

BHUTAN NATIONAL PATHWAYS



FOOD SYSTEMS FOR GROSS NATIONAL HAPPINESS TRANSFORMATIVE PATHWAYS FOR BHUTAN



Ministry of Agriculture and Forests
Royal Government of Bhutan
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FOREWORD

The fractures within our food systems have painfully come to the fore during the on-going COVID-19 crisis. Now is the time to reflect and reconsider the many ways in which we produce, process, deliver, trade and consume food. We need a food system, which works for all and not for the few. We need a system which nurtures nature and not otherwise. We need a system, which is resilient and delivers in the face of a rapidly warming world. And we need a system which empowers women and ensures that the children of the world get the nutrition they deserve.

Here in Bhutan, the leadership of His Majesty the King has blessed us. With His Majesty's fortitude and guidance, Bhutan has braved the COVID challenge resolutely. And with him at the helm, we will build back stronger, greener and better. Food systems will be central in our efforts to build back stronger.

By 2030, Bhutan will achieve a carbon neutral, environmentally benign, high performance food systems, which is resilient to shocks and climate change; effectively provides affordable, safe and nutritious food for all; provides gainful employment; empowers women and children; and radically advances maximization of Gross National Happiness and achievement of SDGs. Our 'pathways' proposal align closely with our Nationally Determined Contributions and Low Emissions Development Strategy for the agriculture and livestock sector.

We believe that the opportunities, which lie ahead, are incredibly huge. We have a unique chance to reimagine and design a food system, which is at the heart of wellbeing. We need bold investments. We need to accelerate science. And we need to renew our commitment to build a world which is ecologically stable, and free of hunger, strife, and poverty.

Individual nations, particularly least developed countries like Bhutan, cannot succeed in transforming their food systems alone. Financial and technical support to developing countries should be ramped up and provided on an urgent basis.

Bhutan remains committed to supporting the UN in the pursuit of building a food systems which works for all. This is indeed a pledge to ourselves, our children, and their future. We thank and congratulate the UN Secretary General for convening this most important of Summits. And we look forward to engaging closely in spurring the transformation of our food systems so that the needs of the 21st century can be truly met.

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FOOD SYSTEMS FOR GROSS NATIONAL HAPPINESS: TRANSFORMATIVE PATHWAYS FOR BHUTAN

PREAMBLE

“Bhutan’s difficult terrain means that only 7 percent or 664,000 acres of our total land is usable. We must ensure that this small amount of land is put to the best use for the benefit of our people.”

[His Majesty the King, 17th December 2016]

“An estimated half of the Bhutanese population is engaged in the agriculture sector. If with a well-designed programme, our youth were engaged in building a robust water management infrastructure, it would be of long term benefit to the country. While global conflicts and wars will be fought over access to water, if we can solve this problem once and for all in Bhutan, it will be a truly noble accomplishment. This would also ensure food security, an essential aspect of our overall national goal of self-reliance.”

[12th September 2020, His Majesty the King’s Royal Address to the people of Bhutan during the COVID-19 crisis]

BHUTAN, FOOD SYSTEMS AND ASPIRATIONS

Bhutan is a small, 38394 km², landlocked country in the eastern Himalayas. With over 70% of its land under forests and subscribing to the development paradigm of Gross National Happiness (GNH), Bhutan remains carbon negative. At its core, GNH seeks harmony between human wellbeing, nature, and the pursuit of development goals.

Bhutan has witnessed rapid development in recent decades. Per capita GDP has grown almost ten fold, from as low as 330 USD in the 1980s, to 3300 USD as of 2019. These achievements have mostly been realised through investments in hydropower and growth in the tourism sector. Bhutan’s population has almost doubled from about 400,000 in the 1980s to almost 770,000 in 2019. Bhutanese food systems, however, have not been able to keep pace with increasing demand and a growing population. Imports have risen significantly while exports have failed to witness significant growth. Inherent structural and systemic challenges related to small and scattered land holdings, with minimal inputs and low mechanization possibilities, continue to result in high production costs and limited yield. Given continued migration, particularly of youth, from rural to urban areas, farm labour is becoming increasingly scarce. This is not helped by the negative image associated with farming.

Less than 20% of arable land is irrigated. And given persistent crop and livestock loss to wildlife, and pests and diseases, almost 30% of arable land is currently left fallow. Farming remains highly vulnerable to the impacts of climate change. Yield for almost all crops and livestock produce remain below regional averages and production for most crops have plateaued over the last two decades. Post-harvest loss remains high and agri-processing infrastructure remains infantile, while markets and standards remain weak. Given all this, diets, particularly in remote areas, remain poor. As of 2017, almost 21% of children under five years of age remain stunted, and 5.9% are wasted. There is also continued prevalence of vitamin and iron deficiency. Food related waste remains high and the agri-food systems is responsible for over 15% (552 Gg of CO₂e) of Bhutan’s GHG emissions.

Despite considerable constraints, the agri-food sector retains significant opportunities for impact and remains consequential for Bhutan. The agri-food sector is the biggest employer and provides direct employment for over 58% of Bhutanese and contributes to 13.42 % of the GDP (as of 2019). Given Bhutan’s varied agro-ecological zones which allow for a wide variety of produce to be grown, opportunities to substantially increase incomes and improve livelihoods of a majority of Bhutanese by transforming the

agri-food system, is real and imminently possible. Recognizing the lack of employment creation opportunities in other sectors, urgently enabling gainful employment of youth within the agri-food sector will be crucial to ensure Bhutan's near-term and future prosperity.

By 2030, Bhutan will achieve a carbon neutral, environmentally benign, high performance food systems which is resilient to shocks and climate change; effectively provide affordable, safe and nutritious food for all; provides gainful employment; empowers women and children; and radically advances maximization of GNH and achievement of SDGs.

PATHWAYS FOR TRANSFORMATION AND IMPACT

To build and achieve a high performance food system which provides for abundance and catalyses the maximization of GNH and the achievement of SDGs by 2030, Bhutan will embark on eight ambitious and transformative pathways over the next decade. These transformative pathways will ensure that Bhutan's food systems: (a) assure access to affordable and safe food to all members of society; (b) eradicate all forms of malnutrition and hidden hunger; (c) double smallholder incomes and alleviate poverty; (d) empower women and children; (e) reduce drudgery; (f) contribute to meaningful employment creation; (g) remain ecologically benign and carbon neutral; and (h) build resilience to shocks and stressors across the food system network. These pathways align closely with Bhutan's *Nationally Determined Contribution* (NDC) and the *Low Emission Development Strategy* (LEDS) for the agri-food sector.



1 | SECURE PRODUCTION AND SMALLHOLDER LIVELIHOODS

A suite of strategies to secure production, increase smallholder incomes, and build climate resilience will be initiated and implemented. A comprehensive plan to ensure fertility and secure Bhutan's limited arable land will be put in place. Innovative mechanisms to bring fallow land into productive use will be upscaled and funding will be secured to

expand irrigation coverage and improve farm roads. Investments will be increased to stem crop and livestock loss to wildlife.

Modalities and mechanisms to ensure adequate inputs of quality seeds, livestock inputs, animal breeding stocks, feed and fodder, fertilizers and farm machineries will be put in place. An urgent assessment of whether such services can be better delivered through private parties and/or farmer cooperatives will be conducted to maximise efficiency and create enterprises.

Opportunities for farmers to obtain carbon credits for tree crops including fodder trees will be created and implemented.

Uptake and support for climate smart production technologies will be expedited by provisioning soft loans, tax breaks, and easy access to state land lease. Such climate-smart food production systems will entice youth to be meaningfully employed, bring in technology, reduce drudgery, generate substantive income, and contribute to image building of farming as a technology-based enterprise.



2 | ENHANCE VALUE, STANDARDS AND MARKETS

To protect and enhance value, private enterprises and farmer cooperatives will be promoted and strengthened. Such enterprises will serve as primary aggregators and ensure collection of farm produce at the farm gate. These enterprises will possess the technology, know-how, financial resources, and human capital to liaise with farmers, collect and process,

build, and adhere to standards, and serve as conduits between smallholders and markets, thereby minimizing

waste and maximizing returns. They will contribute to building technology competence along supply chains from pre-harvest to post-harvest, storage, and processing. Such aggregators will ensure a steady supply of produce to the markets, ensure optimal export, maintain quality, process, store, and value add where possible. They will thereby protect and guarantee incomes to smallholders by assuring the purchase of their produce. Such enterprises may also be sanctioned to operate cold-chain, ware house and packhouse infrastructure, and will increasingly, and effectively, link suppliers to processors and markets.

Apples, mandarin, cardamom, areca nut, ginger, and potatoes stand out as crops of strategic significance to Bhutan given their export dominance. Detailed business plans for all these crops will be drawn up to facilitate investment and enterprise building. Additional investment plans for specific livestock and forest based produce will also be developed.

Standards across the food systems value chain will be improved to capitalise on Bhutan’s pristine and nature positive image. Certification schemes will be developed and rolled out to help Bhutan gain competitive export advantage.



3 | UNLEASH THE POWER OF DIGITAL TOOLS

An ensemble of digital tools will be developed and rolled out to provide crop and livestock advisory services, early warning on weather, and incidences of pests and diseases. To assist service delivery, such digital platforms will also be designed to support agriculture and livestock extension agents. Digital tools to collect real time data on farm conditions will also be rolled out to track the pulse and health of Bhutan’s agri-food systems.

To address information asymmetry within the agri-food market ecosystem, support will be provided to develop dynamic real time digital platforms to provide information on agri-food produce and also facilitate digital marketing. Such platforms which may be developed by private parties will link smallholders, cooperatives, farmer groups, aggregators, and consumers in real time and ensure faster and much more efficient flow of information and finances between supply and demand networks.

At the national level, in collaboration with the National Statistical Bureau, a food systems dashboard will be launched to track performance, and provide a standard reference for all actors within food systems.



4 | SECURE FINANCING AND DE-RISK THE AGRI-FOOD SECTOR

Current agri-food related financial institutions will be strengthened to function at the level of a full-fledged agricultural bank. Such bolstered institutions will guarantee financing for upscaling smallholder farming activities, ramping up climate smart productions systems, and establishing logistic centres, storage infrastructures, and agri-food based processing industries.

Buy back and minimum price schemes will be re-designed to suit the needs of both producers and consumers.

Smallholder farms remain vulnerable to climate related risks and will continue to lose produce to weather related events. **Innovative schemes to insure crops and livestock to buffer financial loss of farmers will be established.** Such schemes will boost farmer confidence and assure livelihoods at times of disasters and calamities.

Given the significant capital costs associated with road and irrigation infrastructure, **the establishment of an infrastructure fund** to ensure quality and timely maintenance of agri-food related infrastructure will be explored.



5 | ACCELERATE SCIENCE AND TECHNOLOGY

Research within the agri-food sector of Bhutan can build on more than forty years of institutional strength and experience. Current research initiatives will be strengthened by fostering closer collaboration with the University and civil society organizations, both within and outside Bhutan. An immediate exercise to determine ‘grand challenges for science and technology on food systems’ will be spearheaded and conducted by the Government. The exercise will draw up investment and operational plans with clear deliverables for the research sector.

Priority will be accorded to research and technology aimed at building resilience, securing and increasing production, helping build value chains, and enhancing nutrition.



6 | BOOST NUTRITION POSITIVE INITIATIVES

Bhutan will exponentially improve the delivery of food and nutrition to children and women with the aim of eradicating malnutrition and hunger in all its forms. Supply chains to institutions (schools, universities, monasteries and military) will be rebooted to ensure that menus provide for adequate nutrition. Such menus will be used to plan procurement from farmer groups, cooperatives, and private aggregator firms. Such linkages will also positively influence what is grown by farmers.

Research and technology initiatives will prioritize biofortification and production of nutrient dense crops.

Educational and outreach programs aimed at changing consumer behaviour will be ramped up to help transition towards healthier diets.



7 | SUSTAIN NATURE FIRST APPROACHES

Bhutan continues to champion environmental conservation. Bhutan’s NDC and the LEDS for the agriculture and livestock sector lays out the plans and ambitions for Bhutan to pursue a low carbon strategy. Bhutan’s prioritised measures and targets until 2030 will mitigate a total of up to 710 Gg CO₂e emissions, significantly more than current emissions from agriculture and livestock.

Forests which cover over 70% of Bhutan’s land area will be conserved and sustainability managed. Financing mechanisms will be upscaled to ensure that forests continue to provide ecosystem services, protect biodiversity and mitigate climate change. Enterprises involving the sustainable use of non-wood forest products and agro-forestry initiatives will be promoted.

Given Bhutan’s aspirations to pursue organic production, facilities and enterprises to provision for organic seeds, organic composts, biofertilizers, bio-feed and bio-pesticides will be fast tracked and established. Biogas production integrated with livestock systems for domestic use in rural households will be upscaled, while biodigesters for production of biogas and biofertilizers from food and organic waste in major towns of Bhutan will be commissioned. Low carbon and shorter supply chains will be encouraged by proactively linking consumers with producers and processing facilities.



8 | BUILD CAPACITY, STRENGTHEN COORDINATION AND PARTNERSHIPS

Broad frameworks to foster collaboration and partnerships across agencies and actors will be established. The ‘food systems dashboard’ will be used to inform priorities, identify chokepoints, and forge win-win partnerships, on an annual basis.

Given the unanimous call for policy coherence, a complete review and harmonization of all the policies and acts will be initiated to facilitate the transformation of the food systems and render it fit for the twenty first century.

A multi-year capacity building initiative will be rolled out targeting all actors within the food systems and aimed at elevating standards and efficiency.

And an annual ‘food systems and agri-business’ conclave will be convened to promote value addition, establish business ventures, create synergistic inter-agency plans, and track impact.

A ROADMAP FOR IMPACT: PRIORITY ACTIONS ITEMS FOR THE NEXT THREE YEARS

2022 | Reimagining & Re-establishing the Foundations

- Develop a comprehensive plan to ensure soil fertility and secure Bhutan’s limited arable land and bring fallow land into productive use
- Initiate development of financing proposals to expand irrigation coverage and improve farm roads
- Secure investment and technology to stem crop and livestock loss to wildlife
- Establish modalities and mechanisms to ensure adequate inputs of seeds, livestock breeding inputs/stock, feed & fodder, fertilizers and farm machineries
- Develop business and investment plans for all major and strategic crops to facilitate investment and enterprise building
- Develop business plans for specific livestock and forest based produce
- Review and redesign current guidelines on buy-back and minimum price support schemes
- Solicit proposals for the establishment of climate smart production systems
- Initiate development of an ensemble of digital tools to support agriculture and livestock extension agents, provide crop & livestock advisory services, and early warning on weather, and incidences of pests and diseases
- Develop dynamic real time digital platforms to provide information on agri-food produce and facilitate digital marketing and initiate the development of a ‘food systems dashboard’
- Initiate development and design of a comprehensive and nationwide crop and livestock insurance scheme
- Scale up linkages to meet demands for school feeding programs through farmer cooperatives and private aggregation firms
- Initiate discussions to strengthen existing agri-food related financial institutions and develop mechanisms and modalities for the establishment of an infrastructure fund
- Develop proposals and mechanisms for farmers to obtain carbon credits for tree crops including fodder trees
- Solicit proposals for scaling up production of biogas, bio-feed, bio-pesticides, bio-fertilizers, organic seeds and organic compost
- Solicit proposals for establishing agri-food based industries and strategically located logistics centres and storage infrastructures

- Conduct an exercise to determine ‘grand challenges for science and technology on food systems’
- Initiative development of certification schemes for Bhutanese agri-food produce
- Develop proposals to implement Bhutan’s NDC and the LEADS for the agriculture and livestock sector
- Commission a complete review of all extant policies and acts

2023 | Strengthening the Foundation

- Continue developing a comprehensive plan to ensure soil fertility and secure Bhutan’s limited arable land
- Pilot innovative schemes to bring fallow land into productive use
- Secure financing to expand irrigation coverage and improve farm roads
- Upscale measures to stem crop and livestock loss
- Roll out redesigned buy-back and minimum price support schemes
- Pilot innovative mechanisms to supply quality seeds, animal stock, feed, fertilizers and farm machineries
- Launch digital tools to support agriculture and livestock extension agents, provide crop advisory services, and early warning on weather, and incidences of pests and diseases
- Roll out an innovative crop and livestock insurance scheme
- Continue discussions on the establishment of an infrastructure fund and strengthening of existing agri-food related financial institutions
- Based on the business plans, initiate establishment of agri-food and agri-feed based industries for a few commodities
- Initiate establishment of logistics centres/ storage infrastructures
- Initiate establishment of bio-feed, bio-pesticides, bio-fertilizers, organic seeds, organic compost production facilities and upscale domestic biogas production
- Finalize funding for implementing Bhutan’s LEADS for the agriculture and livestock sector
- Evaluate findings of the review exercise on policies and acts and recommend adjustments
- Enter into collaborative partnerships, seek financing, and execute priority research and technology projects
- Convene Bhutan’s first ‘food systems and agri-business’ conclave and roll out an annual capacity building program aimed at all key actors within the food sectors
- Continue developing of certification schemes for Bhutanese agri-food produce
- Roll out programs to nudge consumers towards healthier diets

2024 | Ramping Up for Impact

- Secure funds to implement a comprehensive plan to ensure soil fertility and secure Bhutan’s limited arable land
- Upscale schemes to bring fallow land into productive use
- Implement irrigation expansion and farm road improvement program
- Continue upscaling measures to stem crop and livestock loss
- Designate and empower one of the existing banks to function as a full fledged ‘agriculture bank’ and operationalize Bhutan’s infrastructure fund
- Implement Bhutan’s LEADS for the agriculture and livestock sector
- Operationalize commercial biogas plants and biofertilizer plant for major urban centres of Bhutan
- Operationalise climate smart production facilities for a few key select commodities
- Operationalize agri-food and agri-feed based industries for a few commodities
- Operationalize logistics centres/ storage infrastructures

- Operationalize bio-feed, bio-pesticides, bio-fertilizers, organic seeds and organic compost production facilities
- Upscale digital platforms and tools to collect real time data of farm conditions
- Upscale innovative mechanisms to supply quality seeds, animal stock, feed, fertilizers and farm machineries
- Pilot carbon credit schemes for a few select communities
- Continue executing priority science and technology projects
- Roll out certification schemes for select Bhutanese agri-food produce
- Initiate policy and legislative adjustments



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