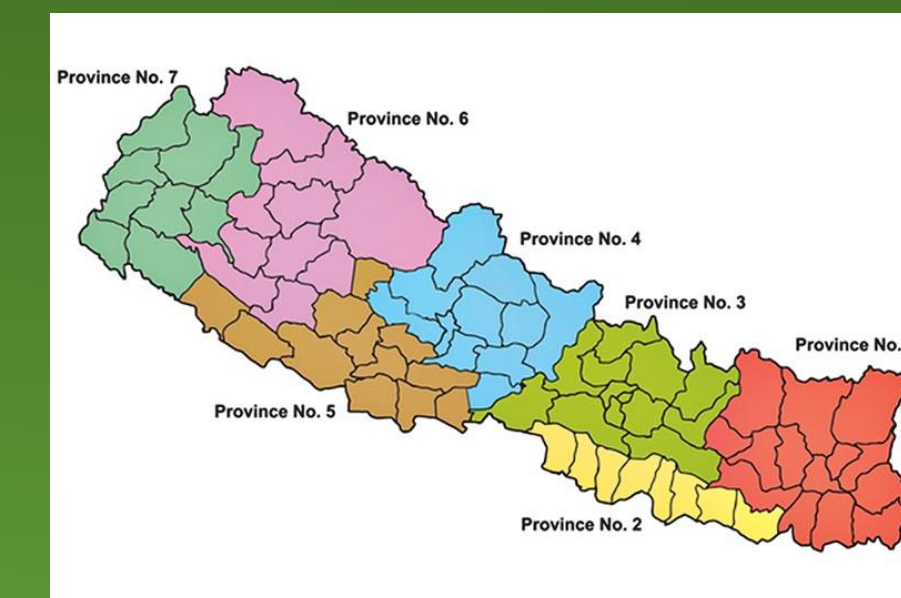


Food systems in Nepal generally do not provide farmers with profitable livelihoods or the population with nutritious diets, and they put pressure on natural resources and biodiversity.

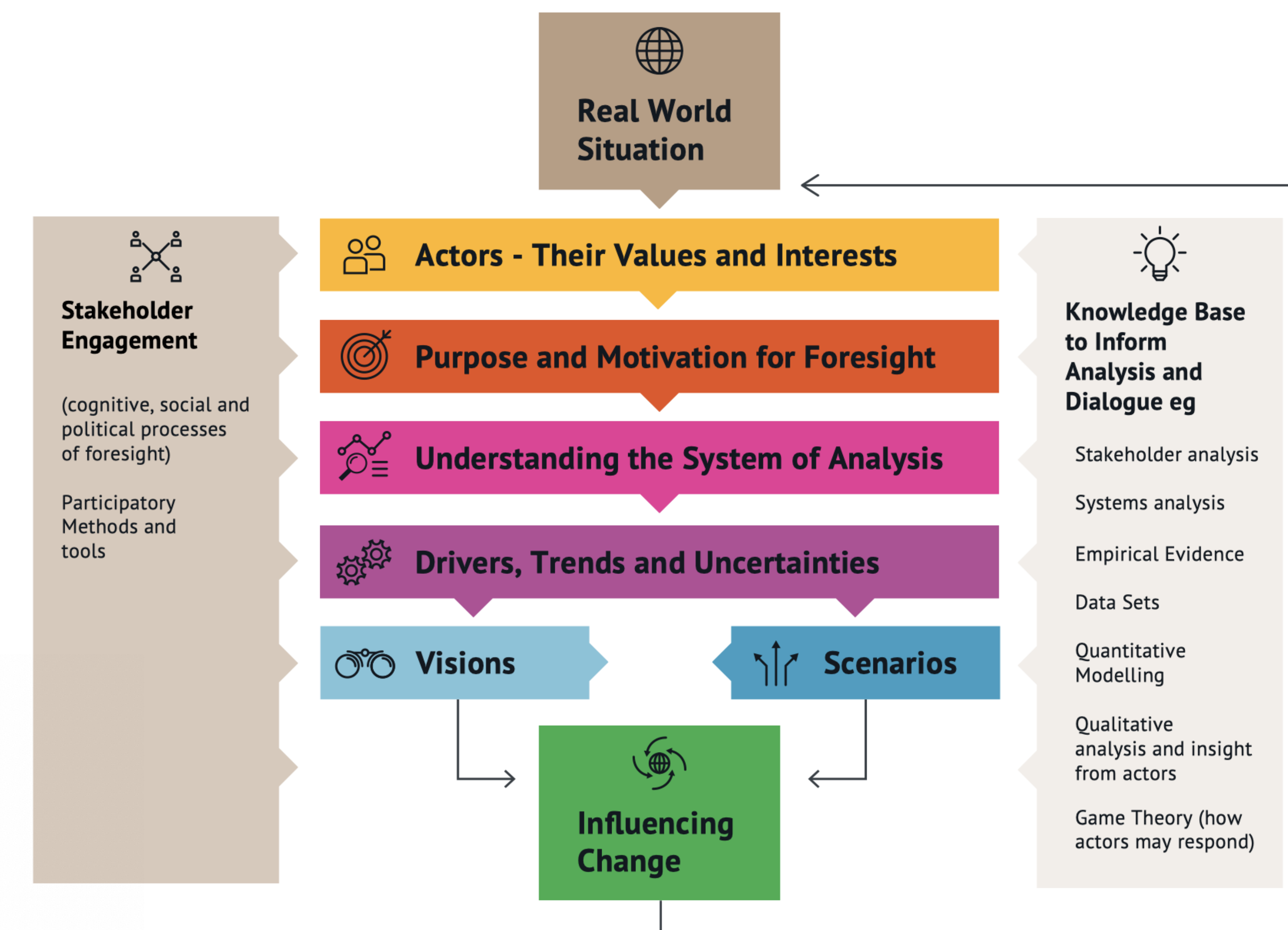
It is important to understand the food system at a range of scales, given that there are multiple, interacting external and internal stresses that need to be identified before decisions can be made about how to manage them.

This work aimed first to understand the food system at a range of scales through expert insights that identified the major trends and drivers, and then by consolidating empirical evidence of these trends at regional and provincial levels.

Levers for change often exist at the local level, and therefore subsequent steps assessed the situation for agriculture, the food system and extension service delivery from the perspective of citizens and local government actors in Province 2. This helped identify coordination of different levels of government as a key enabling factor to support resilient food systems; and subsequent work is focusing on better coordination for extension service delivery.

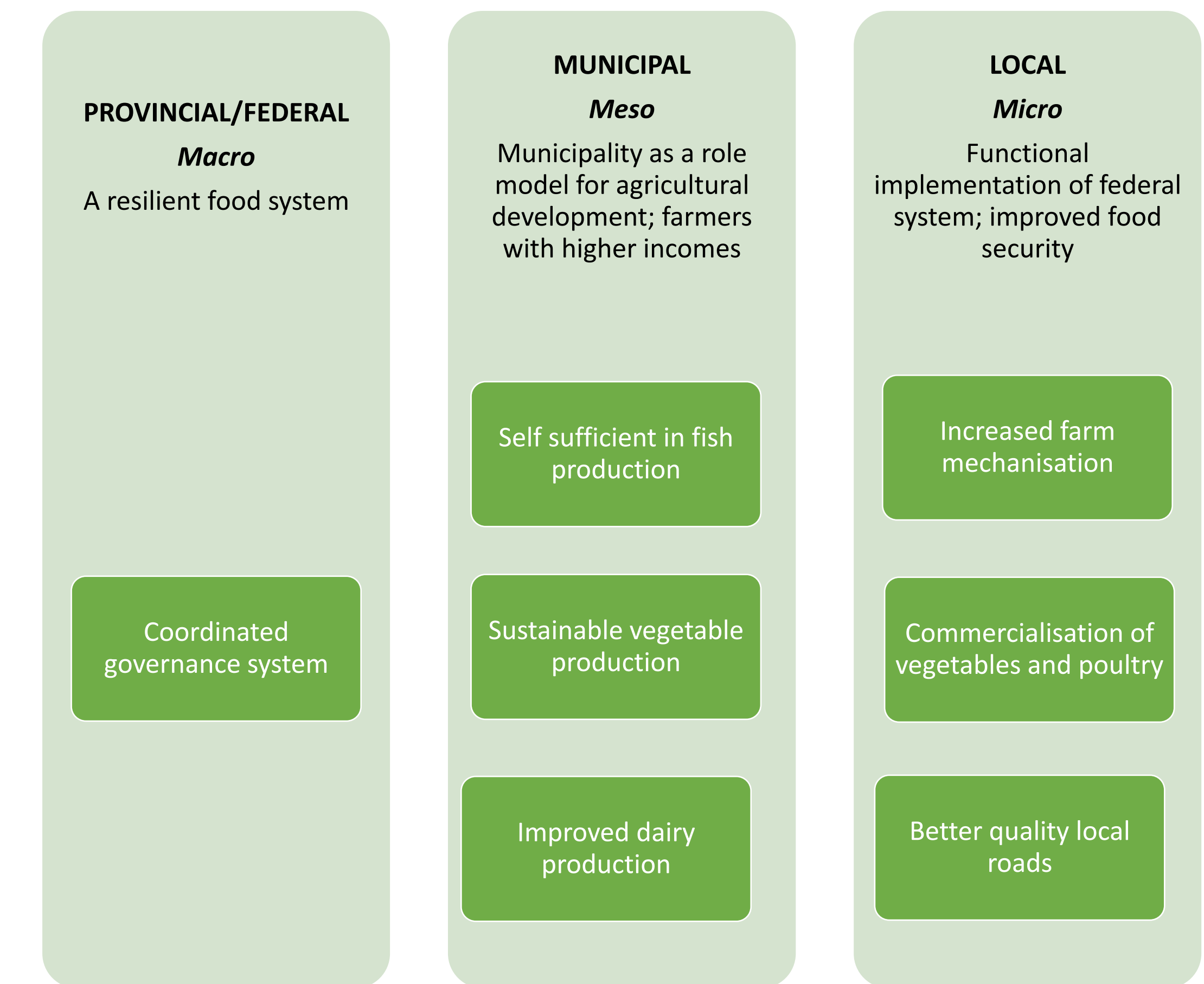


Following the Steps of Foresight



Foresight Framework (Woodhill & Hasnain, 2019)

4. Aligning visions



Conclusions & further work

This work aims to enable stakeholders at all levels to take a longer-term overview of the food system, and to choose courses of action now that lead to a preferred future state. It does so recognising that although problems can be regional, the levers for change are often found at the local level. The impacts of these micro, meso and macro level connections on current and future food security need to be better understood for long term transformation of the food system.

Local level actors can provide a more nuanced understanding of the drivers affecting food systems.

Exploring visions with different stakeholders can explore whether they align, and identify action points.

In Nepal, the new federal system requires all levels of government working together effectively for the food system to be better adapted and supported. One opportunity for doing this in Province 2 is to work with the five AKCs which are currently detached from the wider system both vertically and horizontally in terms of knowledge gathering and knowledge dissemination.

With better coordination between existing agriculture development, research and extension institutions it is possible to make AKCs an effective vehicle to support food security and sustainable food systems. This is being tested in a subsequent project.

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For more information go to www.aciarsdip.com.

1. Engaging with relevant actors

This work incorporates inputs from actors at macro, meso and micro levels, to understand the current settings for food systems in the larger region, at provincial levels and among local communities in the Nepal Tarai.

Scientists, policy makers and development professionals from a range of sectors identified major trends and drivers that impact the food system, and subsequently food and nutrition security.

At the local level, communities (urban and rural) and local government actors confirmed current priorities, defined future visions and considered options for transforming smallholder agriculture.

2. Understanding the system of analysis

In Nepal, agriculture accounts for one third of the country's GDP, and employs two thirds of the population, with almost equal levels of employment for men and women. 52% of the country's households are food insecure, with a further 10% severely food insecure. Farming systems are dominated by smallholders who have less than 0.5 ha of land and have limited access to inputs, including irrigation and fertiliser. These systems are mostly at subsistence level, with few taking a commercial approach. Land fragmentation is a major constraint to development. Cropping systems are cereal based, with rice accounting for 43% of area (52% of food production). Maize, wheat, millet, barley and buckwheat are other common rainfed crops. Cereal productivity is among the lowest in South Asia, primarily due to a reliance on monsoon rainfall and low input systems.

Province 2 is located in the southern Tarai plains, and is the most populous sub-region of the country. It is located in the most fertile plain area of the country, and therefore has very high potential for agricultural production, representing around 22 – 26% of the cropped area of rice and wheat respectively and 17.5% of the total cereal production of the country. However, although it was previously considered the 'food basket' of Nepal, this has changed and for the past 15 years it has been food deficit. The long and porous border with India to the south means that market access can alleviate pressure for food availability. Levels of outmigration are high, with 50% of all migrants coming from the Tarai region. The province is highly prone to flood and drought disasters, and agrobiodiversity is in decline. Average land holding size is higher than the national average at about 1 ha per household. Farming systems are mostly subsistence and semi-commercial agriculture; where farming is still semi-traditional, mostly based on peer learning, intuition and traditional knowledge systems. There is some semi-commercial farming, where cereals and pulses are produced partly for markets; vegetables and cooking oil are both sold to and purchased from the markets. There are weak policies regarding agriculture price support, storage, food transport and distribution which exacerbate food insecurity.

3. A shared understanding of drivers and trends

Driver	Expert opinion	Local level experiences
Climate change & environment	Weak climate resilience, frequent climatic shocks such as erratic precipitation, floods and droughts, causes inundation, landslides, siltation, leading to damage of infrastructure, crops and animals.	<ul style="list-style-type: none"> Participants noted changes in monsoon and rainfall patterns, and increased frequency of floods and droughts, which was impacting food production. Plant diseases and pests were appearing more often. Water sources were drying up and the water table was declining. Human health as well as the environment around the localities were being polluted due to the use and misuse of pesticides, fertilizers and exploitation of natural resources.
Demographics & development	Socio-economic change, including youth migration, increase of middle-income population and changing food habits.	<ul style="list-style-type: none"> Labour outmigration was high in all study sites, resulting in a lack of farm labour in cropping seasons. This was being compensated to some extent by rented tractors, power tillers, threshers, pump sets and other small farm machinery. For poor and marginal farmers access to machinery is still difficult and the majority of them were dependent on the availability of human and animal power. Farming work continues to be inefficient and difficult, and the level of drudgery means it is not attractive to youth and educated people.
	Land conversion, encroachment, quarrying, deforestation, flooding, urbanization Fragmented land holdings, land abandonment and scattered production	<ul style="list-style-type: none"> Small land size and low quality of land was a common scenario to all study areas. Many people rely on public land, with land ownership an issue. Skewed size of landholdings, a lack of secure tenure rights and landlessness were reported to affect crop production, food security and the general well-being of the people.
	Subsistence farming and increased population pressure High costs of production and soaring food prices Changes in eating habits—increasing consumption of processed food Decreasing food diversity; low awareness on the need to address food and nutrition security	
Policy & geopolitics	Institutions and governance system has changed with a new federal system being implemented. There are now three tiers, with more power to local government. This is currently not well organized and institutions are weak.	<ul style="list-style-type: none"> Participants do not see any difference in the lives of farmers before and after the implementation of federalization. Farmer's problems and issues were the same and, in some aspects, have become worse. The federal system has made the municipality much bigger in area, by mixing up several former village development committees. Access to agricultural extension services has become more difficult and complicated. The impact of the lack of coordination between the governments and related agencies was visible in the lack of supply of inputs and service delivery to the farming communities. Municipalities were not taking advantage of the nearby agricultural research and development farms and centres run by the federal government.
	Transportation and distribution problems Inadequate food buffer stocks and poor distribution system	<ul style="list-style-type: none"> Problems with supply of inputs and services for agricultural production.
Science & technology	Low levels of production and productivity	<ul style="list-style-type: none"> The cropping pattern is dominated by rice-based systems, but the productivity of crops is less than the national average. With low - average productivity, all the study sites were food deficit areas. The low production of crops is mainly attributed to small size of land holdings, low soil fertility, inadequate inputs, lack of irrigation and poor extension service delivery. Unless people were supplemented through off farm and daily wage works and overseas employment remittances, they were always on the brink of food crisis. People's lives and their economy were deeply rooted in agriculture but it was not productive and remunerative to sustain lives and livelihoods of the farmers.
	Poor collaboration and cooperation between research, academia and extension Under the new federal system, the previous extension system has broken down and a new one has yet to be implemented properly. This means agricultural extension service delivery was found to be poor and at times non-existent.	<ul style="list-style-type: none"> Extension workers were not seen in the fields, and small quantities of seeds and fertilizers were distributed to farmers on an ad hoc basis. Access to technical advisory services was hugely difficult as there were no Agriculture Service Centres in close proximity. The agriculture section attached to the municipality office was often poorly equipped. With only one officer and two junior staffs, the section was not capable of providing specialized technical services to the different categories of farmers and entrepreneurs. Coordination between the municipality agriculture section and Agriculture Knowledge Centres and other agencies was non-existent.