

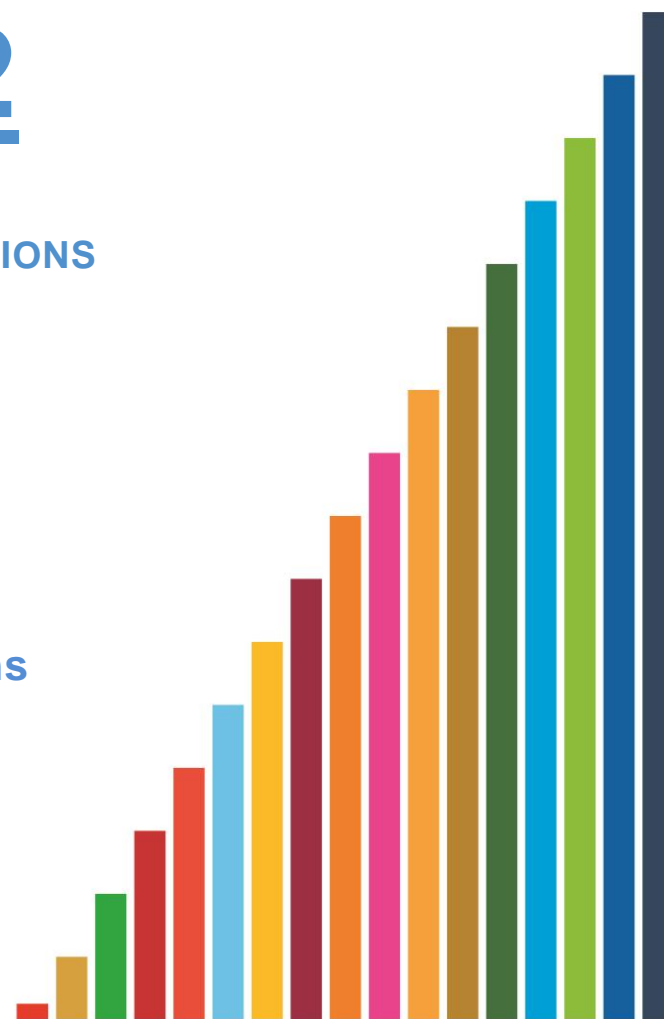
THE 4-4-2

4 NEWS – 4 GLANCES – 2 QUESTIONS

ECONOMIC BULLETIN

April 2023

Food security and resilient food systems
in Mauritius and Seychelles



Food and inputs prices may remain high and exacerbate food insecurity in SIDS



Most food prices continued to increase in 2023, rice increased by 11.5% over the first quarter. Adverse weather patterns, ongoing Ukraine war and high energy prices may continue to exert upward pressure in the coming months.

Source: World Bank Commodity prices/outlook



The cost of energy and other inputs, such as fertilizers, continued to decrease in the first quarter of 2023; for example a barrel of Brent crude registered below 80 USD, compared to 120 USD in June 2022. Yet prices should remain 50% above average for months.

Source: World Bank Commodity prices/outlook

Transforming food systems to improve resilience makes a difference



The tropical **Cyclone Freddy lasted for 34 days and travelled 8,000 kilometers**, equivalent to a whole hurricane season in the Atlantic, becoming the **longest tropical cyclone on record** and showing the **accelerated impact of climate change on food production and livelihoods**, among others.

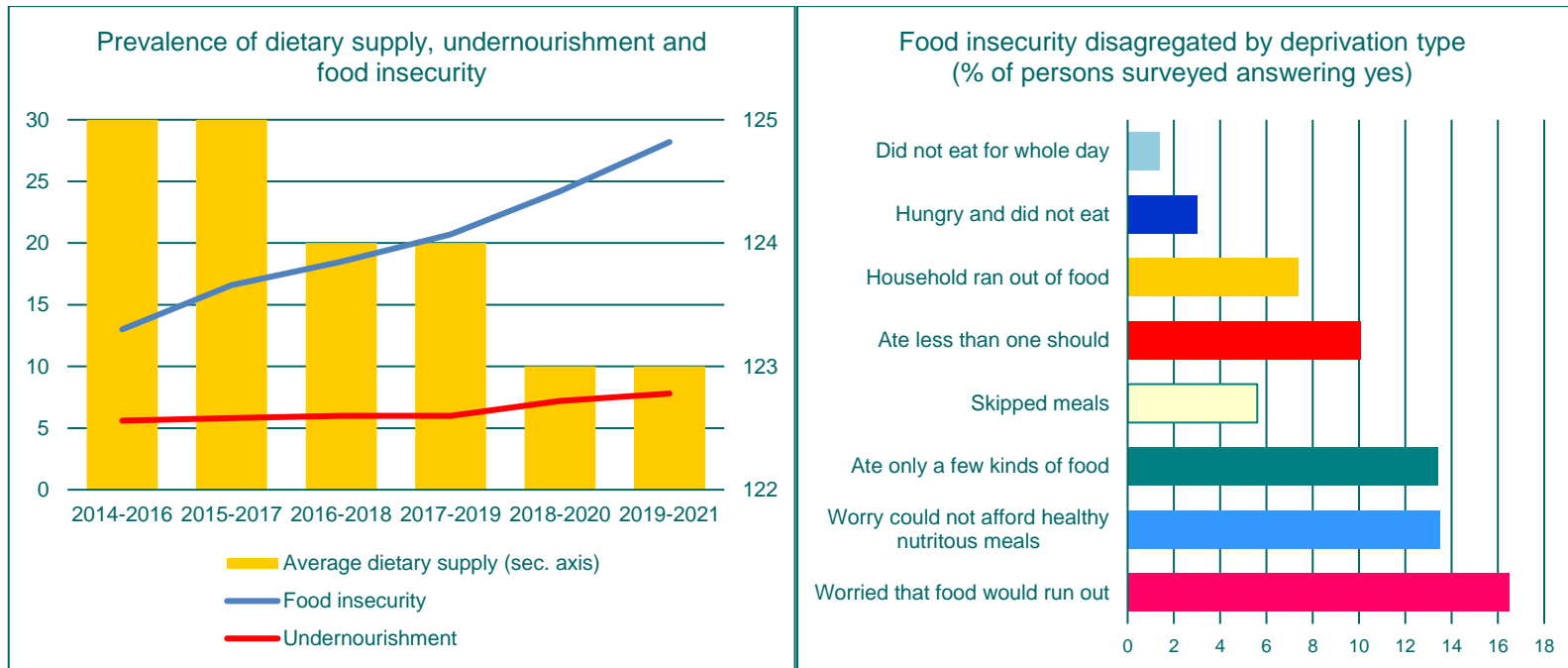
Source: World Meteorological Organization



Rice, a Mauritian **main staple food**, of which **99% is imported from Pakistan and India**, will become much more expensive and less available, as demand will **rise by 30% by 2050**, and **climate change** will contribute to yield decline and crop destruction.

Source: The Economist, March 2023

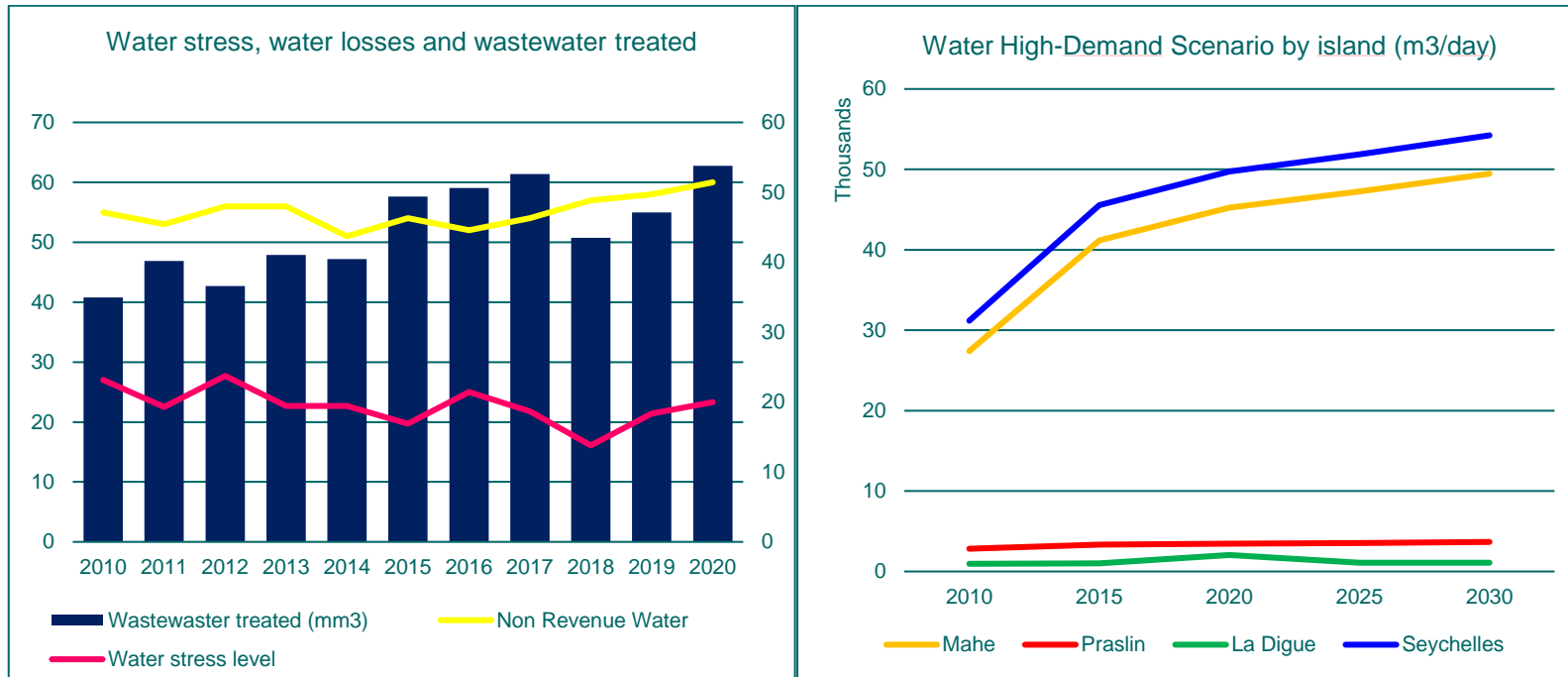
Glance #1: Highest human development standards, inherent food insecurity



1. Mauritius and Seychelles, as other SIDS, **continue to experience food security issues, despite their high human development status**. Although the most critical indicators such as **under-nutrition remain low**, food security became a top priority after COVID-related disruptions and the impact of the Ukraine war **laid bare food systems vulnerabilities** globally and nationally.
2. The **UN Food System Summit Stocktaking Moment** in July will allow for a national, regional and global assessment of the situation.
3. In Mauritius, **food security increased** during the SDG period, while the average dietary supply declined (see chart 1). In Seychelles, **undernutrition** was one of the four **main drivers of multidimensional poverty**, with 1 in 6 Seychellois worrying that food would run out, even before COVID and the food crisis. An up-to-date **nutrition sensitive value chain analysis** would be critical to drive a need-based transformation of the food systems.
4. Although post-COVID data is unavailable, the rapid shifts that are already characterizing the post-COVID era will deepen as the impact of climate change accelerates. Therefore, **the resilience of the food systems will swiftly become a driver for profound transformations in the economies and the societies of Seychelles and Mauritius**. Transformation of the food systems can influence **national security, sustainable development, and human rights**, and contribute significantly to **wealth and employment creation**.

Source: FAO, [FAOSTAT](#), 2023 ; National Bureau of Statistics of Seychelles, [Multidimensional Poverty Index](#), 2019; National Bureau of Statistics, [Seychelles Food Insecurity Experience Scale Survey 2017](#), 2018.

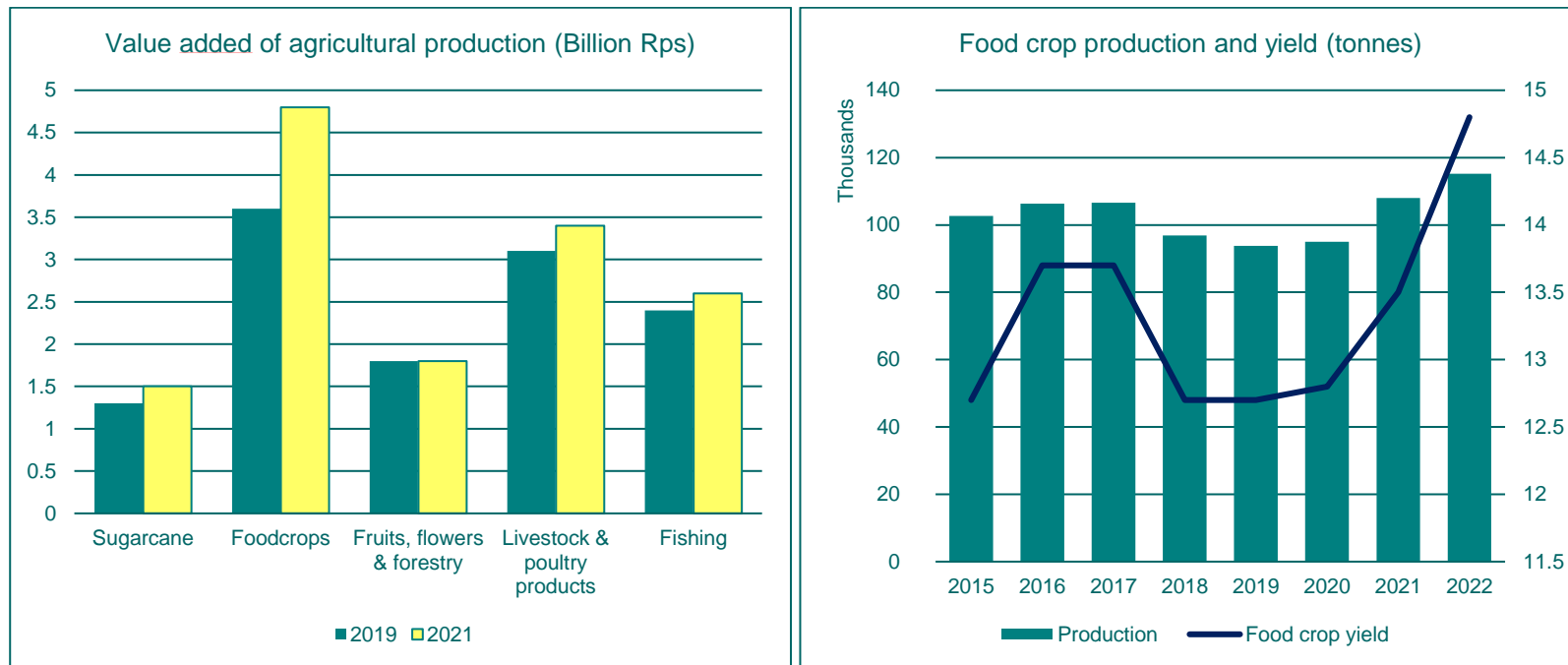
Glance #2: The Water-Energy-Food-Environment nexus condition SIDS vulnerability



1. Mauritius' and Seychelles' food systems **vulnerabilities go beyond food production**. They are better understood through the **Water-Food-Energy-Environment Nexus (WEFE)**, which integrates **water availability and demand over time**. It places water within a context of the accelerating effects of climate change making droughts and flashfloods more frequent and impactful. In Mauritius, a quarter of agricultural areas are irrigated, and agriculture accounts for 30% of water use at national level. In Seychelles, all farms are irrigated, mostly from rivers, with limited impact on water demand.
2. **Renewable energies (RE)** are also critical as one of the key **inputs into food production**, as imported energy is among the main **drivers of vulnerability** for the food systems and the economies in both countries (see the [4-4-2 edition on COP27 outcomes](#) for data and projections on RE).
3. Other critical, import-dependent inputs for food production are fertilizers. This highlights the role of **local production of fertilizers**, especially based on algae, and **waste management**, as **waste can be converted into agricultural inputs**, in the form of fertilizers and energy.
4. **Innovation** is key to address the WEFE nexus while adapting food systems to climate change. Climate smart technologies and closed-loops, auto-dosing systems use **95% less water, 85% less fertilizers, and 90% less land**. Such solutions are being piloted in different SIDS including Mauritius and Seychelles, and will have to be brought to scale through public and private investments and partnerships.

Source: Statistics Mauritius, [SDG Database 2010-2020, 2021](#) and Ministry of Agriculture, Climate Change and Environment of Seychelles, 2022

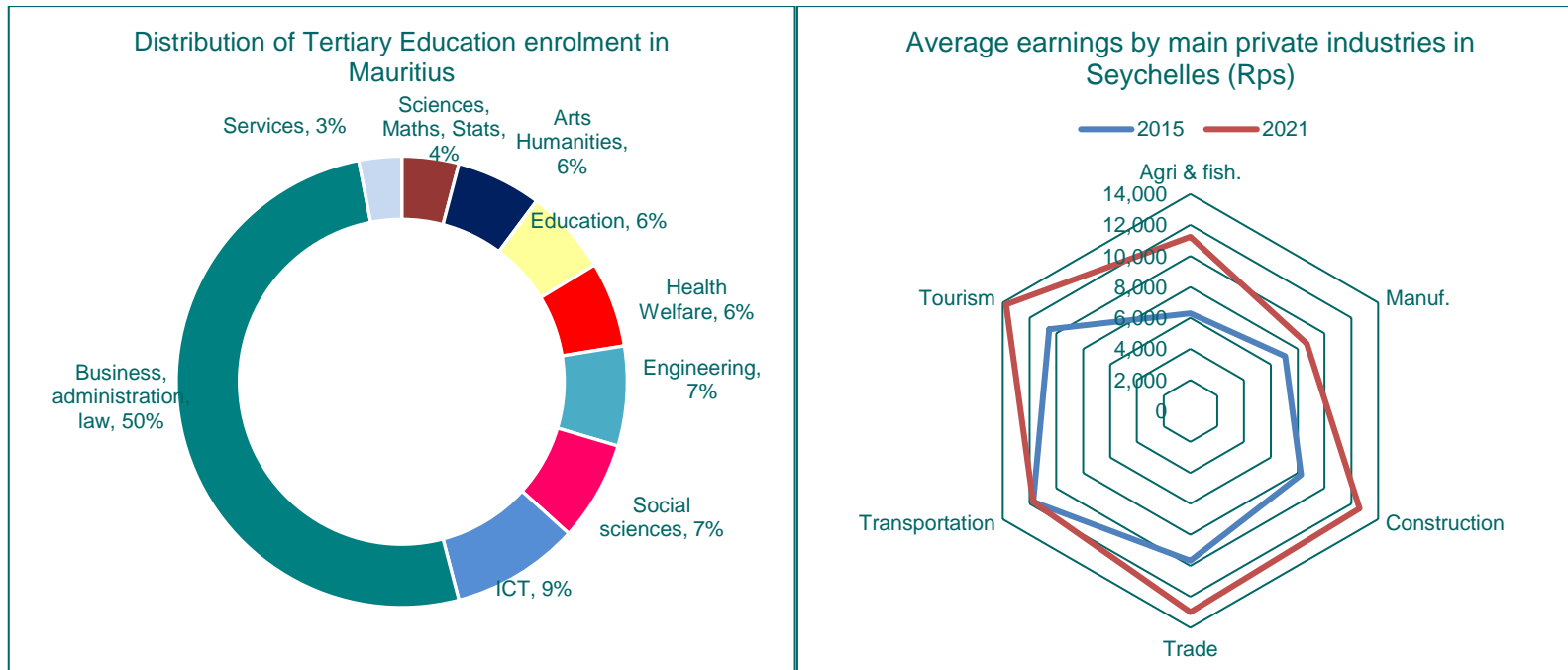
Glance #3: Wealth and job creation based on food systems transformation



1. The share of agriculture in domestic production and employment **consistently decreased in the last decade**. For domestic production from 4.1% in 2012 to 3.1% in 2020 and from 8.1% in 2012 to 4.6% in 2021 for employment. The **trend was reversed** by multiple crises, with effects felt in 2021 for the share in GDP (3.7%) and in 2022 for the share of employment (5.8% of total employment).
2. Moreover, the **yield and the value added of food crops improved dramatically** between 2019 and 2021-2022, while those of other agricultural products stagnated or declined, such as value added in fruits, flowers and forestry (0% change) or yield in sugar cane (-9.6%).
3. Although it is too early to draw conclusions on the **future of food systems in terms of wealth and job creation**, different push factors may exert **upward pressure on both**, such as the overarching national priority put on food security, or the global shift towards a post-global, post-neoliberal era where resilience is the main focus and supply chains are shortened and strengthened, while market forces are stirred by State intervention to **ramp up value chains and spur economic transformation** in key areas for national security.
4. For Mauritius and Seychelles, this will mean **higher public and private investment**, mostly domestic, into the food systems, probably **accelerating productivity gains** (food production under cover already jumped by 52.1% in 2022). If training and domestic labor supply follow, **food systems**, alongside **energy and waste systems**, may **become significant wealth and job providers** in the coming years.

Source: Statistics Mauritius, *Economic and Social Indicators, Agricultural and Fish production 2022 and Historical Series*, March 2023

Glance#4: Food systems and green jobs



1. To ensure the **emergence of wealth and jobs** in the Water-Energy-Food-Environment systems, the **role of the state will be critical to secure** a sound legal/regulatory, policy and fiscal framework, including in terms of taxes, incentives, subsidies, and budget allocations. The State should also ensure the stability of revenues and prices, foster the organization of value chains and the de-risking of investments, and improve the circularity and the inclusiveness of the food system and the economy in general.
2. Engaging the youth in the transformation of the food systems will involve upskilling in engineering and STEM studies, currently underpopulated, as well as digital skills including on AI. This should push up productivity and wages, the latter already improving faster in agriculture and fisheries than other industries (+78.5% vs 30.6% in tourism, 22.9% in construction or 1.2% in transport).
3. The State should also act as a catalyzer for partnerships, to leverage knowledge, technologies, and finance; leading a strategic dialogue, and foresight; ensuring cross-sector collaboration and policy coherence; and promoting innovation systems, including R&D.
4. Mobilizing concessional finance and crowding in private investments, both domestic and Foreign Direct Investment in food systems, by investing in infrastructure, equipment, and skills, and providing the enabling environment for food systems transformation will also be key.

Source: University of Mauritius, [World Economic Outlook Database](#), October 2022 and National Bureau of Statistics of Seychelles, [Employment and Earnings](#), 2022

Charles Boliko, FAO Representative in Madagascar, Comoros, Mauritius and Seychelles



Sen Narrainen, Senior Advisor, Ministry of Finance

Why has food security become a top priority in SIDS like Mauritius and Seychelles?

Sen Narrainen: I suppose that most SIDS are net importers of food. And like Mauritius, most of their geology and geography expose them to natural hazards, such as cyclones, droughts, floods, and rising sea levels which have intensified over the last two to three decades due to climate change. The COVID-19 pandemic and war in Ukraine are other eloquent reminders of the vulnerability of SIDS to major food insecurity.

Mauritius depends almost entirely on the rest of the world for its food supplies, considering that most of the food produced locally depend on inputs from abroad, including seeds, fertilizers, pesticides, technology, equipment and also energy. Very soon we may also have to import human resources for the agricultural sector, because of the growing dearth of workers in the economy, including the agricultural sector.

I look at the worst-case scenario of a total disruption in these supplies from abroad, which can be disastrous, especially for countries that are net food importers. The likelihood of such an event can never be ruled out. If that worst-case scenario becomes reality, Mauritius will be almost, if not completely, without food.

The challenge therefore is to be prepared - to shape a new food eco-system that will buffer the Mauritian society from such an external shock. This is an existential concern and I believe that most SIDS must be facing a similar food security challenge.

As there is no one-size-fits-all response to such a challenge, each SID will have to work out its response. Mauritius is not the only SID that's waking up to that existential issue. Singapore is already doing it with its 30 by 30 strategy. **The approach to food security must be based on two fundamental principles. First, that food should not be seen as just a commodity. And second that the food security objectives cannot be left to market forces.**

I believe it is important for the SIDS to come together on the food security issue to convince international institutions to support them. So far, the international institutions such as the FAO, the United Nations, and others have done an excellent job to raise awareness on the food security issue. But I think their efforts must now be more concentrated on the solutions. It will help if the pursuit of food autonomy objectives by SIDS gets greater support. By food autonomy I mean production that does not rely on any imported inputs, from seeds to fertilizers, to pesticides and to energy. **I am also thinking of a Food Security Credit similar to the Carbon Credit that can be made available for food production projects, especially in the food autonomy segment.** This will take quite a bit of thinking and resource mobilisation but will be very helpful.



Charles Boliko: Due to land and natural resources scarcity, Mauritius and Seychelles import more than seventy-five percent (Joint SGD Fund, 2022; ITA, 2023) of their food needs to ensure food security for their populations and tourists. In addition, most of the imported food products come from geographically remote areas such as Latin America, Europe or Southeast Asian countries. It is worth noting that much of the imported food is highly processed, leading to a worrying increase in obesity and overweight as well as non-communicable diseases that are costly to the economies of these countries.

Against this backdrop, the travel restrictions imposed during the COVID-19 pandemic highlighted the vulnerabilities of these very attractive Small Island Developing States, whose economies have traditionally been based on tourism. This situation was exacerbated by the war in Ukraine, which led to serious food availability challenges, rising food prices, and increased food and nutrition insecurity.

Mauritius and Seychelles are Member States of the Indian Ocean Commission (IOC), a sub-region with a high potential for agricultural and food production which remains largely untapped as intra-regional agricultural and food trade accounts for only four percent of their imports. It is therefore time for these countries to realize that, to ensure the food and nutritional security of their populations, it is necessary to revisit food systems models that rely on large quantities of imported food from distant countries, most of which is highly processed and has a high carbon footprint. Serious consideration needs to be given to implementing proximity models that are more inclusive, more resilient to climatic, health and economic shocks, more respectful of the environment, and therefore more sustainable. Mauritius and Seychelles can make a substantial contribution to this ambition given their high food safety standards, which could also have an impact on other IOC countries which would be pulled up.

What are the opportunities linked to the transformation of the food systems moving forward, especially for the youth ?

Sen Narrainen: First of all, let us think about what kind of transformation of the food systems would be most desirable. So far, for Mauritius, it looks like the transformation will have to be based on three main pillars:

- a food autonomy segment that can produce locally some 30 percent of the country's food and nutrition requirement. It may take around ten years to meet this challenge ;
- more diversified sources of food and food products imports ;
- and, a new food consumption culture that is centered on locally produced food that are almost perfect substitutes for major imported foods in terms of nutrition value. These will include the production and consumption of bread fruits, jack fruits, cassava, sweet potatoes, mooringa, papayas, and a few others on a larger scale.

Such an endeavor will be fraught with opportunities for our youth.

It is important that when we rethink our food system, that we give a place of high prominence to the need to make it more attractive to young people. The new food system must take into account the reality that youth decisions to pursue a career in agriculture are determined by a number of factors, the most dominant one being the nature of the agri-food system, institutions, and laws and regulations. Young people tend to shun traditional agriculture and favour modern agriculture practices and high value-added products. There are structural barriers that must be removed to foster greater youth participation in the food system. These include access to land, finance and skills. In Mauritius, there is also a cultural barrier – parents prefer their children to prepare for work in other sectors, especially for manual labour.



Charles Boliko: The ways in which food is produced, processed, distributed, consumed, and wasted are widely recognized as unsustainable, whether from an economic, social, or ecological perspective. Young people, who represent 35 percent of the Mauritian population (Source: Statistics Mauritius, 2021) and 33.58 percent of the Seychelles population (World Bank, 2021), and who have enormous capacity for innovation and production, are not only consumers of food. They are also potential innovators and entrepreneurs who can contribute to the agri-food systems transition to achieve food and nutrition security for all, poverty eradication and environmental sustainability.

In Mauritius and Seychelles, the potential for job development to contribute to more sustainable blue and green economies is enormous; with the appropriate technologies and learning platforms, young people can unleash their creative power to better integrate digitalization, automation, and artificial intelligence into agriculture and food systems.

In terms of transforming food systems, one specific area where new solutions need to be considered is food loss and waste (FLW), particularly in high-income countries like Mauritius and the Seychelles. While much food is imported at great expense, much is also lost during production, transformation and transport, or wasted in restaurants and at the household level. Sustainability cannot be achieved while such food losses continue to occur, especially since FLW has a significant impact on global warming. Having collaborated with a number of universities in Japan, I have seen how young people can contribute to improving food systems, including reducing FLW, through data collection and analysis, and developing social or business solutions that are in line with society's needs. FAO is ready to address this issue with the authorities and educational institutions in both countries.

