



Food and Agriculture  
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# Agrifood systems transformation through a climate change lens



A case study on policy dialogue from Myanmar



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Food and Agriculture Organization of the United Nations

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## THIS PAPER DISCUSSES HOW:

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- adapting food production systems to respond to consumer demand for healthier diets is a major opportunity to mitigate and adapt to climate change in agro-rural economies;
- existing technological solutions for climate change mitigation and adaptation need to create more balance between the production and consumption tiers of agrifood systems;
- policy dialogue includes managing trade-offs between different sector and stakeholder interests and exploring synergies rather than focusing on exclusivity and competition. This requires a new framework that goes beyond sector-specific policy development;
- political economy issues compound the outcome of evidence-based policy dialogue results. For example, political motivation for exporting protein-rich foods may lead to negative impacts on local food sovereignty and food production for local markets;
- the use of concrete policy dialogue tools (food-based dietary guidelines, land use planning and discussions on a protein production strategy) can facilitate a more interactive policy process;
- specific rural transformation efforts (e.g., adopting territorial approaches for conceiving and implementing policies; targeting specific producer and consumer groups; strengthening resource ownership; and empowering women and young people) are an integral part of agrifood systems transformation;
- following the events of 1 February 2021 in Myanmar, policy discussions have been suspended.

*The FIRST Programme (a tripartite partnership between FAO, the European Union and a number of governments around the world), operated in Myanmar from 2016 until the political turmoil of February 2021.*

*In Myanmar, FIRST was attached to the Ministry of Agriculture, where it facilitated technical inputs and intra- and inter-ministerial and sectoral coordination and dialogue, while strengthening functional capacities. The main aim of the programme was to improve the enabling environment for work on nutrition, agriculture and land reform; it also aimed to strengthen links with climate change, social issues, and the humanitarian-development-peace nexus.*

**This report reflects on the work intended for 2022 and beyond based on extensive analysis and experience during the height of policy reform in Myanmar.**

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## 1. SETTING THE SCENE: AGRIFOOD SYSTEMS ARE IMPACTED BY AND HAVE AN IMPACT ON CLIMATE CHANGE

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### 1.1. Extreme weather events

Myanmar has been identified as one of the world's most vulnerable countries to the effects of climate change, ranking second out of 187 countries from 2000 to 2019 (Eckstein *et al.*, 2021). Other climate change risk, vulnerability, adaptation capacity and readiness indices (UNDP, 2021; EC *et al.*, 2021) confirm Myanmar as one of the most vulnerable countries. Climate change results in more frequent extreme weather events such as floods, hurricanes and landslides, or a combination of these. In Myanmar, flooding is the most common type of climate-related disaster, and it has the most widespread impact on populations. Generally, floods take place during the monsoon season, often in coastal areas – such as the Delta, Rakhine, Tanintharyi, and coastal Mon State – but they are also prominent along all major inland floodplains. Such events destroy the food production base (land, crops, livestock, productive and social infrastructure), the food transportation network and food stocks.

The cyclone *Nargis* in May 2008 was the most devastating natural disaster in Myanmar's recent history. The event had a major impact on food security and consumption patterns, and disproportionately affected the poor. A post-Nargis joint assessment of the Government of the Union of Myanmar, the United Nations and the Association of South East Asian Nations (ASEAN) concluded that 55 percent of households had one day of food stocks or less (PONJA, 2008). In the aftermath of the cyclone, the population also shifted to less varied diets: consumption of fish and eggs – the main sources of protein and fat – dropped by 25 percent; consumption of vegetables and fruits – among the main sources of vitamins and minerals – decreased by 9 percent. Food security and the risk of acute malnourishment were therefore of high concern.

In 2015, severe flooding and landslides led to similar outcomes. That year, the estimated total value of losses and damages exceeded 1.51 billion United States dollars (USD) – the equivalent to 3.1 percent of the annual GDP in 2014/15 (Government of Myanmar, 2015a). Agriculture, livestock and fisheries were the most affected sectors (suffering 37 percent of all economic impacts), followed by housing (28 percent) and industry (25 percent). These impacts had a major effect on exports, slightly reducing overall economic growth, but at the micro-levels the consequences were worse. Local food prices surged, with up to 25 percent increases in the price of rice, straining household economies and local markets (MacGregor, 2015).

### 1.2. Long-term climate change effects

Long-term climate change effects are already having an impact on crop and livestock production. Major changes for Myanmar include the following:

- Rising sea levels increasingly expose delta paddy fields to high water levels for longer periods, making a significant amount of land unsuitable for some of the most important rice varieties. Sea level rise projections also result in loss of mangroves and may rapidly affect aquaculture infrastructure.
- Growing salt intrusion in rivers and water reservoirs, combined with saltier groundwater, result in a considerable reduction in irrigation capacity. Rice production is increasingly limited to the monsoon period. Summer rice cannot be grown in lower delta areas because of the high salinity in river waters during the dry season. This impact on rice production demonstrates the salty taste of climate change.

- A shortened monsoon rain season occurs in rice-producing areas with late onset and early withdrawal of monsoon rains. The International Water Management Institute (IWMI, 2015) reports that irrigation is increasingly being used to secure the monsoon crop rather than for a second cropping season in drier areas.
- Higher extreme temperatures in drier areas cause major crop and animal stress, especially in the Dry Zone. In fact, crop production in the Dry Zone becomes farming on burning fields.
- Less predictable rainfall events with higher intensities lead to high crop failure risk for dryland oilseed and pulses production. There is evidence of major and more frequent dryland crop failure, with post-monsoon sesame being indicated as a gambling crop. The introduction of crop insurance mechanisms seems to be gaining more importance for adapting food production systems to climatic dynamics.
- Higher average temperatures in the uplands may have a positive effect on crop production. Some high-altitude areas are becoming more suitable for certain crops such as corn for animal feed (and export), which is rapidly replacing local human food production. In combination with regional market demand for agricultural commodities, the effects of climate change are starting to have a major impact on agrifood systems. In Shan State, for example, plans to place over 400 000 hectares (ha) under corn production for the animal feed industry (under contract farming arrangements) are rapidly changing the smallholder landscape, inducing more smallholder vulnerability.

Myanmar's answers to these changes have mainly focused on technological adaptation measures, especially those that target plant physiology. This has resulted, for example, in research and breeding of new rice varieties that are more resilient to salt, waterlogging and drought and that are adapted to shorter growing periods.

Policy reflections on possible changes in land use patterns, accompanied by an enabling legal framework to facilitate land use conversions have caught less attention. As an example, the 2015 Climate Smart Agriculture Strategy (Government of Myanmar, 2015b) focuses almost exclusively on rice production adaptation (i.e., resilient crop breeding).

### 1.3. Agrifood systems as a driver for climate change

Agrifood systems are a major driver of climate change in Myanmar. Between 83 and 90 percent of the total Myanmar greenhouse gas (GhG) emissions are attributable to the agriculture, forestry and other land use (AFOLU) sector (WRI, 2021). This is much higher than the estimated average of one quarter of AFOLU contribution to global emissions (Smith *et al.*, 2014).

Some fifty percent of the AFOLU contribution to GHG emissions in Myanmar is attributable to forest and other land uses, three-quarters of which are due to the conversion of forest land for agriculture. Emissions directly originating from agricultural production account for another 32-36 percent. Two-thirds of agricultural-based emissions come from rice production together with enteric fermentation from ruminant livestock.

In sum, agrifood production in Myanmar contributes significantly more to GhG emissions than the globally estimated one-third (Tubiello *et al.*, 2021). This is a characteristic of countries whose rural economies rely heavily on the production of agriculture commodities and food. In fact, in countries where the FIRST Programme is currently present, AFOLU contributions average some 50 percent, and focusing on agrifood systems to address climate change targets is fully justified.

The upper tier of the agrifood system (the production of food and other agricultural commodities and land use change to make agricultural land available), or production up to the farmgate,

accounts for some three-quarters of total GhG emissions. The contribution of the middle tier of the food system (transport, storage, processing and packaging) to GhG emissions is far less than the upper tier and the lower tier (consumption).

The cutting of fuelwood and production of charcoal, almost exclusively for cooking purposes, is identified as a major driver of forest degradation. Therefore, fuelwood use significantly adds to the food system's contribution to GhG emissions.

#### **1.4. The climate change-agrifood systems nexus is context-specific**

The effects of climate change on food production, and by extension on agrifood systems, are strongly context-specific and well correlated with Myanmar's agroecological diversity. The country includes some of the wettest and driest parts of Southeast Asia: the Delta and coastal lowlands receive 5 000 mm of annual rainfall while the central Dry Zone gets around 700 mm. Climatic conditions in the northern mountains at the foot of the Himalayas are very distinct from those in the peripheral upland hinterlands of Chin and Shan States.

There are also major socio-economic differences in each of these rural areas, particularly between poor higher uplands and better-off central plains. These include differences in economic growth and poverty rates, dietary diversity, nutrition and food security status, and access to services and public goods.

The diverse agroclimatic conditions roughly coincide with major socio-political fault lines and ethnic identities, with social and religious customs, and with specific food and consumption patterns. Peripheral communities often remain outside the reach of the central government, but they have established border economies with neighbouring countries and have access to alternative, often informal markets and agrifood supply streams. This diversity illustrates the complexity of assessing agrifood systems in Myanmar.

Addressing agrifood transformation through a climate change lens requires a conflict-sensitive approach. Social conflict between the government and ethnic armed organizations (EAOs) persists in several territories, often in border areas. The transformation processes cannot be confined to specific areas nor single out specific social groups.

## **2. OPPORTUNITIES TO LEVERAGE A CLIMATE CHANGE-AGRIFOOD SYSTEMS POLICY PROCESS**

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### **2.1. Natural disaster risk management**

The occurrence of extreme life-threatening events, such as Nargis, has led to a shift from crisis management to risk management (Myint-U, 2019). The government issued a standing order for disaster management and for the formulation of the Myanmar Action Plan on Disaster Risk Reduction to address extreme natural disaster events arising from climate change.

A solid disaster risk reduction (DRR) system is now in place, including a Disaster Management Law (2013) that sets the scene for risk management. A number of DRR tools have been put into place: i) a National Natural Disaster Management Committee that deals with institutional coordination; ii) early warning systems; iii) land use planning to identify areas prone to disasters; iv) the Natural Disaster Management Fund.

However, Myanmar's National Adaptation Programme of Action for climate change (NAPA) translates risk management into a mainly technological response to build climate resilience and



reduce the vulnerabilities of rural communities. It focuses on crop management and crop breeding – especially of more resilient rice cultivars. In addition, there is a focus on early warning systems, reforestation and forest restoration, especially for degraded mangroves.

Emergency responses to natural disasters, such as Nargis, can contribute to structural political, social and economic policy changes. The cyclone created renewed ways of cooperation between the Government, civil society organizations and multilateral as well as bilateral financial partners. Over the following years, Myanmar established relations with the international community and strengthened its efforts on climate change.

The response to the crises planted seeds that blossomed with the political and economic transition from 2011 onwards, giving rise to several changes:

- New and strengthened civil society organizations – such as the Food Security Working Group (FSWG) – focused on food security, climate change-related disaster relief, rural development and community resilience building.
- A women's protection, gender equality and social inclusion agenda emerged that has informed government policies such as the National Strategic Plan for the Advancement of Women (2013-2022).
- The interest of international partners increased. The Livelihoods and Food Security Fund (LIFT) became the single most important multidonor trust fund to support civil society organizations and non-governmental organizations (NGOs) in emergency support efforts. LIFT has since transitioned to development investment with more recent efforts to engage with the government in project and policy support.
- Policy-making called for increased participation by civil society organizations and a stronger culture of inclusivity. For example, the National Land Use Policy set a benchmark for inclusive and participatory policymaking, embracing the principles contained in the Voluntary Guidelines on the Responsible Governance of Tenure.<sup>1</sup>
- International institutions (e.g., Michigan State University, the International Food Policy Research Institute [IFPRI]) conducted research in support of agricultural policy formulation that supports climate change adaptation and mitigation.

It still needs to be confirmed whether the COVID-19 pandemic may have a similar impact to that of Nargis on policy and strategy development. The Myanmar Economic Resilience and Reform Plan (MERRP), drafted as the government response to the pandemic, is weak on climate change, agrifood systems, nutrition and the need to have strong governance to support agricultural transformation. The major focus of MERRP is on private investment, development of the agrifood industry and promoting larger-scale producers. The role of smallholders in the agrifood system seems to be relegated to that of contract farmers.

All of the above, together with the events of 1 February 2021, led to the suspension of policy discussions.

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<sup>1</sup> The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security promote secure tenure rights and equitable access to land, fisheries and forests as a means of eradicating hunger and poverty, supporting sustainable development and enhancing the environment. They were officially endorsed by the Committee on World Food Security on 11 May 2012.

## 2.2. Consumer demand for agrifood systems transformation

Consumer demand, and that of other stakeholders, drives the need to transform agrifood systems and will determine how such a transformation will eventually impact climate change. The demand for food has several dimensions, driven by factors such as population growth, changing dietary patterns, human and animal health issues, trade and globalization, among others.

The following are some of the key elements influencing demand in Myanmar.

### Demand for more food

In 2015, only 38 percent of the population lived in households that consumed the recommended quantities of protein-rich foods. Only 16 percent consumed the recommended intake of vegetables, 9 percent of fruits, and less than one percent consumed the recommended quantity of dairy products (Mahrt *et al.*, 2019). The Green Revolution succeeded in increasing the production of staple foods and making them accessible to most people. However, producing other healthy food types to feed urban and rural populations remains a major challenge.

FAO estimates that the global demand for agricultural products will grow by 60 percent by 2030. Over 85 percent of the additional demand will come from developing countries, where most population growth will take place. Myanmar still lags behind other ASEAN member countries to close the yield gap on major food commodities and hence can explore this potential (De Wit and Noack, 2019). Filling this yield gap can considerably reduce an increase in arable land area which would be required to meet 2030 food needs under current productivity levels.

Dietary choices determine the land expansion needed to feed future generations. Clark and Tilman (2017) link dietary choices to environmental and climate change impacts, as well as to the amount of cropland required to produce the ingredients of the chosen diets.

Current dietary trends would result in 65 percent expansion of croplands by 2050. Alternative dietary pathways – such as more plant-based diets or diets focused on less animal protein or more consumption of fish – would limit such expansion to some 12.5 percent. Applied to Myanmar, these estimates would mean a cropland expansion of respectively 8.1 million hectares given current trends, and 1.56 million hectares for alternative diets.

Land expansion for food production provokes institutional competition between the Ministry of Agriculture, Livestock and Irrigation (MoALI) and the Ministry of Natural Resources and Environmental Conservation (MoNREC). Trade-offs are needed to respond to consumer demand for food on the one hand and territorial claims for forest cover conservation and (re)forestation on the other.

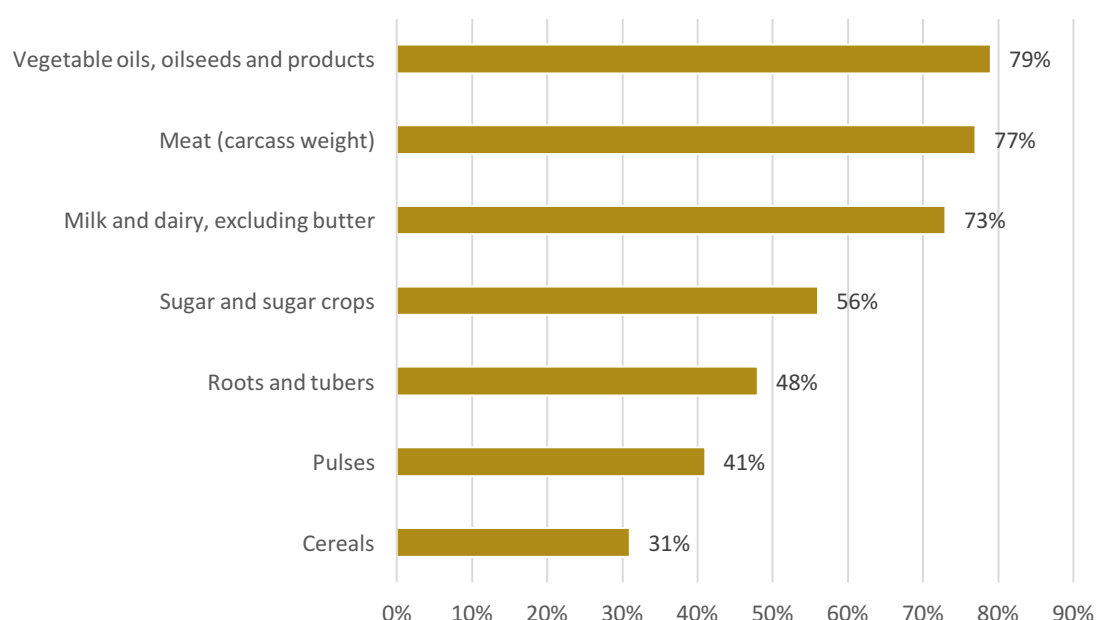
Intensified food production by family farms and the smallholder sector seems to be a better strategy to minimize excessive land expansion and its possible negative impact on local communities, as compared to the horizontal expansion of agribusinesses. There is ample global evidence that family farms and smallholders can be very efficient in producing food, resulting in more socio-economic benefits for rural populations (see for example FAO, 2013, building on work from Pretty and in support of earlier work by Lipton). Myanmar's earlier experiences with food production by large scale agro-commercial plantations failed, with major negative impacts on local communities, including the alienation of customarily-managed land. The support for the family sector is enshrined in the Agricultural Development Strategy (ADS) but is arguably challenged by the MERRP response plan to COVID-19. Indeed, the MERRP expresses an interest to promote large-scale agribusiness production of food and other agricultural commodities, albeit with a focus on exports.

## Demand for healthier and more nutritious food

Diets are rapidly shifting in Myanmar, with a decrease in rice consumption and greater demand for protein-rich food, especially meat and fish. This shift reflects the changing economic climate and the opening of the country to foreign goods and advertising. This pattern follows the global trends of increased consumption of processed foods, oil, and snacks in countries undergoing economic and social transitions, the so-called ‘nutrition transition’ (Popkin *et al.*, 2012).

Between 1989 and 2016, expenditures in rice dropped from 33 percent of total household expenditures to 15 percent in rural areas and from 22 percent to 11 percent in urban areas (Myint *et al.*, 2016). Following the globally-recognized stages of the nutrition transition, it is likely that diets will ultimately transition away from high carbohydrate, high sugar, high fat diets in favour of more nutrient-rich foods as rates of diabetes and hypertension start to undermine people’s health (Popkin *et al.*, 2012). Projected trends in food consumption can be seen in Figure 1.

Figure 1. Estimated increases in global demand (2015–2050)



Source: World Bank, 2017

The response to dietary changes will have a major impact on GhG emissions and climate change. Direct GhG emissions resulting from anticipated global trends in dietary change would increase global emissions from food production by 80 percent by 2050. Nevertheless, there is potential for having no net increase in food production emissions if global diets move towards alternative healthier patterns (Clark and Tilman, 2017).

The impact of consumer demand for healthier foods on climate change in Myanmar can be illustrated by looking at the demand for protein. There is high consumer demand for affordable protein-rich foods: chicken consumption increased by 72 percent and chicken eggs by 40 percent between 2010 and 2015 (Belton *et al.*, 2020). Food producers respond to consumer demands, even in a policy environment focused on promoting rice production at the cost of agricultural diversification. The production of animal-based protein foods, such as meat, milk and eggs, increased 446 percent between 1990 and 2011. Table 1 summarizes the climate and

environmental footprint for the production of different protein sources that are currently in demand in Myanmar.

The climate and environmental impacts of protein sources are highly variable. Land use footprints (i.e., the land required to produce a unit of food) and GhG emissions from beef and milk production are much higher than those of other food sources, such as non-ruminant meat (pork and chicken). From a climate change perspective, this might suggest a desirable policy shift from meat protein to vegetarian protein with a much smaller carbon footprint. However, against a background of a major high quality protein shortage, this is not likely to become a priority.

**Table 1. Environmental and climate impacts of producing different sources of protein**

	Land use footprint (m <sup>2</sup> required)		GhG emissions (kg of CO <sub>2</sub> equivalent)		Water needs (litres required)	
	100 g protein	1 000 kcal	100 g protein	1 000 kcal	100 g protein	1 000 kcal
Beef	164.0	119.0	50.0	36.0	728	532
Milk	27.0	15.0	9.5	5.3	1 904	1 047
Pig meat	10.7	7.3	7.6	5.2	1 110	751
Farmed fish	3.7	4.7	6.0	7.6	1 619	2 062
Poultry	7.1	6.6	5.7	5.3	381	357
Eggs	5.7	4.4	4.2	3.2	521	401
Rice	4.6	0.8	-	1.2	-	610
Pulses	7.3	-	0.8	0.5	204	-
Soybean	2.2	1.3	1.2	2.0	93	55

**Source:** compiled from Ritchie and Roser, 2020.

Social, behavioural, trade and political economy issues interact with climate change and environmental motivations for the consumption and production of different protein sources. Beans and pulses, for example, are an affordable protein source with a low climatic impact, but their consumption remains low, and they are not really part of daily diets. The preparation of bean-based meals requires excessive fuelwood extraction and labour from women. Thus, Myanmar produces beans and pulses mainly for export.

Commercial large sized fish farms (50-1 000 acres and more) well-adapted to climate change effects in the Delta area, but they have a major negative impact on the local population. The privatization of commonly managed fishing grounds and waterways, denied access to water resources for irrigation by smallholders, land confiscation resulting in landless farmers, all have contributed to increase the vulnerability of local communities. Large scale aquaculture expansion results in disrupted floodplain connectivity, fish habitat degradation, poor natural fish stockage, and hence causes environmental degradation of the floodplain (Conallin *et al.*, 2018). Large fish farms are exclusively export-oriented and do not provide local foods.

Family-run integrated fish-chicken farms, for their part, are a major source of protein for local markets and an economically efficient practice for family farms. They produce fish protein at a low cost and help farmers to reduce the risks of poultry production. In addition these farms have several environmental advantages including integrated manure management without need for manure disposal, re-use of excess nutrients from livestock production and maximized land use productivity (Belton *et al.*, 2020). This business model is however discouraged by export-driven operators, mainly on the basis of sanitary and food safety issues that could jeopardize the export of large-farm raised fish. The Myanmar Fish Federation, representing large scale aquaculture

operators requested the Government in 2019 to issue a directive and/or law to restrict integrated poultry and fish farming. Researchers and policy facilitators suggest however a policy that should seek to regulate this economically and environmentally efficient practice rather than to ban it (Belton *et al.*, 2020).

Meanwhile, livestock production is booming because of growing exports to China, with Myanmar society bearing the burden of externalizing<sup>2</sup> GhG emissions costs and experiencing increases in meat prices in local markets.

### 2.3. Commitment to international agreements

Myanmar's international commitment to reducing national GhG emissions and adapting to the impacts of climate change is embodied in its endorsement of the Paris Agreement in 2017, the intended Nationally Determined Contributions (iNDCs) submitted in 2015 and the new Nationally Determined Contributions (NDCs), which were drafted in 2020. The iNDCs focused exclusively on mitigation efforts in the forest and energy sectors, leaving agrifood systems aside.

The underlying premise of the NDCs is that interventions should not threaten food production (Article 2.1 of the Paris Agreement) but Myanmar's forest mitigation targets risk doing just that. The targets increase legally-defined forest land ('reserved and public protected forests') to 30 percent and protected areas to 10 percent of the total country area. Meeting these targets would require putting an additional six million hectares under reserved forestland and protected area regimes. These additional areas would be mainly classified as vacant fallow and virgin land (VFV land), most of which is claimed and/or informally occupied by rural communities and used for food production and forest use. Land rights activists have highlighted the risks involved in this legal forest land expansion and its likely impact on forest-based agrifood systems (see for example K. Woods, 2015a). This target of six million hectares is significantly larger than the two million hectares of VFV land that were allocated between 1992–2011 mainly to agribusiness. These land allocations resulted in major protests from civil society organizations and several development partners.

Recently efforts emerged to convert forested VFV land into peoples centred conservation efforts under arrangements such as "community forestry" and "local community protected areas" (the Myanmar version of Indigenous and Community Conserved Areas). Such initiatives would certainly contribute to marry climate change mitigation with local community livelihood strategies, including forest based food production. Vested interests and institutional competition between public institutions managing forest land (MONREC) and VFV land (the VFV central committee and MoALI) are however major obstacles to implement such a strategy.

The draft NDCs also fail to capture the possible contribution of agrifood systems transformation to climate change mitigation, for example, by affecting food demand, dietary change, and consumption patterns. The draft adds mitigation measures for the agricultural sector such as "promoting tree planting on 275 000 hectares of agricultural land by 2030." It builds on the Davos 2020 call to grow, restore and conserve one trillion trees mostly in tropical areas, and the fascination with forest-based carbon offsets as a strategy against global warming (WE Forum meeting, 2020). However, the NDC proposal acknowledges the possible negative impacts of this forestation target: "The economic and social circumstances in Myanmar as well as its cultural and ethnic diversity make climate change mitigation (including REDD+) challenging. All proposed

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<sup>2</sup> The environmental costs of livestock and meat production are in fact off-loaded to Myanmar society by the end consumer without any form of compensation.

policies and measures need to be thoroughly screened for potential negative impacts on people's livelihoods" (Government of Myanmar, 2020).

The NDCs reflect a disconnect between the agrifood systems universe and the forest-based carbon sink improvement universe, and this is mainly due to institutional fault lines:

- The institutional responsibility for climate change is embedded in the Ministry of Natural Resources and Environmental Conservation (MoNREC), which has led to a strong forestry focus. The Environmental Conservation Department (ECD) within the MoNREC is Myanmar's focal agency for the United Nations Framework Convention on Climate Change (UNFCCC). The ECD has created a climate change division, which does not seem to have the necessary convening power to include a wider array of policy-makers.
- Coordination between the UNFCCC country secretariat and the institutions involved in agrifood systems exists, but it is rather weak. Involving the Department of Agriculture (DoA), which is responsible for crop production, as the main MoALI partner directs action towards planting trees on cropland, its main area of technical jurisdiction.
- Agroforestry is not institutionalized in MoNREC nor in MoALI. This leaves a void in one of the most promising interventions to address agrifood systems in a forest cover environment.
- External NDC drafting support has been delivered by forest and conservation institutions (the Global Green Growth Institute and World Wildlife Fund, for example). The agrifood industry and consumers are not participating.

Commitment to develop a National Adaptation Plan (NAP) is another opportunity for Myanmar to mainstream climate change adaptation into its national development planning.<sup>3</sup> The process to develop a NAP is still ongoing and relies significantly on already existing plans. NAP processes are designed to be multi-sectoral, involving Ministries of Environment as well as Planning and Finance, and other key ministries. In Myanmar, institutional arrangements for NAP development resemble those of the NDC process, and hence do not necessarily create an enabling environment to bridge different institutional universes.

### 3. POLICIES AND STRATEGIES FOR POLICY DIALOGUE

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Like many other countries, Myanmar does not offer a perfect example of a harmonious and preplanned policy process that connects climate change with the different tiers of agrifood systems and their ongoing transformation.

Agrifood systems transformation and climate change adaptation/mitigation processes are managed by separate institutional universes, supported by their own financial flows and development partner support. None of these policies satisfactorily addresses the overlap in their interests.

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<sup>3</sup> The National Adaptation Plans (NAP) were established the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 to enhance country-led planning and preparedness for climate change adaptation (CCA) in the medium and long-term. The objectives of the NAP are to reduce vulnerability to the impacts of climate change and to integrate adaptation into all levels of development planning.

However, simultaneous work on multiple processes has ensured a certain degree of coherence in developing a policy platform for achieving FAO's Four Betters: Better Production, Better Nutrition, a Better Environment and ultimately a Better Life.<sup>4</sup>

The alignment of different policy processes aims for joint indicator frameworks, technical linkages and the involvement of many partners. Effective policy dialogue on identifying win-wins and trade-offs between Better Production and Better Nutrition has resulted in a strong interface between two of Myanmar's national strategies: the **Agricultural Development Strategy and its Investment Plan (ADS-IP)** and the **Multisectoral Plan for National Action on Nutrition (MS-NPAN)**, including a harmonized indicator framework.

The next challenge will be to create links with the Better Environment and Better Life dimensions. The European Union delegation in Myanmar, given its shift in focus to climate change and existing budget support for agricultural nutrition, is uniquely positioned to make this link, with the 2021-2027 Multi-annual Indicative Plan (MIP) as a programme tool. At the same time, FAO, as a technical partner of MoNREC and MoALI on both climate change and agriculture/nutrition issues, can link these processes internally and take up its task as an intersectoral policy facilitator.

### 3.1. Better food production

The ADS-IP (2018-2022) addresses mainly food production (from field to farmgate) and, to a lesser extent, the middle processing and transformation tiers. As an integral part of the Myanmar Sustainable Development Plan (MSDP), it has a longer-term horizon, until 2030, and is therefore Myanmar's reference for meeting the targets of a number of Sustainable Development Goals (SDGs).

Although it is not especially strong on climate change and nutrition, the ADS-IP includes some relevant adaptation and resilience building interventions and principles. The most interesting are:

- setting up and strengthening early warning systems;
- keeping food reserves, feed and fodder stocks and seed stocks;
- introducing crop insurance systems;
- developing and using climate smart agricultural and livestock practices; and
- introducing conservation farming.

Relevant ADS-IP contributions to addressing the agrifood systems-climate change nexus in Myanmar include the following:

- The focus on agricultural diversification is a major contribution to adapt and mitigate the impact of climate change on the agrifood system and improve resilience to ecological as well as market shocks. At the same time, agricultural diversification generates more income for food producers, and increases the local availability and affordability of diversified food.

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<sup>4</sup> The Four Betters capture FAO Director General QU Dongyu's strategic approach for a comprehensive transformation of the global agrifood system that can significantly contribute to attaining worldwide targets including ending hunger by 2030. They include:

**Better production:** ensuring efficient sustainable consumption and production patterns, inclusive food and agriculture supply chains at local, regional, and global levels.

**Better nutrition:** ending hunger, promoting nutritious foods, and increasing access to healthy diets, which can be buoyed by tackling food loss and waste and making sure that markets and trade are accessible and open.

**Better environment:** protecting, restoring, and promoting sustainable use of terrestrial and marine ecosystems, promoting a good environment for farming systems, and combating climate change through reduction, reutilization, recycling, and residual management approaches.

**Better life:** reducing inequalities - between urban and rural areas, rich and poor, and men and women - and promoting inclusive economic growth.



Diversification de-risks livelihoods and contributes to repurposing food production in Myanmar. The best defence for unpredictability is diversification.

- A territorial, landscape-based approach has been promoted for community-based disaster risk management to respond to extreme, structural and non-structural climate events. The use of a territorial approach could be extended from disaster risk management to support agrifood systems transformation. The FIRST team acknowledges the importance of such an approach in the social transformation process (see Section 5).
- The ADS-IP focuses on the smallholder/family sector, rather than on large-scale agribusinesses. The latter caused biodiversity and environmental degradation with massive negative impacts on forest-based carbon reserves. Hence support to the smallholder is a climate change sensitive policy. It is however critical to link family farms more closely to markets, with contract farming as an option.
- The ADSIP aims to increase productivity, rather than to horizontally expand food production. The strategy reduces the land area footprint for food production but improves returns on labour, increases smallholder income from food production and makes healthy diets more accessible.

### 3.2. Better nutrition

The MS-NPAN deals with the consumer dimension of agrifood systems (Better Nutrition). The plan was developed by four ministries (Ministry of Health and Sports (MoHS), MoALI, Ministry of Social Welfare Relief and Resettlement and the Ministry of Education) and it illustrates the advantages of using an intersectoral approach. Each ministry contributed its own sectoral vision, with MoALI taking on the production of nutritious food on the basis of consumer demand and nutrition needs.

The MS-NPAN does not explicitly cover climate change but it refers to food production and consumption practices that may contribute to mitigating climate change or to adapting agrifood systems to its effects. It provides the following elements to include in a dialogue on the agrifood systems-climate change nexus:

- greater diversity of food products to promote local adaptation capacities;
- better availability of local diversified food;
- higher and risk-mitigated income from food production to increase food accessibility for those who have difficulties affording a healthy diet;
- consideration of agroforestry as an important agrifood production system as well as a climate change mitigation and adaptation land use system;
- intensive home-based gardening, and organic farming;
- increased production and local availability of non-ruminant meat and other protein source production (poultry, pigs, fish);
- farm gate food safety.

In retrospect, MoALI's strong engagement in the MS-NPAN helped to make the ADS-IP more nutrition-sensitive and concerned with the consumption of healthy food. The use of minimum dietary diversity for women (MDD-W)<sup>5</sup> as a measure of progress in an agriculture strategy (rather

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<sup>5</sup> The MDD-W indicator was developed by FAO and partners to fill the need for a simple, food-based indicator for measuring dietary diversity and micronutrient adequacy, key dimensions of diet quality of women of reproductive age.



than just crop yield targets) is a significant development. A next step would be to assess whether the plan also contributes to reducing emissions as a result of changing diets.

### 3.3. Better production for better nutrition

The ADS-MSNPN interface is a reasonably powerful framework for starting an agrifood systems dialogue. The processes to develop the strategy and plan were time-aligned and this facilitated interaction. The interface between the two covers most elements of the agrifood systems chain. Work on the interface has resulted in better interdepartmental coordination within MoALI.

However, some public stakeholders were left out in the initial dialogue. MoNREC is handling all agrifood activities within the permanent forest estate. This includes food production on land classified as ‘community forest.’ New Community Forestry Instructions (2016)<sup>6</sup> provide opportunities for farmer organizations to engage in agrifood systems, with a special focus on food and cash crop production under agroforestry systems and agroecology. The promotion of such systems is encouraged under the MS-NPAN, especially for upland ethnic communities.

The failure to include the Ministry of Commerce (MoC) in MS-NPAN discussion may have resulted in a lack of alignment between food export strategies and the production of protein-dense food products for domestic markets.

The European Union delegation in Myanmar supports the implementation of the ‘Better Production for Better Nutrition’ programme through a budget support programme of 106 million EUR. This support provides a solid basis for field activities in two selected regions/states including: i) capacity building for all involved departments and ii) actions to strengthen inter-departmental coordination for engaging in a less siloed approach to agrifood systems.

### 3.4. Better environment

The Myanmar Climate Change (MCC) Masterplan (2018-2030) operationalizes Myanmar’s iNDC and NDC commitments to the Paris Agreement. The Masterplan expands on the MCC policy and strategy approved by the government in 2019. It focuses on six workstreams, each involving the participation of a different ministry, as follows:

- climate-smart agriculture: MoALI;
- sustainable management of natural resources: MoNREC;
- resilient and low carbon energy transport and industry: Ministry of Transport;
- resilient, inclusive and sustainable cities and towns: Ministry of Construction;
- climate risk management: Ministry of Social Welfare, Relief and Resettlement;
- education, science and technology: Ministry of Education.

Three out of the four ministries that participated in the MS-NPAN process were also engaged in the development of the MCC Masterplan. The plan was drafted under the leadership of the Environmental Conservation Department/MoNREC, with support from a UN-Habitat/United Nations Environment Programme (UNEP) partnership and funding from the European Union delegation in Myanmar. The Masterplan uses existing sector-specific policies and strategies in some of its interventions, such as these falling under the responsibility of MoNREC. These include:

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<sup>6</sup> The Community Forestry Instructions or Regulations are a by-law to the Forest law that provide legal backing for rural communities to co-manage forests.

- INDC and NDC commitments;
- Myanmar's REDD+ strategy,<sup>7</sup> which focuses on i) reduced horizontal land expansion for agricultural production; ii) reforestation and iii) forest and biodiversity conservation;
- Forest Masterplan, 2000-2030, which sets the scene for forest conservation targets and includes a community forest target of 919 000 hectares, which to date is substantially behind schedule; and
- National Reforestation and Rehabilitation Programme, 2017-2030, which targets 275 000 hectares for tree planting on farmland, a target also included in the draft NDCs.

Although many REDD+ strategies recognize agriculture – and hence food production – as a major driver of deforestation and forest degradation, research indicates that these strategies will need to be far more detailed, calibrated and matured before directly addressing agricultural drivers, including in Myanmar (Kissinger, 2011).

In this context, it is puzzling that the Masterplan makes no reference to the ADS-IP and does not adequately address Myanmar's single most important GhG emission driver: agrifood systems. The food consumption-production dimension – developed by three ministries under the MS-NPAN – seems to have fallen off the agendas of the same ministries when they participated in developing the MCC Masterplan.

### 3.5. The missing systems link

Two policy and institutional universes are apparent in Myanmar's strategic thinking on agrifood systems transformation through a climate change lens. The ADS-IP and the MS-NPAN tackle the demand side of food consumption and food production, with some focus on adaptation and mitigation to climate change. The MCC Masterplan handles climate change mitigation by maintaining and improving forest carbon stocks through conservation, ecosystems restoration and reforestation.

**The use of agrifood systems transformation as a mitigation strategy to meet climate change goals is the missing link.** The MCC does not fully acknowledge that: i) agrifood systems are the major driver of GhG emissions; and ii) opportunities exist to use the demand for healthier and more diversified diets to reduce the carbon impact of agrifood systems.

### 3.6. Realizing progress on policy with the European Union as a game changer

Progress on addressing the agrifood systems transformation-climate change nexus will largely depend on whether and how the two universes can genuinely come together for a joint dialogue, cross-sector programming and action. There is a definite need to better balance efforts to reduce the food production and consumption contributions to climate change with climate change mitigation efforts to maintain and increase forest carbon sinks.

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<sup>7</sup> A REDD+ strategy defines a country's efforts to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks. REDD+ was created through international negotiations under the UNFCCC.

The European Union delegation in Myanmar is well positioned to bring these two universes together in a dialogue on a single systems approach to tackle the agrifood systems-climate change nexus.

First, the European Union's Farm-to-Fork (F2F) strategy provides a sound global policy framework for starting a dialogue.<sup>8</sup> The European Commission considers food systems to be a key driver of climate change and environmental degradation. Consequently, the F2F strategy is critical to achieving the objective of a climate-neutral European Union by 2050. The strategy focuses on promoting food systems that help mitigate climate change and adapt to its impacts; it aims at ensuring food security, nutrition and public health for all. The F2F framework will be used in developing countries that the European Union actively supports, hence in all the countries where FIRST is present.

Second, the European Union delegation in Myanmar supports both the agrifood and the climate change universes. The delegation has made a major investment in implementing the ADS-MSNAN interface. There is also major delegation support for the implementation of MCC masterplan through the Myanmar Climate Change Alliance.

Third, the delegation's dialogues for the preparation of the 2021-2027 MIP identified action clusters around climate change, food security and nutrition, environmental and biodiversity protection as a means to deliver the Green Deal at the country level.<sup>9</sup> Initial consultations indicate however that further dialogue will be required to merge these different dimensions into one coherent approach that addresses synergies, opposing views and possible trade-offs between different stakeholders.

A major challenge that lies ahead is the establishment of a solid intersectoral, inter-institutional partnership to address agrifood systems transformation in a climate change framework. The current structure is often not appropriate. This is the case in Myanmar, where institutional climate change leaders (ECD/MoNREC) and agrifood systems leaders (MoALI) are competitors rather than allies. This competition is reinforced by the country's development partners: both FAO and the European Union delegation address climate change and agrifood systems separately in their programming.

The Myanmar Climate Change Alliance, supported by the European Union delegation, provides a chance for both the government and development partners to establish a genuine partnership. The Alliance coordinates the implementation of the MCC Masterplan, with UNEP-UN Habitat supporting the implementation of three out of the six programme components. The climate-resilient agricultural component still requires support. MoALI will need to take on a more prominent role in implementing the Masterplan, possibly with FAO support.

## 4. TRADE-OFF DIALOGUE AND NEGOTIATION TOOLS

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Myanmar has typically focused on production-oriented and technological solutions to adapting food production to climate change. These include actions to close the yield gap of a variety of crops, with a strong, continued focus on rice in areas with major climate change impact. Climate-smart agricultural interventions include nutrient management, water harvesting techniques, soil and water conservation practices (alternative wetting and drying of paddy fields

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<sup>8</sup> The Farm to Fork Strategy is an essential part of the Green Deal and aims to address and GhG emissions resulting from food systems and reduce the impact of food systems on natural resources.

<sup>9</sup> The Green Deal is the EU's main new growth strategy, launched in December 2019, to transition the European Union economy to a sustainable economic model and to become the first climate neutral continent by 2050 resulting in a cleaner environment, more affordable energy, smarter transport, new jobs and an overall better quality of life

for example), intercropping, irrigation and other farming practices (e.g., mechanization). These solutions are accompanied by the necessary infrastructure for their delivery: research, extension, credit, access to inputs, crop insurance, among others.

However, the agrifood systems-climate change nexus creates trade-offs that can only be addressed through policy choices. Dialogue on such choices provides the platform for bringing stakeholders together and establishing partnerships. Myanmar provides several examples of such trade-offs, as featured in Table 2.

**Table 2. Examples of trade-offs between policy options in Myanmar**

Policy option A	Policy option B
Smallholder/family farm driven food production	Agro-industrial food production
Healthy diet, including animal-based protein	Sustainable diet limiting animal-based protein sources
Rice bowl policy	Food basket policy <sup>10</sup>
State-driven biodiversity conservation to maintain carbon stocks	Community-driven livelihoods supporting agrobiodiversity conservation
Trade policy to encourage export of nutrient-dense food products	Food sovereignty
Commodity value chain approach	Agri-food systems approach, farming systems and agroecology <sup>11</sup>
Climate-smart technology improvement	Land use change adaptation policies
Filling the yield gap for particular single crops	Risk mitigated, climate-smart farm productivity increase
Horizontal farmland expansion for food production increase	Zero land expansion; productivity increase
Smallholders as contract farmers	Smallholders as sovereign food producers
Planning, land allocation and incentives for bio-energy crop production	Planning, land allocation and incentives for food production
Investment in staple food research	Investment in nutrient-dense food crop research

Some trade-offs are not mutually exclusive and/or may be reflected as false dichotomies. Smallholders are often connected with agro-industries under different arrangements such as contract farming in Myanmar, possibly resulting in win-win situations. Climate smart technology improvement for rice production may increase land use change adaptation options in vulnerable and ecologic high risk delta lowlands. A crucial element of the policy dialogue on trade-offs should be to identify possible synergies that exist between different policy choices. Policies around exporting nutrient-dense food products or on food sovereignty are good topics for such a

<sup>10</sup> The Rice Bowl policy sets a framework to increase the production and productivity of rice-based production systems whereas the Food Basket policy aims at agricultural diversification and responds better to the demands for diversified healthy diets, climate change adaptation and mitigation and increased income from food production.

<sup>11</sup> Value chain development tends to focus on a single commodity driven linear solution path whereas an agrifood systems approach and to some extent a farming systems approach and agroecology are more holistic and includes more environmental, social, and economic drivers for food production. See, for example, Mauscher *et al.*, 2020; and De Keyser *et al.*, 2020. <https://doi.org/10.1016/j.gfs.2020.100439>

dialogue. Box 1 provides some insight on export-driven nutrition-dense food production models and their environmental and social impacts.

Myanmar currently produces a variety of animal and plant-based protein sources, using different production systems. These include fish-protein in the delta, chicken and pork close to cities (and often in combination with fish production), livestock protein in the Dry Zone, and beef-milk protein in uplands.

#### **Box 1. Trade-off between exporting nutrient rich food commodities, its impact on the environment and the production for local consumption**

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Myanmar is increasingly profiling itself as a major exporter of nutrition-dense and healthy food products, including beans, livestock and animal feed, fish, fruits and vegetables. This profile, which is driven by the private sector, is fully supported and encouraged by the Ministry of Commerce (MoC) and the Ministry of Investment and Foreign Economic Relations (MIFER).

Current crop production practices for agrifood exports often have a negative impact on the environment and may also contribute to climate change. For example, the production of watermelon in Mandalay and Sagaing, and of tissue culture banana in Kachin has been documented to cause almost irreversible soil contamination due to overuse of fertilizers and pesticides (see for example Hayward *et al.*, 2020). Chemical impacts have affected the health of humans, livestock and biodiversity and have contaminated local water sources. Field work carried out by FIRST showed that bean producers in the Dry Zone are reluctant to consume their own produce given the risks associated with excessive chemical use. Banana plantations for export markets cause deforestation over large areas and result in major social impact (especially loss of land) for local populations.

The conversion of extensive areas of delta flood plains from marginal paddy production into aquaculture has a major positive impact on climate change adaptation and mitigation. However, current export-driven aquaculture practices have negative effects on the environment (cutting floodplain connectivity) and on local fishermen's food security (loss of access to formerly commonly managed floodplains). Small, integrated and profitable fish-poultry-pig farms are discouraged by stringent export license conditions for larger holdings, especially those that export to the Middle East. On the other hand, those smaller-scale integrated farms provide affordable fish- and white meat-based protein to the urban Yangon population.

Myanmar's response to COVID-19 recovery and rehabilitation proposes different approaches to agrifood systems transformations. The MERRP protagonists (MoC and MIFER) focus on the importance of strengthening global and regional trade, maintaining food supply chains and reducing import and export barriers – hence a trade-based food security approach. Other platforms advocate local food sovereignty, ensuring that smallholders are well connected to local markets to guarantee that both rural and urban communities have access to sustainably-produced, healthy food of their own choice.

Table 3. Rapid qualitative assessment of five protein production models against a set of ecologic, social, economic and political variables

	Beans and pulses	Ruminant meat	Poultry, eggs, pork meat	Large commercial aquaculture	Integrated fish-chicken/pork farms
<b>Production environment</b>	Mainly grown in Dry Zone and Ayayarwaddy; both dryland and irrigation Exclusively smallholder production	Mainly in Dry Zone Feed production on farmland is discouraged; communal grazing lands are disappearing Livestock farm establishment on farmland is very cumbersome Mainly smallholder production	Farms around urban areas, especially Yangon and Mandalay Household animal raising in Dry Zone Feed mills near cities and in Shan highlands Integrated and non-integrated farms; Most farms operated by households Most farms are not legally operating (due to land laws) and have low tenure security	Converted paddy land and floodplain land in Delta Exclusive large holdings	Converted paddy land in Delta Mainly family holdings
<b>Climate change and environmental impact</b>	Low carbon footprint Variable environmental impact nitrogen fixation but excessive pesticide use	High carbon footprint High environmental impact (water use, land area requirement)	Medium carbon footprint Medium environmental impact (water use, land area)	Low carbon footprint Medium – high environmental impact (disrupted floodplain connectivity) Options for green innovation: solar power Poor Environmental and Social Impact assessment regulation use	Low carbon footprint Low to medium environmental impact (possible some water eutrophication and antibiotic use) Options for green innovation: solar power Manure recycling;
<b>Social issues</b>	Little consumption (10 kg/capita/year) Long cooking time adds to women's labour burden Lack of awareness of nutritional value	Limited consumption (high price, religious reasons) No home slaughtering	Chicken and pork meat frequently consumed Major protein provider for urban areas Small-scale piglet raising by women is a strong gender empowerment tool	Major negative social impact on local communities, increased vulnerability (loss of fishing grounds and land access) No contribution to create women's employment	High income for family businesses Irregular land tenure and exposure to asset loss
<b>Trade and economics</b>	Major agricultural export crop High price volatility resulting in major market disruptions	Major live animal export market High price volatility (border areas) Market disruptions (sanitary issues)	Mix of local and export production	Exclusive export production	Reduced use of (imported) fish feed Exclusive production for local market including urban population
<b>Political economy</b>	High-level trade negotiations with India	Strong export lobby Policy debate on the externalization cost of GHG emissions in livestock production	Debate on impact of major land use change of agroforestry into corn monocropping, mainly for feed export Debate on pros and cons of corn contract farming for feed industry	Strong export lobby of Myanmar Fish Federation Export regulations negatively impacting on integrated family businesses	Poor policy support Lobby friction between Myanmar Livestock Federation and Myanmar Fish Federation

Each of these systems has its benefits and constraints; each has a different environmental and climate change impact, with strengths and weaknesses in terms of capacity to contribute to local agrifood systems and to export. Table 3 assesses several the production of several different sources of protein against variables such as agroecological production conditions, climate change and environmental impact, possible social advantages and unintended social consequences, trade and economic issues, and the political economy environment. Such an assessment can help policy makers and facilitators recognize that any actions to transform food systems will need to be weighed against a range of social, environmental, economic, climate change, livelihood support factors.

Given the highly diversified contexts in Myanmar – agro-ecological conditions and potential, traditions and customs and behaviours, presence of long-term social conflict, exposure to neighbouring countries – the pathways and solutions for sustainable agrifood systems transformation may differ across the country.

There is value in developing and using practical tools to assess the trade-offs, benefits and constraints inherent in the available options for policy dialogue support. FIRST has identified two such tools for Myanmar.

**Food-based dietary guidelines (FBDGs)** are used to improve food consumption patterns and the nutritional well-being of individuals and populations. They can also serve as a tool for considering how to respond to the consumption tier of agrifood systems. FBDGs provide evidence-based guidance on the foods and nutrients that make up a healthy diet. Additionally, FBDGs can serve as a basis to inform agrifood systems, agricultural and land use policies.

However, when restricting their use to the nutrition and health sectors only, they may fail to reach producers and consumers. The intention in Myanmar was to produce FBDGs that capture the diversity of the country, that cater to the needs of specific population groups and to use them as a tool not just use for counselling and advice for the public on ideal food and nutrition patterns, but to also serve as a basis for agriculture, behavioural science, and health policies. This allows for a tool to serve both producers (to address dietary needs at regional or population level) and consumers (to close population level and individual dietary gaps).

It is important that FBDGs take a range of dimensions into account, such as social behaviour, culture and customs, local availability and the affordability of specific food ingredients, among others. In the case of Myanmar this would imply that some regions may need to have their own context-specific FBDGs.

FAO, in partnership with other United Nations agencies in Myanmar, is providing technical support to the National Nutrition Centre (NRC), the MoHS and the MoALI to support the development of national FBDGs. This partnership network can be used as a dialogue platform for trade-off negotiations.

FBDGs do not primarily aim to address diets in a climate change and environmental sustainability context. Healthy foods may therefore be considered as environmentally or climate ‘unhealthy.’ A recent global study of 85 FBDGs found that around 80 percent of the guidelines were incompatible with the Paris Agreement and other environmental targets (Springmann *et al.*, 2020).

Climate targets can at times contradict health targets, but these agendas can often be aligned by negotiating trade-offs and looking for synergies and acceptable common denominator solutions. Some countries already promote diets that support healthy people while staying within environmental boundaries. Considering protein-rich and iron-rich foods with low



GhG emissions – such as eggs, fish and chicken instead of beef – is an example proposed in Myanmar's new FBDG. At the same time lower GHG animal products happen to be more affordable which is a paramount concern at this time. These FBDG outcomes hence create a win-win situation.

**Land use planning** is concerned with the production side of agrifood systems. It aims to provide evidence-based information to facilitate decision-making on land use and land use change. It also puts in place a systems approach to trade-off negotiations between public, community and private sector interests. Setting land use planning in a context of the agrifood systems transformation and climate change adaptation/mitigation would enable policy-makers to respond to a number of Myanmar's challenges:

- agreement between conservation and agrifood systems stakeholders on the prioritization of carbon stock conservation, different food production areas and systems;
- identification of priority cropping lands to target different climate-smart agriculture interventions;
- identification of risk-prone cropping lands where land use change incentives could be considered as a climate change adaptation intervention. In Myanmar, these focus on the conversion of marginal paddy producing areas into aquaculture-based systems in the delta;
- conversion of drought-prone cropping areas into integrated livestock systems in the Dry Zone;
- identification of priority agroforestry areas; and
- prioritization of mixed food production-conservation areas where social and ecological conditions are favourable for communities to undertake food production under community forest arrangements.

Land use planning uses a range of analytical tools, such as land evaluation, crop suitability assessment, farming systems analysis and agro-ecological zoning, to plan the implementation of food production diversification strategies. The process consists of matching the dietary needs of target beneficiaries with nutritious and safe foods through direct production-consumption pathways and production-income-consumption pathways. In Myanmar, agricultural diversification planning remains a field of major interest and challenge for MoALI.

Increasing the availability of high quality affordable food can be achieved by encouraging the use of improved farming techniques (stable, risk mitigated and lucrative) that better leverage specific local agro-ecological and market potentials. These potentials are identified by integrating various crop suitability assessments into smallholder integrated farming systems. In Myanmar, special emphasis is given to introducing alternative crops with higher nutritional value. These can be integrated into existing farming systems and may generate more income for smallholders, which enables them to access more nutritious food products.

Land use planning provides information for evidence-based decision-making to fine-tune national FBDGs to region-specific opportunities and constraints. Given the diversity of diets by agro-ecological zone and by culture (Myanmar hosts some 135 officially-recognized ethnic groups), it is important to promote locally-accepted food plates in planning and nutrition education. Such food plates can be identified through farming systems analysis, crop suitability assessments and local agro-ecological and market potential. The weak link between nutrition, agriculture production and income can be strengthened by the combined use of FBDGs and land use planning. FAO has been implementing a project to support the government in developing this combined tool.



## 5. SOCIAL TRANSFORMATION TO ADDRESS THE NEXUS

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Together with its partners, FIRST has identified a number of specific enabling processes and interventions to deliver policies and strategies that ensure agrifood systems transformations are underpinned by a large and inclusive support platform and reach all communities.

These processes are especially relevant in countries with significant socio-political, cultural and agro-ecological diversity, where certain people and communities run the risk of exclusion or where policies do not treat everyone equally. Social transformation processes should aim to be game changing, focusing on women and young people and utilizing interventions that can bring about crucial social changes.

Myanmar has several entrenched power structures that require attention: centralized policy development; planning and fiscal structures that make it difficult to devolve powers to region/state territories; seniority that blocks youth creativity and initiative; patriarchal dominance of decision-making; ethnic minority marginalization; and religious identity issues.

### 5.1. Territorial approach

The advantages of a territorial approach for policy design and implementation are attested by experience of the MS-NPAN and several other land-based processes. The latter include land reform under the National Land Use Policy (NLUP), ecosystem restoration (for example, mangrove restoration under the REDD+ programme), climate-smart agriculture and agroforestry adapted to local opportunities (under a Global Environment Facility-FAO project using township land use planning) and biodiversity conservation (through a World Wide Fund for Nature project using landscape planning).

Territorial planning contrasts sharply with some previous Myanmar experiences, such as the military-led campaign in the mid-2000s, which sought to plant 200 000 hectares of *Jatropha* in each region and state. Setting such blanket targets irrespective of land availability and the suitability of local agro-ecological conditions has not been successful.

A similar argument can be made producing particular food products based on the FBDGs. National FBDGs can indicate the optimal intake of different food groups, but specific food ingredients need to be territory-specific: different territories have different potentials and constraints to produce and make available different products.

Arguments for using a territorial approach in Myanmar include the following:

- **Geography matters.** Disparities in food security, nutrition, hunger, income are strongly territory-specific.
- **Opportunities for agrifood systems transformation are context-specific**, with coastal areas, central drylands and ethnic uplands presenting highly variable and diversified socio-ecological circumstances. Territory-targeted policies are more likely to consider this diversity.
- Territorial policy implementation is more likely to cut through a nationally siloed, sector-specific approach. **Local institutions interact more** and devise better fit-to-purpose adaptive solutions.
- A localized territorial approach **encourages participation of a wider range of stakeholders**, as demonstrated by the ADS-IP and MS-NPAN consultations and regional planning dialogues. Inter-sectoral negotiation platforms on trade-offs are more realistic. Power

imbalances between stakeholders are more manageable at a territorial than at a central level, where policy interests are strongly entrenched. A territorial approach seeks realistic consensus, builds on inclusive decision-making and empowers local actors through their formal and informal networks.

- A territorial approach responds better to the federal governance model that has been proposed in the peace talks between the government, the military and the Ethnic Armed Organizations (EAO) under the National Ceasefire Agreement. The implementation of the NLUP for example aims increasingly for federalism.

## 5.2. Targeting

A multistage approach targets both groups and individuals for programme planning and implementation. Multistage targeting is used in combination with a territorial approach, reflecting the reality that various groups – smallholders, small and medium enterprises, landless rural families, immigrants and indigenous people – may face similar socio-ecological opportunities and constraints. Consumption patterns are much more individual- or household-specific, with possible wide variations within a specific group depending on intra-household socio-cultural differences, education levels and other factors.

Poverty can also be an indicator for targeting specific interventions for rural folk engaging in food production, but targeting the rural poor only is not the most effective way to reduce malnutrition. *Accelerating progress towards SDG2: policy effectiveness analysis, a report commissioned by the European Union* report (De Wit and Noack, 2019) illustrates, for example, that stunting in the richest household quintile in Myanmar remains high at 16 percent.

Examples for specific targeting that emerge out of agrifood systems diagnostic work include the following:

- **Smallholder sector for food production.** The case has been made that smallholders and family farms are able to produce food in a sustainable way with major socio-economic advantages and a comparatively smaller carbon footprint. Several recent investments by major financial partners (United States Agency for International Development, World Bank, International Fund for Agricultural Development, European Union, Swiss Development Cooperation, LIFT and others) have recognized the comparative advantage of smallholder/family farm food production, mainly through value chain development programmes. Smallholder farmers are more efficient than large-scale entrepreneurs and companies in developing vacant, fallow and virgin lands granted by the state (San Thein *et al.*, 2018). On the other hand, large-scale agribusinesses based on the concession model have not contributed much to food systems development in Myanmar (Byerlee *et al.*, 2014). At the same time, they have caused substantial environmental and social damage (Woods, 2015b).
- **Indigenous and ethnic communities to make transformation processes more conflict-sensitive.** Many agrifood systems variables closely follow the ethnic fault line between the Bamar-dominated communities from the central country axis and the ethnic upland communities. The latter are often impacted by conflict and/or coincide with major areas of conflict. Major limitations can be found in these communities in terms of the adequacy of food consumption, dietary diversity, stunting prevalence, access to formal seasonal credit, education level, and, in general, access to agricultural inputs, delivery of formal land titles, food expenditure and labour costs. Policies and strategies only partially address the issue of service delivery in conflict-affected areas.

#### 5.3. Resource ownership

Myanmar does not have land rights framework that enables communities to effectively adapt to and mitigate the effects of climate change. People that have been displaced as a result of natural disasters are likely to lose their property rights – even if legally titled – without due compensation. Informal land occupation on farmland and vacant, fallow and virgin land (i.e., land occupied without formal title documentation) is considered a criminal offence and can be prosecuted. Community-driven carbon storage initiatives outside the permanent forest estate meet major difficulties since it is impossible to obtain secure tenure over land. In fact, the current land tenure framework encourages communities to engage in deforestation rather than to conserve forests. Poor tenure security of integrated farms under forest cover (e.g., agroforestry farms) pushes food producers into seasonal monocropping, with negative impacts on carbon stocks (forest clearance).

In the same vein, Myanmar's land rights framework does not enable an agrifood systems transformation process based on food basket strategy of diversification. Land titling continues to focus on annual cropping land, especially for rice. Land use conversion to any other more adaptive land use (e.g., for aquaculture, grazing, livestock production, agroforestry, or integrated farming) is subject to extremely rigid regulations and administrative red-tape. Land is secured for specific, narrowly defined uses and the choice of production system is limited by law. This constrains the responsiveness of food producers to consumer demand.

Insecurity of land tenure disproportionately affects ethnic communities, who rely on customary systems which are not recognised and protected in law. Land titling is strongly gender-selective, with women often discriminated against when attempting to acquire land in their own accord.

Land tenure reform remains a major bottleneck to creating an enabling land rights environment for agrifood systems transformation and responsive climate change mitigation/adaptation in Myanmar. Rather than only a technical or institutional challenge, it is a matter requiring genuine social transformation.

#### 5.4. Women and generational empowerment

Transformational change in Myanmar faces gender and generational obstacles. Women and younger people are unable to break away from traditional and religious gendered and generational roles, which keeps them from participating and deriving benefits from agrifood systems transformational processes.

Outstanding challenges range from poor access to land and a lack of control over land and asset sales; forced allegiance to customary practices; high work burden of women in customary production systems, such as shifting cultivation; perceived social inferiority of women; discrimination against women in the delivery of land administration services (such as land titling), and challenges of early entry into adulthood through marriage of young women.

The key role of women in households, as guardians of food consumption and nutrition for example, is in sharp contrast with their marginalization by a patriarchal code of conduct.

## 6. A FACILITY LIKE FIRST CAN PLAY A STRATEGIC ROLE IN AN AGRI-FOOD-CLIMATE CHANGE TRANSFORMATION FACILITATION PROCESS

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The case of Myanmar highlights challenges but, more importantly, opportunities to devise and implement policies that simultaneously tackle major global goals: climate change, environmental degradation, hunger, nutrition and health. A facility like FIRST can facilitate the tailoring of development programmes – such as the European Union’s Green Deal and Farm-to-Fork strategy – to a specific national or territorial context. Focusing on potential synergies and politically acceptable trade-offs between various national processes will help to create win-win situations rather than competition between national institutions.

The nature of FIRST support is well captured in its results framework. First, the partnership facilitates the development and implementation of policies that can link agrifood systems with demands for climate change adaptation and mitigation and rural transformation. In Myanmar, this has included identifying and managing strategic policy opportunities, such as MS-NPAN, ADS-IP, MCC and iNDCs. Globally, similar country-specific processes can be made actionable under the Multi Annual Indicative Programme 2021-2027 that each European Union delegation develops to reflect its anticipated country action. The agrifood systems climate change workstream focuses on policy assessments, building evidence and establishing the facts, and understanding political economy motivations.

FIRST Policy Officers can promote and support country-specific assessments. This includes the compilation of evidence on the agrifood systems climate change nexus (NAPA, REDD+ strategies, NDCs and their current revision, GEF projects, GCF initiatives, FBDGS development, etc.) and facilitating the identification of trade-off issues, negotiating trade-offs, identifying synergies, etc.). Policy Officers can contribute to political economy analysis framed around specific themes, such as the push and pull factors between the agrifood systems universe and the conservation, forest/landscape restoration universe, or the food sovereignty-export paradigm.

Second, FIRST supports building hands-on institutional capacities for national stakeholders to better understand the nature of policy processes, identify possible synergies between different processes, and realize that strategic trade-offs will need to be made. In Myanmar, this has resulted in a solid interface between the agricultural producer-driven ADS-IP and the consumer-driven MS-NPAN. MoNREC has already started to better appreciate the value of a conservation strategy that supports food security, nutrition and livelihoods.

Finally, the partnership relies heavily on the creation of an enabling environment for cross-sectoral policy coordination, dialogue and negotiation. Myanmar has initiated a process to bridge the gap between the agrifood systems and the conservation, forest and landscape restoration universes, under the MCC. Powerful tools such as FBDGs and land use planning are being devised to facilitate dialogue between institutions with different interests.

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