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Antananarivo's city region food system: vulnerable, complex and precarious



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The food system in the city region of Antananarivo endured successive shocks and stresses. The COVID-19 pandemic and, more recently, soaring fuel prices have compounded the climatic hazards that have affected the food system for years. These shocks and stresses have had numerous, diverse and destabilizing impacts on all food system actors—from producers to consumers—within a food system already marked by significant structural weaknesses. In view of these conditions, the question arises how

to strengthen the system's resilience and ensure food security for the 3.5 million inhabitants of the agglomeration. While food system actors are actively seeking solutions, the immense challenges make it increasingly urgent to move forward. This case study has adopted a participatory research methodology, including interviews and focus group discussions with food system actors, to identify the essential next steps to be taken.

The Antananarivo city region food system

Antananarivo is the country's main consumption hub for goods and services, particularly for food. Spanning a 100 km radius around the city centre, the Antananarivo city region is home to approximately 850 000 households, where all components of the food system coexist and interact. This relatively small geographical area is dominated by agricultural production, much of which occurs within the city boundaries. Key crops include rice, leafy vegetables and horticultural crops such as tomatoes, onions, potatoes, beans. Rice holds a special place in Malagasy culture as the staple food, with farmers

cultivating the crop in the plains, valleys and even on hillsides. This subsistence agriculture is primarily rain-fed and mainly self-consumed. Consequently, the Antananarivo city region—and the country as a whole—is far from being self-sufficient in rice. Analamanga's rice production alone provides less than one third of the region's demand. In addition to crop production, the region supports other productive activities, including livestock farming (dairy cattle, small livestock, and their by-products), fish farming, pig farming, and the cultivation of fruit trees (citrus, exotic, and tropical fruits).



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In addition to the most common players in the food system, the central government and technical and financial partners are the most active, but not the most influential (see [Figure 1](#)). In fact, the system is dominated by middlemen (collectors, transporters, major distributors) and the political and business elites. In this highly unbalanced dynamic, producers, often poorly educated and in precarious financial situations, and consumers, who are poorly organized, bear the brunt of the lack of cooperation.

The urban region boasts numerous markets and trading places for food products, although these

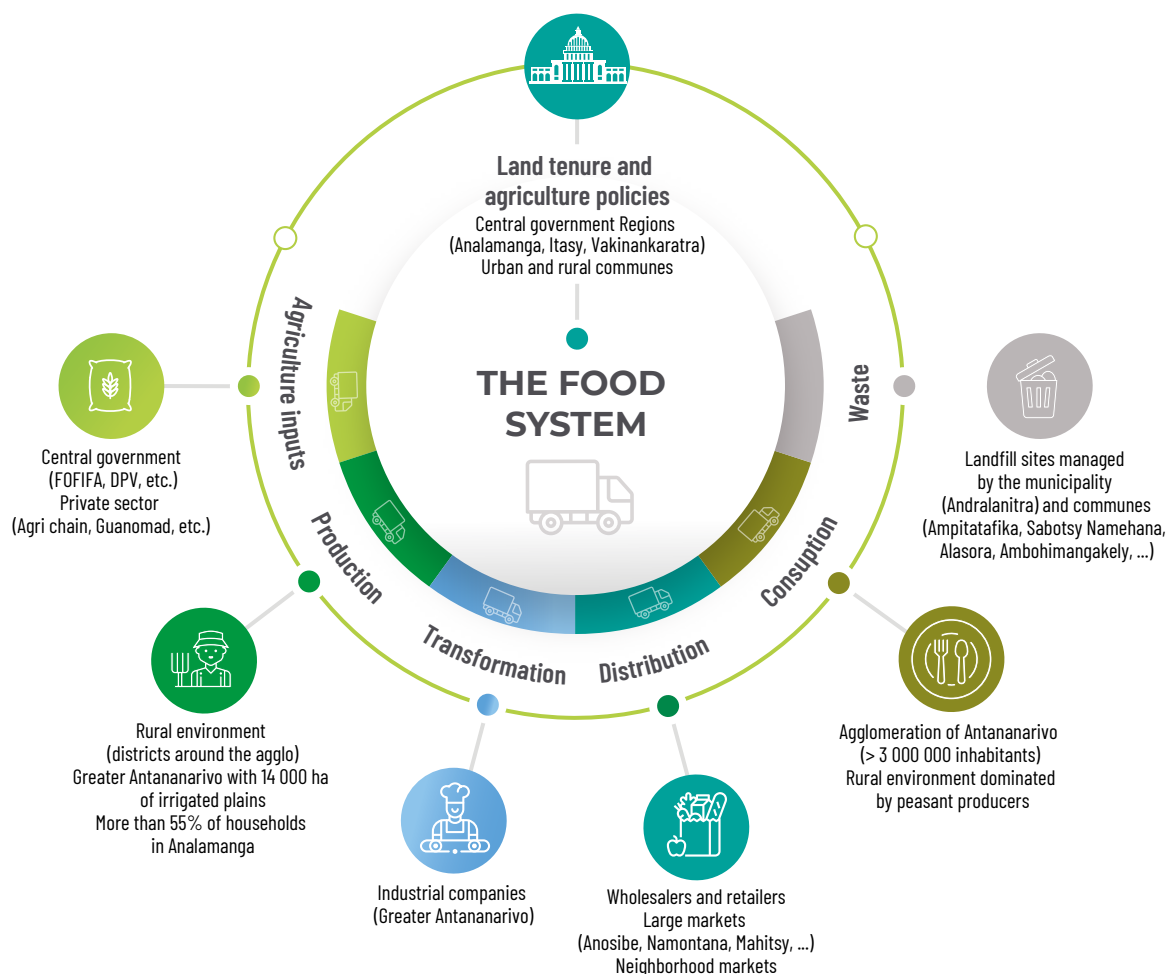
are often poorly organized. Antananarivo is home to the country's two largest wholesale markets for agricultural products, Anosibe and Namontana. These are supported by peripheral markets such as Mahitsy (north-western gateway), Imerintsiatosika (western gateway), Talata Volonondry (north-eastern gateway), and various communal or neighbourhood markets.

The small size of the region, concentration of activities, poor resource governance, and imbalance among players render the system highly vulnerable to external pressures, such as shocks and stresses.



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Figure 1 Nodes of the food system in the city region of Antananarivo



Source: Author's own elaboration.

Multiple shocks and stresses: recurrent and unprecedented, interrelated and aggravated by structural problems

Over the past five years, Antananarivo's City Region Food System (CRFS) has experienced a number of shocks and stresses, characterized mainly by COVID-19, drought, flooding and high fuel prices (see [Figure 2](#)). The impacts of these shocks and stresses are manifold and challenging to manage.

Recurring climatic shocks

In Antananarivo, droughts and floods regularly and severely affect producers. These shocks are recurrent and interrelated, with their impacts amplified by structural problems such as insecurity, lack of land tenure, declining soil quality, lack of irrigation, inadequate energy supplies, and poor road infrastructure.

As agriculture is predominately rain-fed, any disruption to rainfall patterns and the water cycle causes damage and loss in both yield and production,

affecting rice, market gardening, dairy cattle rearing, among others. This often leads to financial losses for farmers due to lower incomes and higher costs ([Figure 3](#)). Any significant drop in agricultural production, particularly rice production in rural areas, invariably leads to higher prices for agricultural products, affecting both urban and rural consumers.

Although rice production is primarily self-consumed, it is far from being self-sufficient. Food insecurity is rising, manifesting as meal rationing, lower consumption quantities, and reduced nutritional intake, particularly among the most vulnerable populations, including struggling farmers and urban households. In addition, even minor climatic shocks can destabilize the food system, an alarming trend given that studies indicate these phenomena will become more frequent and intense in the Antananarivo city region in the coming years.

Fuel price hikes at the wrong time

The rise in fuel prices represents a new shock to Antananarivo's CRFS. Most of Antananarivo's food supplies come from the other parts of the country and are primarily transported by road. The approximately 40 percent increase in fuel prices has temporarily pushed up the price of all food products, including rice (mainly imported from neighbouring regions), leafy vegetables, horticultural crops, meat, and fruit. Consumers and retailers are the most affected (see [Figure 3](#)). Transporters have managed to maintain or even increase their incomes by raising transport costs and negotiating prices with producers, who are often the ones bearing the loss. This dependence on petroleum products is unlikely to change, and the risk of further fuel price increases in the coming years is real. Such increases will continue to be a source of destabilization for the CRFS.

COVID-19's impact on food commercialization and processing

The COVID-19 pandemic was an unprecedented and unforeseeable shock that affected everyone, with varying impacts on different players and the territory. Antananarivo experienced three waves of COVID-19 between 2020 and 2023, with the intensity and magnitude of the impacts decreasing from the first to the third wave as traffic restriction measures and stakeholder adaptations improved.

The most significant impacts were on commercialization, processing and consumption ([Figure 3](#)). COVID-19 had major repercussions on distributors, particularly retailers, street vendors, restaurants and canteens, leading to income losses and closures due to bankruptcy. Intermediaries, such as transporters, collectors, wholesalers and suppliers, adapted quickly, turning the



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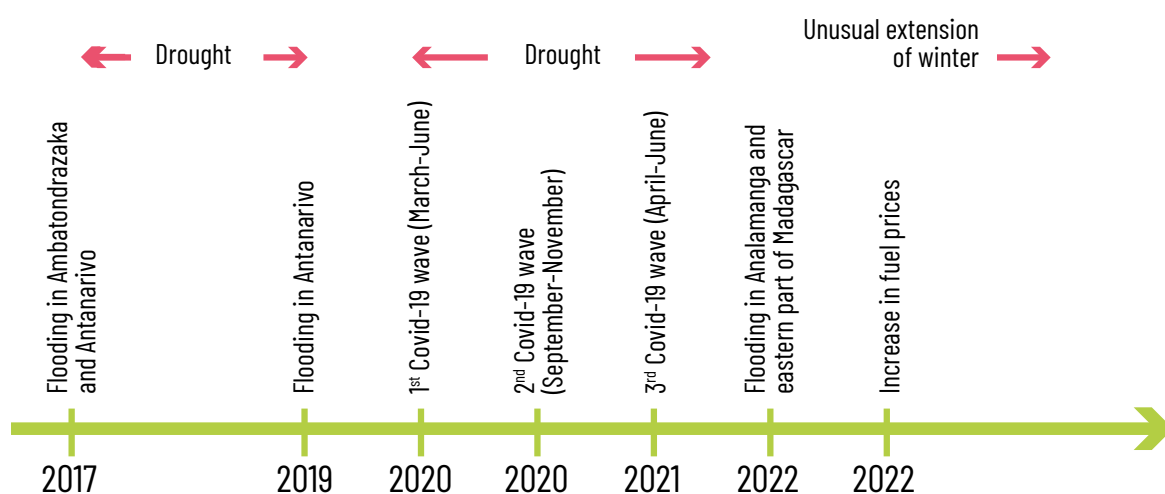
situation into an opportunity by speculating on prices, and manipulating actual costs to increase profits.

In contrast, those involved in processing (factories, workshops, industrial companies) bore the full brunt of the negative impacts of the restrictive measures. Many were unable to recover quickly due to heavy regulations (taxes, labour laws) that govern large firms with hundreds of employees, substantial material resources, and high input requirements. Conversely, small- and medium-sized distributors, with fewer resources and greater administrative and fiscal flexibility, adapted more easily, sometimes skirting legality (e.g. non-payment of tax obligations, online sales, unfair dismissal). The advantage now is that the

system is better prepared for new waves of COVID-19 or other diseases and pandemics such as monkeypox.

In addition to above-mentioned shocks, other climate change-related events (e.g. water shortages, delayed rains, hail) have been recorded throughout the food system, primarily affecting producers—the poorest and most vulnerable CRFS stakeholders. These events resulted in production losses and lower farm incomes. On a broader food system scale, their impacts were perceived as relatively minimal, often overshadowed by the more significant shocks related to droughts and floods. At the food system scale, their impacts were perceived as rather minimal, and were generally hidden by the shocks related to droughts and floods.

Figure 2 Timeline of major shocks



Source: Author's own elaboration.

Central government's reactive measures: a call for stakeholder engagement

Madagascar's insular characteristics have exposed it to various climate shocks, notably floods, droughts and cyclones. These recurrent shocks have led governments to design and develop public policies to cope with climate hazards and mitigate their impacts on human activity, particularly regarding food security (Figure 3). As climate events have intensified and become more frequent, the central government has established and updated policies, often updated, to counter them (Tsenamora, irrigation infrastructure maintenance policy, etc.).

However, according to interviewed actors, these existing policies are often applied reactively rather than preventively. As a result, they fail to bring about significant change in the system. What is more, their effectiveness is limited by the lack of capacity in both state and local governments to implement them, especially in the absence of financial resources. Consequently, relevant

actions are not timely implemented (before, during and even after shocks), such as cleaning irrigation canals, rehabilitation works or maintaining riverbanks. The policy framework already specifies the sharing of responsibility between central and local governments through decentralized communities. However, local governments often remain inactive due to a lack of resources and citizen contribution (lack of resource mobilization and leadership).

At the level of non-state actors, collective initiatives to cope with climate shocks are scarce. According to food system actors, this is certainly due to a lack of organization at stakeholder level. Malagasy stakeholders tend to work in silos, hindering knowledge and skill-sharing necessary for collaborative efforts. This problem of leadership and solidarity is also evident among private sector actors, such as farmers.

When the COVID-19 pandemic emerged, new public policies were developed to mitigate its impact. These policies were driven directly by the central government (Presidency), with local governments playing a collaborative role. All food system actors were taken by surprise by the pandemic, and their responses to facing this unprecedented shock were very specific. According to the actors interviewed, certain actions were taken hastily in response to the health emergency, resulting in unexpected and unfortunate impacts, particularly for certain food system actors (e.g. *Tosika fameno*, *Vatsy tsinjo*, *Asa avotra*, among others). While the most vulnerable were able to benefit from several forms of emergency aid provided by the central government these measures were not necessarily sustainable or transformative but enabled the population, especially the most vulnerable, to avoid succumbing. In summary, no real policies or initiatives with system-transforming capabilities have been implemented following the waves of COVID -19.

Public policies updated for pandemic and climate shocks

It seems that the country was not prepared for epidemiological or pandemic shocks, although the risk was always present. *Tsena mora* is an initiative launched by the current president and his team in 2011 during the socio-political crises that Madagascar experienced from 2009 to 2013, aimed at helping households cope with the rising prices of staple products. Revived in 2018 following the president's return to power, the initiative makes staple products (rice, oil, and sugar) available to households in need at low, affordable prices. During the three waves of COVID-19, when prices rose, this initiative brought relief to many families, despite issues of theft and embezzlement by certain officials, according to interviewees (Figure 3). *Tsena mora* is still existent, as evidenced by its application to affected areas following the impacts of cyclone Batsirai. In addition to the *Tsena mora*, other public policies mentioned by stakeholders include the regular maintenance of irrigation infrastructure, which involves technical measures to support the installation of water infrastructures. This measure is highly demanded by interviewed farmers to better control the water used for agriculture and livestock. In the Antananarivo plain, this is being carried out by the Authority for Flood Protection of the Antananarivo Plain (*Autorité pour la Protection contre les Inondations de la Plaine d'Antananarivo*, APIPA) in collaboration with the communities. Tasks include opening water intakes, cleaning canals within high labour intensive (*Haute intensité de Main d'Œuvre*, HIMO) public works programmes, and rehabilitating structures. These activities are scheduled for July and September each year, but due to a lack of financial resources, they are often delayed or even skipped. The central government and technical and financial partners typically contribute to these canal cleaning operations with support from entities such as the Ministry in charge of regional

planning, the French Development Agency (*Agence Française de Développement*, AFD) with the Integrated sanitation project in Antananarivo, Madagascar (*Projet Intégré d'Assainissement d'Antananarivo*, PIAA), and the World Bank with the Integrated Urban Development and Resilience Project for Greater Antananarivo (*Projet de Développement Urbain Intégré et Résilience du Grand Antananarivo*, PRODUIR).

New forms of social protection in order to cope with shocks and stresses

During periods of shock and stresses, particularly during COVID-19, new policies were developed in response to the impacts. For most social actions, the central government serves as the main coordinator, while local governments, decentralized communities and other partners collaborate to implement these public policies. These policies primarily target urban households in need. Generally, they are reactive measures designed to strengthen absorption capacities, but there are organizational inefficiencies. According to the actors interviewed, the measures taken to prevent the spread of COVID-19 destabilized the food system, leading to discontentment among the population, especially in urban areas. This situation forced the Presidency to develop social aid initiatives to absorb the impact of shocks, including COVID-19.

The implementation of these unprecedented measures by the central government has involved the participation and engagement of all. The private sector, civil society, the technical and financial partners and the communities have all been highly mobilized.

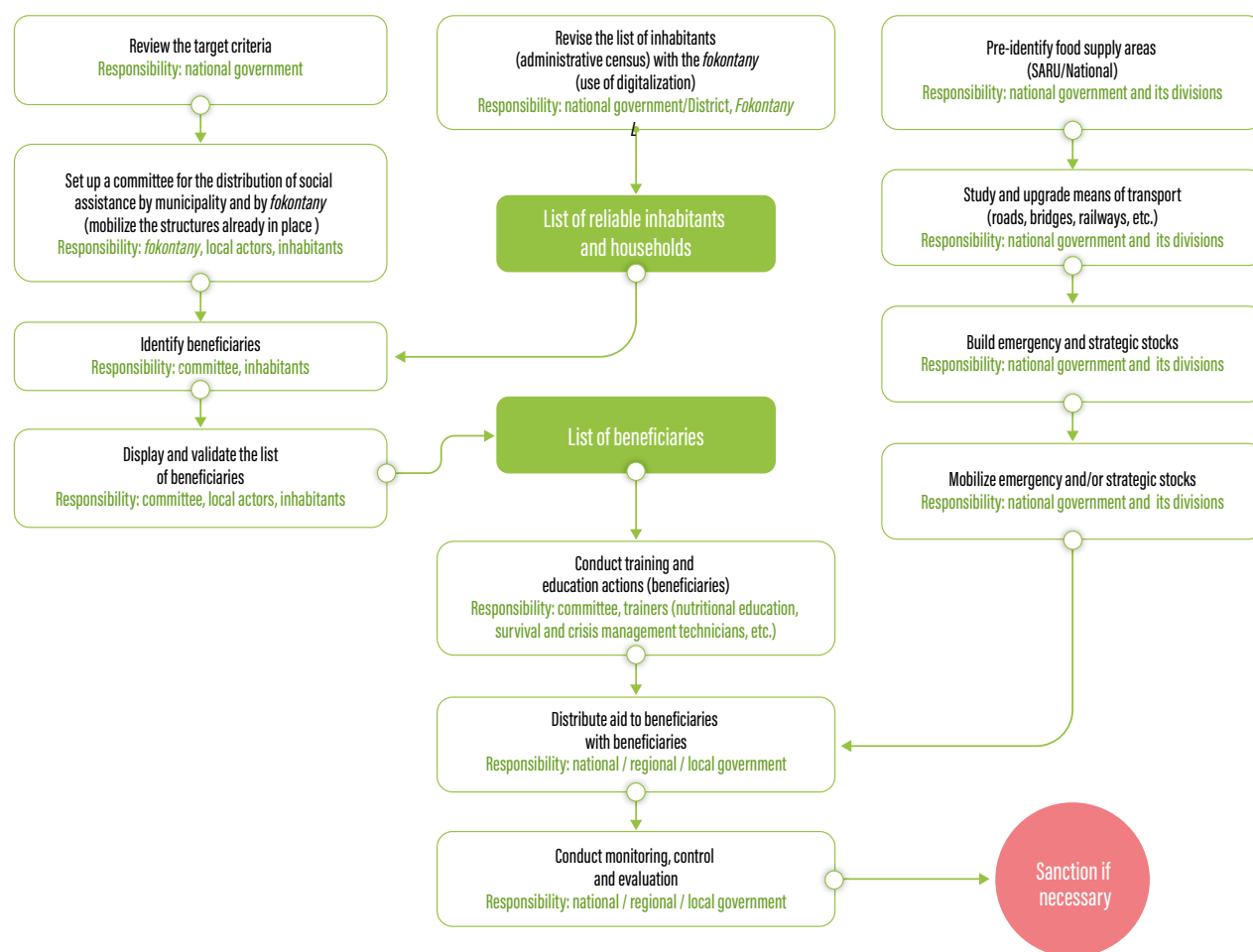
Lack of collective initiatives or strategies

According to the interviewed actors, there are no collective initiatives dealing with shocks to the food system. Only individual initiatives or actions have emerged, often isolated, poorly organized and badly conceived, creating more problems than solutions. These measures tend to be adaptive rather than preventive, lacking real ambition for transformation. Generally, it is the actors themselves who come up with the ideas (individual responses), which are then gradually generalized.

For more structured players, strategies or initiatives stem from the results of a market study, such as developing and implementing customer loyalty policies, improving visibility by participating in fairs or events related to the food system, and developing pricing policies). These initiatives have enabled many actors to withstand and overcome the impacts of shocks and stresses more easily than others.

However, some individual strategies are destabilizing. For example, among wholesalers, the storage and retention of non-perishable food products (e.g. rice and dry beans) has become widespread to fuel speculation during periods of shortage. This practice enables wholesalers to generate higher margins, even though it verges on illegality.

Figure 4 Recommendations and steps to follow for social protection aids



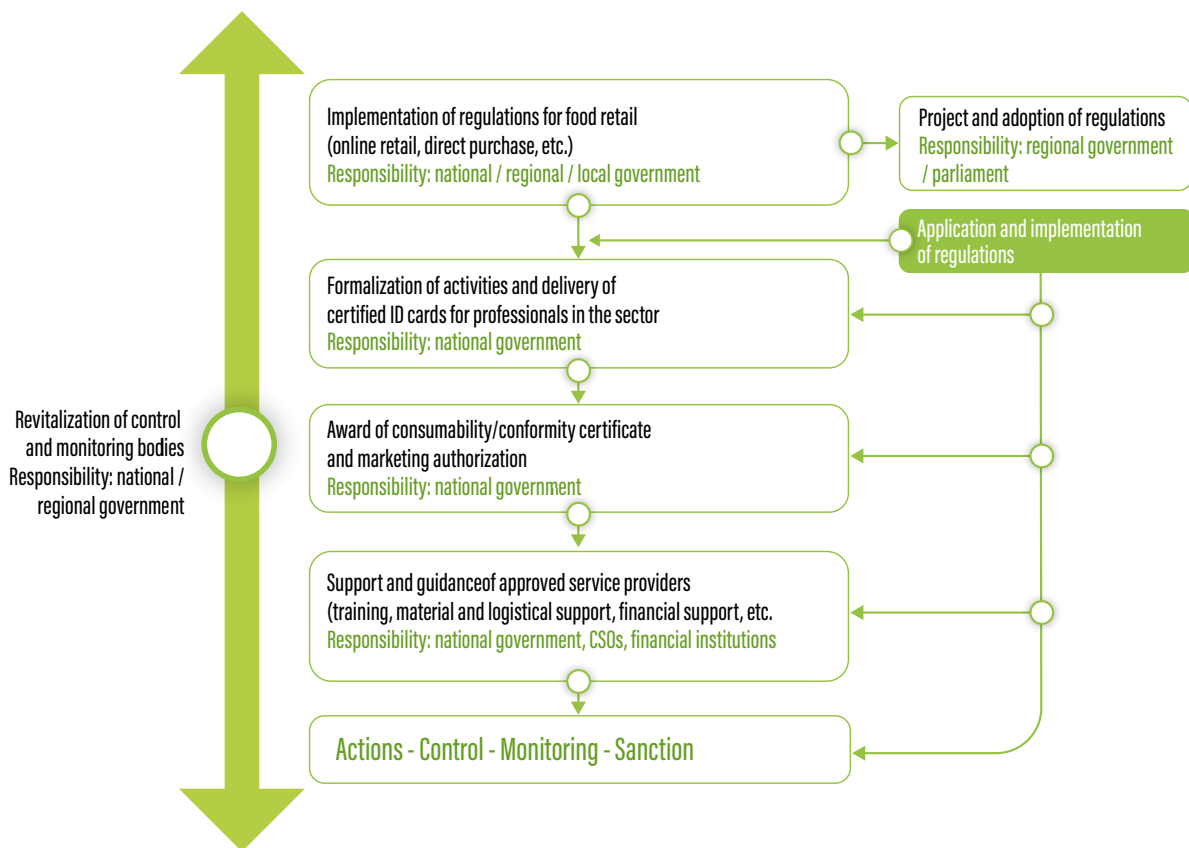
Source: Author's own elaboration.

Supporting the adaptation of supply chains to prevent future crises

Regarding adaptive initiatives in response to potential impacts, promoting new distribution channels to facilitate direct connections between producers and consumers could significantly improve the resilience of the food system in the event of future shocks. Participants in the second focus group identified food product sales, whether direct or online, with or without home delivery, as collective initiatives to be developed and scaled up. These initiatives have addressed many problems associated with shocks, notably COVID-19. The implementation of these initiatives can be facilitated by the quality of the information and communications technology network network (2G, 3G, 4G and soon 5G) throughout the Antananarivo

CRFS and the proximity between production and consumption zones. Additionally, the recent rise in fuel prices combined with the spread of diesel and adulterated petrol have demotivated motor vehicle users. As a result, mobility is increasingly restricted to essential trips only. However, there is currently no precise regulatory framework governing online sales, particularly for sellers and distributors. At present, the activity is informal, with no professional credentials, no tax obligations, no sanitary controls (consumability and compliance), and limited recourse in the event of a dispute. Consumers often face issues related to a lack of professionalism, scams and fraud. This situation penalizes genuine professionals in the distribution business. Therefore, it is crucial to regulate this increasingly popular activity, particularly among young people, in accordance with existing national laws.

Figure 5 Recommendations and steps for promoting new distribution channels (online sales of food products)



Source: Author's own elaboration.

Supporting the adaptation of production systems to prevent future crises

In terms of CRFS actors participated in two focus group discussions to improve the sustainability of Antananarivo's food system and to prevent future shocks and stresses. They recommended implementing transformative preventive measures focused on the re-engagement of agricultural extension services at the different government levels (national, regional and local) to promote support to farmers and producers through existing programmes (e.g. Revolving Fund, *Dokany mora ho an'ny mpamokatra*, *Titres verts*, *Fihariana*).

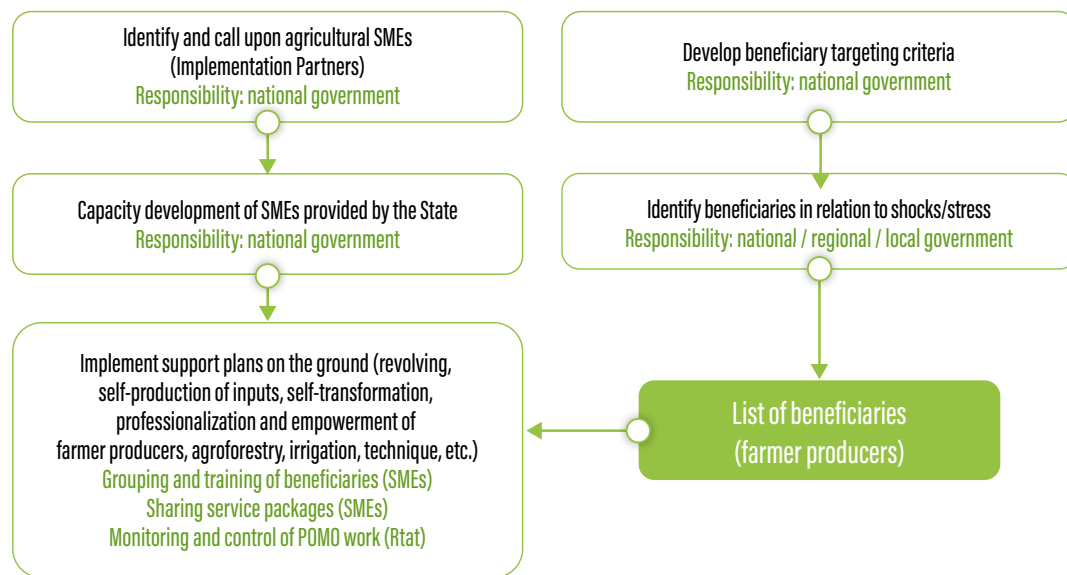
In the first focus group, several actions were prioritized:

- Setting up schools and training centres for agricultural technicians and deploying them at district level in rural communes (Agricultural and rural training centres and establishments [CEFAR], Training School for Agricultural Technicians [EFTA], agricultural high schools and colleges);

- Recruiting agricultural extension agents from schools and centres as state or regional civil servants and assign them to districts and rural communes;
- Re-organizing agricultural extension structures (chiefs of zone, grassroots extension agents, *sefomboly*) and ensure they are functional;
- Promoting partnerships between the state, the private sector (rural service providers) and farmers;
- Ensuring the availability of agricultural inputs (fertilizers, adapted and resilient seeds, agricultural materials and equipment) and technicians (training, support and assistance for producer farmers), as well as any other useful services.

Participants in the second focus group also proposed the promotion of state support for producers and farmers to strengthen the resilience of CRFS in the long-term and drive transformation.

Figure 6 Recommendations and steps to follow for the promotion of forms of state support and its decentralized entities to producer farmers and private farms



Source: Author's own elaboration.

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