re-pumped into the system again. This all poses a significant risk for the population’s health. Recent analysis shows that the channel water and sludge status are very dangerous. JIRAMA, the local state society for access and water treatment, states that it is taking efforts to improve the situation, yet it still does not seem to be sufficient.

For energy, in Madagascar, only 15% of the population has access to electricity. In 2017, the country only had an installed capacity of 570 MW, composed mainly of thermal (60%) and hydroelectric (40%). But in fact, only 60% of this energy is actually available because of insufficient maintenance of power plants. Beyond the fact that this undermines the daily lives of inhabitants, the lack of energy is potentially the main obstacle to the socio-economic development of the country and the expansion of private sector enterprise. In Antananarivo, only a small part of the population has access to electricity and for these people,



Figure 1 – Antananarivo local food market

“load shedding” can hinder their activities. Raw materials for energy are lacking. Wood is widely used as a source of energy, but this is without effective reforestation efforts. Charcoal making methods are still archaic. In addition, coal production areas are restricted, making it difficult to distribute in urban areas. When it comes to sanitation, fecal sludge treatment is done in small treatment plants for subsequent fertilizer, biogas and electricity production. But for these last two, the power stations are far from reaching scaled-up solutions.

However, many initiatives have been deployed in the last five years to address such difficulties. Challenges are significant, but the layering of these challenges has somehow allowed development actors to think about innovative, integrated approaches, low-cost strategies and win-win models. All of the cases shared below provide excellent examples of how challenging environments can become useful arenas for innovation.

Emerging, complementary responses to resource access and efficiency in Antananarivo

The PRODUIR Project [6], the Greater Antananarivo’s Integrated Urban Development and Resilience Project, led by the Ministry of Planning (World Bank funded) is hoping to address “water deserts” in a holistic manner that can improve sanitation outcomes. Its objective is to use an integral approach to improve the sanitation network in the most vulnerable areas of the city. To do so, a plan to set up small investment projects in poorest neighborhoods is being developed through the design of detailed micro-master-plans as an effective tool for change. This “Quick-win”

approach intends to allow governments and citizens to track immediate changes. By creating confidence and willingness to change and driving higher understanding and knowledge of their needs, small scale changes can reinforce more impact when trying to leverage living condition improvements.

The ASA program [5], or Support for Agroforestry around Antananarivo, aims to 'Nourish the Capital' with better quality agroecological produce, milk, fish and wood energy. Started in 2014 and ending in 2019, it directly addresses food production quality improvement, by promoting agroecological vegetables produced with the use of natural fertilizers, instead of using chemical products. It's key innovation is the strong investment in learning and building of trust-relationships along the value chain, to ensure shared value capture.

Following this small-scale approach as well, LOOWATT [7] is an innovative private initiative to address the challenges of liquid sanitation. It consists of installing mobile toilets in households that pay a monthly liquid waste collection service fee. Excrement is then collected and treated to obtain biogas which then produces electricity and compost that is sold for gardening use. The next step in the project is to set up a company specialized in the marketing of fertilizer that is produced from this treatment. In addition, LOOWATT has managed to set up an experimental showcase within the local maintenance service of the city of Antananarivo (SAMVA) to expand its activities, with further treatment sites.

The ALISOTA project, led by the NGO GRET [2], [8], provides support for sustainable liquid and solid waste sanitation for three peri-urban communities in Antananarivo. It is working to establish sludge treatment plants and formalize several medium-sized power plants to produce energy and fertilizer. The electricity provided by LOOWATT and ALISOTA remains available for the sites but is not yet marketed. LOOWATT charges batteries of residents' phones via the electricity produced on the sites.

Last but not least, POSITIVE PLANET [10] is a French international NGO that has been working in Antananarivo for almost 14 years on social protection issues. Since 2017, they have led a project to improve health conditions in "precarious neighborhoods". The project seeks to provide social protection to almost one thousand waste collection workers' families through the establishment of health insurance. About 850 families are involved and their contribution to health insurance is about €1 per month. This way, waste collectors are encouraged to pay working duties and have access to social support within the CAS (Centres of Access to social Services), within the Municipality. Through this approach, these vulnerable people have access to socio-economic support and training. The final objective is to accompany formal workers to start-up their own businesses on waste recycling and up-cycling.



Figure 2 – Liquid and solid waste in a peri-urban area in Antananarivo



Story of the Innovation

The ASA program's simple aim to 'Nourish the Capital', nevertheless understood the complex task in doing so, and undertook a holistic approach to invest in improving the quality of fresh produce, milk, fish and wood energy. Starting in 2014 and ending in 2019, it directly addressed food production quality improvement, by promoting agroecological vegetables produced with the use of natural fertilizers, instead of using chemical products. The objective of the ASA program was to contribute to ending poverty in Madagascar and preserving of the natural environment, through the improving producers' incomes around Antananarivo and improving access of citizens to markets with healthy food and wood energy. The program emerged in response to these key challenges:

- The quality and safety of food that arrives at market was not measured or assured, posing a risk to consumers;
- The value of produce offered by farmers, fishers and foresters was not effectively captured, and many of these people are in vulnerable positions, either lacking a robust and reliable income, or lacking tenure on the very land they work;
- The form of agriculture and forestry was not environmentally restorative, posing risks for the long-term food, water and energy security of the capital, should this land be further degraded.

Furthermore there was an understanding of the need to remove existing constraints at the level of farmers' organizations, provide technical capacity supply inputs, improve land improvement, support cultural practices, facilitate product transportation from isolated areas and upgrade markets that were poorly organized.

The program therefore targeted food and forestry producers and actors involved in food systems, such as transporters, processors, distributors, tradespeople. Three regions benefitted during the project period: Analamanga, Itasy and Vakinankaratra, with nine districts and 102 communes. In total, the ASA Program reached about 50,000 direct household beneficiaries (therefore about 250,000 people), and indirectly the entire Malagasy population with the support of the National Land Program.



Figure 3 – Members of the community participating in the project

The activities were organized around five main axes, to support to the development of the following sectors, through the following proposed activities:

1. Market gardening and fruit tree farming -

These activities aimed to train and support technically and economically 8 572 producers. In addition, the activities aimed to structure and strengthen the capacities of 418 producer organizations around these fruit-vegetable and farm chicken sectors; support product marketing (in the identification, business plan, investment and management phases); to improve post-harvest management through the reduction of losses by 20%, the construction of 50 storage buildings and 50 local processing units. These projects also support and support municipalities' project management in improving access to the capital's peripheral markets.

2. **Pisciculture** - The activities are geared towards the training and support of new candidates and existing fish farmers, so that they acquire profitable and sustainable development and breeding techniques (500 farmers for rice farming and 100 other pond producers). Supporting the structuring of 70 producer groups to improve the expression of needs and the emergence of local services; training and support of related professions upstream and downstream of production; support for the creation of a marketing chain guaranteeing the regular marketing of quality fresh fish (an additional 210 tonnes / year including 20 tonnes of live fish / year for the Antananarivo market).

- 3. Wood energy and reforestation** - The projects allow the production of 11.8 million seedlings in the 240 nurseries installed by the SNGF, to plant 9,200 ha of new wood energy plantations, to further improve carbonization techniques with 3,500 charcoal burners).
- 4. Milk** - The productive capacities of the 1,400 beneficiary pastoralists increase and their professional organizations increase their autonomy of action. The project also improves the marketing channels, in order to allow consumers and processors to access regular and high quality milk (2000 liters are sold daily through the sales-depots and marketing centers). Finally, the project also strengthened the technical, economic, analytical and political collective action capacities of the dairy industry.
- 5. Support for land security** - The project supports land security and access to land for male and female producers who are beneficiaries of the ASA Program; the communes in the implementation of systems of securing land rights in the context of the decentralization of land management, land management and property taxation; and the consolidation of Madagascar's land reform and its institutions.

The PROFAPAN project, derived from the ASA Program, aimed to "increase the quantity, availability and regularity of products throughout the year and to improve the access of the population to quality products" [9]. In 2008, a baseline study found out that it was necessary to improve the conditions of marketing and production both in quantity and quality. Over 5,000 producers were trained in agroecology practices and 300 producers have adopted the agroecological approach on their farms. The project engages 400 ha of the urban hinterland in agroecological production. 90 village collectors play a role in connecting producers and customers. They are supported to buy the producers' products for resale directly in the municipal markets every day. Among these 90 collectors, 60 have been trained to form small commercial enterprises that are already functioning. This project has involved an outstanding transformation, touching all aspects of the food chain from the production to consumption, to promoting knowledge about environmentally responsible practices, to health issues related to food consumption. In addition, producers have not only received a significant upgrade of their professional skills, but have

also integrated a set of innovative tools such as the introduction of the Participative Guarantee System (SPG). The SPG consists of a quality label awarded to producers, based on producers and consumer's confidence and is much more affordable than eco-certification. Such initiatives are very rare and the Antananarivo producers are currently experimenting with it. In addition, the ASA Program has contributed to reforesting 10,000 hectares around the city with wood that can be sustainably harvested, and 70,000 improved home stoves have been sold for better energy savings.

Enabling factors for success

One of the main pillars for innovation to come out of these initiatives, is the learning process itself. A clear understanding of what had worked in similar contexts and trying to adapt it to local realities has helped to develop the most effective strategy. This has helped, not only to gain time through experience capitalization, but also to boost local motivation by providing decision-makers with the possibility to dream about the potential opportunities. In an isolated context, such input has been valuable. Another key input has been the introduction of participatory approaches which have helped to build a foundation of knowledge, trust and social cohesion for the implementation of the action plan. The participatory approach is aimed to play a key role in the implementation phase: each small-scale intervention will be decided in plenary sessions with the main actors involved, so as to keep a common vision throughout the whole process. The ASA - PROFAPAN project demonstrated that value of concrete participatory tools, which have reinforced the links between producers and sellers. This has resulted in visible impacts for producers and the improvement and regularization of their incomes. Producers are now more comfortable to produce throughout the year, following agroecological approaches. They have improved their revenues by increasing the value of quality products, which can be sold at higher prices. Additionally, financial training for producers has enabled them to reinvest in, and grow, their businesses, slowly but consistently. As for consumers, they have gained access to quality products, without health risks. The quality insurance tool (SPG) has provided common ground for producers and consumers around the quality of the product. Producers aim to develop controlled practices and share knowledge, and consumers support this process by buying

certified products at a higher price. This way, consumers encourage producers not to abandon their participation or investment in agroecology.

An important enabler in these projects is the integration of the Antananarivo City Council (ACC) in the strategies [4]. The ACC has clearly expressed its will to continue supporting development actions that reinforce innovative approaches and mobilize resources to produce effective change. The will to create the Food Policy Council that reunites internal and external stakeholders shows ACC's real interest in facilitating cross-sectoral dialogue, knowledge sharing and participatory dynamism as vital to decision-making processes. This is

a win-win approach, which will bring about benefits for external stakeholders and to the local government, showing a direct impact on the population's needs. The ACC understands its role in convening stakeholders and facilitating dialogue and motivation for collaboration. With its partners, efforts to improve existing municipal infrastructure and reinforce employers' professional capacities, can help them to work more efficiently, and to widen their role in supporting collaboration. Creating motivation in municipal officials by introducing intelligent tools such as health insurance is a way to tackle many issues with one same effort.

Synthesis

All initiatives referenced here have highlighted the challenging environment in Antananarivo's urban context. Main obstacles are caused by the lack of continuity of previous actions, weakness in the general governance approach, difficulties engaging citizens and acknowledging commitments to change their habits related to food, water and energy. The ASA program has effectively demonstrated the need to set up multi-stakeholder approaches in order to achieve expected results, from engaging local actors to civil society organizations and key actors from the private sector. This has helped to bring about extraordinary innovation in the field. However, it seems that even if individual initiatives demonstrate an effort to develop transversal approaches intrinsically, the actions lack interconnectivity and coordination between them, i.e. they may happen in the same context but do not reinforce each other. Cross-sectorial decision-making processes have been present in many cases, but providing continuity to

actor-platforms is still a huge challenge. The ACC seems to have understood this gap and is trying to innovate in local governance, by providing coherence between stakeholders and their activities. In particular, ACC is using food system actions as a driver for wider system change. There is a need to continue investing in the reinforcement of local capacities to develop concrete tools, to enhance the sharing of information, feedback from experience, lessons learned and best practices. There is still a lot to improve in terms of communication, especially with the population. Nowadays, there are lots of existing low-cost resources to allow the exchange of information; however, actors seem to be too busy with the complexity of projects and very little time is allocated to the sharing of knowledge. There is a clear need to find innovative tools to trigger the creation of nexus and raise awareness in its potential to contribute to projects' success in the short and long run.

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