POLICY BRIEF

ESTABLISHING ENTREPRENEURIAL AGROFORESTRY SYSTEMS ACROSS BHUTAN'S REGIONS – OPPORTUNITIES FOR FALLOWLAND RECOVERY, LIVELIHOODS DIVERSIFICATION, FOOD SECURITY, AND EMPLOYMENT

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POLICY MESSAGE

This Policy Brief is based on an assessment carried out in 2021 titled *"Study on Agroforestry Systems and Practices in Bhutan in support of a National Strategy and Program,"* which generated a Study Report. The Report provides an Annex that describes a proposed preliminary national **Agroforestry Strategy and Program** in substantial detail, including an indicative budget. Key inputs for the study were interviews with farmers in different agroecological zones (AEZ) of the country, and with officials of the Royal Government of Bhutan (RGoB) who work in the Renewable Natural Resources (RNR) sectors at the National and District levels. This **Policy Brief** includes a series of key policy messages for decision-makers within and outside the Ministry of Agriculture and Forests (MoAF); discusses the drivers for change that can promote both traditional and entrepreneurial agroforestry systems; and sets out some of the main policy implications, including strategies, institutional processes, and guidelines.

Figure 1: Tsamdro traditional low-intensity AF system with scattered trees and pasture

The study did not cover all agroforestry systems found in Bhutan, but focused upon (1) *Systems that have not yet been covered by policies and strategies supporting agriculture, forestry, and sectoral livestock activities.* The study also covered systems in which stakeholder configurations have already been tested and elaborated, such as traditional agroforestry systems and community forestry. (2) *Agroforestry systems that can be scaled up through multi-actor processes, i.e., where RGoB, farmers, researchers, and private actors have regulatory, implementing, technology development and commercial roles respectively.* Realizing the potential of these systems requires coordinated and concerted activities.

The study highlights several entrepreneurial agroforestry examples that demonstrate considerable commercial potential. Nine potential business agroforestry systems are simulated in scenarios using the **Farm Tree® Model,** and the results are described in a study annex. Adopting these systems and the other agroforestry arrangements of trees, animals and crops will contribute to environmental and cultural services, such as climate adaptation and mitigation, food self-sufficiency and socio-economic development. Promoting relevant agroforestry systems is one of the critical solutions congruent with the approach of strengthening **Resilient Mountain Villages.** The study examines the existing policy and legal framework that directs agroforestry development, and proposes several new policy directions. The study finds that although agroforestry systems are established widely across Bhutan, Bhutan's policies and institutions need strengthening. Several sectoral Policies, Acts, and Guidelines are relevant for the promotion of agroforestry concepts. MoAF's central Departments (DoA, DoL, DoFPS) have specific Agroforestry components in their program activities. Nevertheless, limited coordination and integration exist among these departments and agencies.

This Policy Brief, the study, and its annexes should directly support the programming by MoAF of a **National Agroforestry Strategy and Program.** This Program should be further

formulated, organized institutionally, and budgeted to guide long-term planning. The Strategy and Program can then be considered for inclusion in the 13th FYP, and would become a strong candidate for further support under European Union funding. The Agroforestry Strategy would have the following national Agroforestry program objective: *"To increase, diversify and sustain production from limited land for self-sufficiency plus economic, environmental and social benefits."* The Strategy proposes to realize Bhutan's agroforestry potential by seeking to achieve three main outcomes:

Figure 1: Proposed program outcomes of the Agroforestry Strategy

Outcome 1. *Traditional agroforestry systems are preserved and promoted through diversification/integration of farming system approaches;*

Outcome 2. *Agroforestry entrepreneurship is promoted through enhancing knowledge-practice-value chain linkages;*

Outcome 3. *Synergies between Government, research, financial, and business services create a conducive environment for entrepreneurial agroforestry.*

As the current national lead agency, the DoFPS will develop a clear policy, strategy and guidelines in order to achieve these outcomes. This will include assigning roles and responsibilities to different participant institutions and consolidating the existing coordination mechanisms.

The study proposes that Bhutanese farmers, extension agents, and policymakers should continue to use the online FarmTree® agroforestry planning tool, to construct business cases for future business planning of agroforestry systems, as a decision-support tool. Because this tool was developed in other countries, it will need further investment and tailoring by incorporating up-to-date parameters of Bhutanese farming systems to make the model applicable to local contexts for farm planning.

An **Action Plan Framework** needs to be developed to implement the study's critical recommendations in the short term. This should be done via a series of bridging activities led jointly by the Policy and Planning Division and the Social Forestry and Extension Division (SFED) of the Department of Forests and Park Services (DoFPS). In particular, actions are needed to determine which institutional arrangements would effectively promote national agroforestry programming.

After approval of the Study Report from DAI plus this Policy Brief, SFED will conduct stakeholder consultations and other required activities prescribed by RGOB, with funding support from their own office. It should then present the draft Strategy and Program components to the Technical Committee/RNR GNHC for endorsement within 2022-2023.

KEY ISSUES

Agroforestry Systems are *"a land-use technology that combines trees with arable crops and/or livestock on a single management unit, with the overall goal of higher sustainable productivity."* In Bhutan, agroforestry systems have been a component of standard farming practices for generations, and are widespread. The numerous agroforestry systems found in Bhutan include *agro-silvicultural* systems, which combine crops and trees; *agri-horticulture* systems, which provide for both crops and fruit trees; *silvo-pastoral* systems, where trees and pasture/grasses are established together; and *agro-silvo-pastoral* systems that combine crops, trees, livestock, and pasture. Each of these significant classes of agroforestry supports livelihoods and incomes, and provides a range of ecosystem services. The study authors also propose a definition that *"agroforestry systems are physical combinations that include land, trees, crops,*

animals and humans, which need to work together to produce products and services for the household and the market".

The ambition of promoting the widespread adoption of agroforestry systems in farming communities is affected by a range of value-chain, farm management, and environmental factors that differ from one District to another across Bhutan's varied terrain. Core agroforestry problems or principal factors in farming systems located in agricultural landscapes include the following:

Figure 2: Core issues to be tackled in agroforestry systems outreach

- Agroforestry practice takes place in a **rapidly developing socio-economic and environmental context.** Since the early 2000s, the rural population has shifted from subsistence farming to semi-entrepreneurial agriculture, then towards **fully-entrepreneurial and commercial-scale agriculture.**
- **Only 2.9% of the total land area of Bhutan is under cultivation.** More than 31% of the agricultural land is situated on slopes as steep as 50% or more. Average crop yields are well below the global average due to poor land conditions, poor management, and limited access to inputs and technology, such as farm mechanization and finance.
- **Limited, fragmented, and dispersed landholdings** are a significant "push factor" for rural youth who no longer wish to be involved in farm work, which they tend to regard as drudgery.
- **Environmental factors** include high levels of wildlife-related crop damage and excess fuelwood use for cooking. Farmers are affected by changes in **crop seasonality,** extreme weather events (especially droughts), **crop damage** from human/wildlife interactions, and the prevalence of pests and diseases.
- In terms of demographics, many farmers are (often illiterate) smallholders, which makes crop diversification and the generation of additional cash income difficult. A growing number of the next generation of farmers will be **urban-dwelling employees with claims to their parental land.** The overall labor scarcity also leads to the feminization of households, a tendency across the sector that pushes families to prefer **lower-input farming systems.** However, there has been limited research into gender differences and disparities in agroforestry. **Gender-based constraints on Bhutanese women's participation in agroforestry** remain invisible.
- The **reduction in agriculture farming** is exemplified because 23% of rural households have left farming in the last decade. In 2020, **26% of agricultural land was found to be fallow.** This was due to a labor shortage resulting from school enrolment in conjunction with crop depredation by wild animals and poor farm road connections. This tendency is exacerbated by the difficulties experienced in **acquiring and maintaining farm machinery.**
- The tendency to leave land fallow is partly caused by the insufficient availability of irrigation systems and the inefficiency of irrigation methods. As a result, most areas that are now lying fallow are outside irrigation command zones. Fallow land is colonized by invasive weeds and regenerating trees. Some of this land could be turned into **private tree-based systems** representing a growing resource of landowner capital, providing several social and ecosystem services.
- **Livestock-owning households** face the problem of **inadequate fodder and pasture** due to small per-capita landholdings. However, to stall-feed cattle and use imported feedstock is expensive (and is often not an available option), inducing herders to rely on forests for grazing. **Livestock losses to wild predators** result in economic losses for rural communities. The ineffectiveness of the compensation scheme for livestock lost to predators adds to frustration.

- Interested households face high investment costs for establishing **entrepreneurial agroforestry systems,** have weak business planning skills, and lack sufficient technical knowledge. There is a **lack of access to loans and other finance** from financial institutions for wide-scale agroforestry investments.
- **Effective marketing is a significant challenge for the products of all farming systems,** due to the lack of channels for selling farm produce and weak national demand. Inter-regional trade within the country is economically unfeasible due to the problem of small surpluses. Poor road networks, coupled with unreliable transportation, cause difficulties in providing inputs and delivering products to market.
- In summary, the **main constraints affecting the adoption of agroforestry systems that farmer interviewees expressed** include the shortage of farm labor, the small size of landholdings, crop loss/damage caused by wildlife, lack of technical support, water shortage, market uncertainty, and lack of inputs such as machinery and seedlings. Many farmer respondents mentioned the **non-availability of technical support for agroforestry** and the **long maturation period** of some agroforestry species.

DRIVERS OF ENTREPRENEURIAL AGROFORESTRY

Farmers are the final decision-makers regarding the planting of trees on their farms. To facilitate their decisions, it is critical to establish *policies, packages of practices, training material, increased capabilities, and extension systems* that enable them to benefit from planting trees effectively. These elements are crucial for ensuring that the goals of all stakeholders at all levels are reached, including those of households, communities, and Districts, and ultimately for ensuring that they do so at the scale necessary for national development.

Figure 3: Land terracing, agroforestry and community forestry in Pachu valley

Stakeholders involved in promoting agroforestry systems need to remember that 'farmers' are not a homogenous group. The study proposes that the strategy should distinguish between *strengthening traditional agroforestry systems and setting up entrepreneurial agroforestry systems.* Cost-benefit analyses of a range of agroforestry designs are needed to support farmers to match their socio-economic status to different agroforestry options. Subsistence farmers need different combinations of trees and crops than entrepreneurial farmers or absentee landowners, and are subject to differing degrees of labor availability. The systems that are the focus of the proposed Agroforestry Strategy are those based on cost-benefit analyses, referred to in the study as **'entrepreneurial agroforestry'.**

The **main drivers for change** that facilitate and promote the research and outreach connected with climate-smart and green business technologies include the following:

1. **Rural socio-economic development, and the focus on value chains, favor entrepreneurial agroforestry.** Farming is diversifying away from subsistence where only household needs are met, towards production and contributing to national food self-sufficiency. The RGoB is concerned about food self-sufficiency and security and seeks to apply relevant policies, plans, and programs that generate income and food products, focusing on vegetables, cereals, and fruit crops. Vegetable and livestock production helps farmer households to go beyond

satisfying their household food requirements to produce a surplus that will be marketed. *The Government seeks to increase farmers' access to agricultural land to reduce food insecurity. Agroforestry systems can contribute to the achievement of food security and food nutrition.*

2. **Socio-economic variation in the categories of farmers favors the adoption of agroforestry by particular categories of farmer.** The targeted types of farmers who can adopt entrepreneurial agroforestry systems are *semi-subsistence farmers*, plus *semi-commercial farmers* that have sufficient land (5-10 acres) to maintain a kitchen garden, with a few fruit trees on the homestead, sometimes with a separate orchard, with some poultry, a piggery, a fishpond, and animals for dairy. They live off their farm produce and sell the surplus. Commonly, part of their land is kept fallow.

3. **The growing trend towards households whose members are absentee owners, ambitious young people, and women may increase interest in agroforestry systems.** There is an expanding group of Bhutanese citizens who are the offspring of smallholder or semi-commercial farmers and have left their villages for education or off-farm employment. *After their parents retire, they inherit land titles. They may rent out the land, convert it to a land-use type that requires less labor and capital input (such as particular agroforestry models), or leave it fallow. They are often interested in pursuing commercial opportunities to make better economic use of their land.*

4. **The uptake of agroforestry systems may become a focus of interest among farmer organizations,** especially farmers or youth groups/associations. These are groups of farmers or youths who practice commercial farming on private land or on land leased from the Government, who can be included in MoAF programming as agents that work together to establish agroforestry systems across the mosaic of their farming plots in a given locality, achieving economies of scale when inputs such as seedlings, shared labor, fertilizer, or machinery are considered.

5. **Changing gender roles in agroforestry must obligatorily be a cornerstone for driving agroforestry system development.** Bhutan's agriculture is becoming feminized (ADB, 2014), but we do not know women's preferences regarding agroforestry. In some parts of the country, society is matriarchal, and women own the farmland. In most areas, more farming tasks are carried out by women than men. *When women can take on the household leadership role of selling surpluses and managing the incomes, their roles in farming can be emancipatory. In other cases, where their roles are imposed on them, and they do not control the factors of production, their functions on the farm may be no more than drudgery.* It is essential to explore further the importance of women's roles in agroforestry development. This knowledge gap needs to be filled with new research that can inform the design of gender-responsive agroforestry interventions.

6. **Matching local complexity, and generating valuable ranges of products and services from agroforestry systems, increases their attractiveness.** Economic production and soil conservation rather than global concerns drive on-farm agroforestry. *Farmers practice some kind of agroforestry system and consider agroforestry as a method for producing multiple crops and generating different types of income from their limited land, including fodder for livestock and a supply of wood products for soil conservation and providing windbreaks.* Other benefits, such as land restoration, water conservation and regulation, biodiversity and environmental services, and adaptation to climate change, are not widely perceived as necessary.

7. **Improved agroforestry research enables and drives the scaling-out of improved extension services.** Poor research and low-quality information result in poor extension services to farmers. MoAF departments have their research division, but their research agendas are largely primarily focused on the priorities of the individual departments. *Agroforestry*

research requires an interdisciplinary approach integrating forestry, livestock, and agriculture, complemented by sociology and economics. Experts in a single field cannot adequately research complex agroforestry systems. Farmer respondents do not hear about agroforestry from researchers or extension agents, nor do they receive support besides a few training events focused on managing a particular type of fruit tree.

Farmers and local leaders express keen interest in taking up lucrative agroforestry on fallow lands. *Improved research and technical ability could significantly enhance the delivery of agroforestry programs.* Better support services would include: (1) Readily available inputs: improved seed material, fertilizers, mechanization support, tools, and machinery; (2) Demonstration plots, learning groups, and exchange visits; (3) Support for business planning, credit in line with the payback periods of the planned systems; (4) Storage facilities, and mechanisms for the processing and marketing of produce.

Figure 5: The importance of agroforestry business plans as an element in farm planning

8. **Dedicated collaboration between RNR and business development services encourages entrepreneurial agroforestry.** Farmers can carry out entrepreneurial agroforestry if they have the know-how, inputs, and markets. D*emonstrating some promising agroforestry systems and practices on model farms would help to garner interest and build confidence among farmers and youth. Training is needed to build farmers' technical insights into entrepreneurial agroforestry, and their skills in cash flow planning. The innovation drive will come from* ***linking service providers who supply technical inputs and know-how, with farmers and value chain actors, such as nursery owners, post-harvest service providers, SMEs, and agro-processing industries. Collaboration between finance providers and the financial sector, researchers, extensionists, farmers, and market agents will help align individual interests with wider objectives.*** This collaboration would be driven by a joint goal, i.e., sustainable agroforestry-based business development.

9. **Private tenure rights enable the uptake of entrepreneurial agroforestry.** Having long-term land tenure security is crucial for investing in agricultural practices. *Conducive land-use policies and regulations may involve creating a secure framework for ensuring tenure rights, linking tree tenure with land tenure, developing legal standards to protect farmers, and implementing land and tree resource management rules.* Land ownership affects the motivation to adopt an agroforestry system. Farmers are more likely to invest in the management of fruit and timber trees and plan a succession of annual and perennial understory crops if their land tenure is secure. This also affects women's appetite for engaging in agroforestry as they – the de facto decision-makers – often have no say in the long-term fate of the family land.

10. **A National Agroforestry Strategy is needed to enable the right farmer to plant the right tree in the right place.** The importance of "planting the right tree in the right place" is a truism. For Bhutan, we can add "by the right farmer," since a farmer's demographic status (including their age and gender) makes a difference in what trees will contribute the most to their particular livelihood. *Tailoring the agroforestry systems that are promoted, to meet the opportunities and needs of different types of farmers with land located in different ecological zones is essential to the success of the National Agroforestry Strategy.*

Figure 4: Types of agroforestry systems vary according to farmer characteristics	
FARMER CATEGORY	**PREFERRED AGROFORESTRY SYSTEM**
Smallholder subsistence families	Depending on their agroecological zone, smallholder subsistence farmers will practice agroforestry options that give them products for home consumption.
Female and male smallholder semi-commercial	The semi-commercial smallholder will have a small orchard, a cardamom-Alnus plantation, or another half to one-acre site where they produce for the market.
Pastoralist & nomadic women and men	The pastoral farmer will use fodder species on their land or species found in grazing areas, as guided by the DoL, possibly with DoFPS.
Absentee landowners who are often men	The absentee landowner has several options: (1) Options involving some regular work by a tenant or breaks from paid work elsewhere. Depending on labor availability, these can be centered on high-value tree crops such as coffee, fruits, and nuts, planted on fallow land, including intercrops. (2) Options that require a one-time investment and low maintenance, such as timber tree culture, oaks for mushroom culture, bamboo production for construction, etc.
Commercial farmers are often men, but marketing must be more open to females	The commercial farmer will go exclusively for high-value species, such as fruits or nuts, that require some investment. They may not live on the land, so the plantation/orchard will usually be managed as a monocrop.

11. **Harmonization of policy and private objectives can drive change.** Agroforestry demands joint efforts from multiple stakeholders and cannot be realized by any individual sector. *Agroforestry programs should focus on the farmers' priorities – diversifying production and generating cash income – complemented by contributing towards the preferences of the Government, i.e., the conservation of soil, water, and biodiversity.* Farmers prioritize productivity, diversification, and economic gain. In contrast, civil servants from the forestry and other RNR agencies prioritize reducing pressure on forests, using fallow lands, and **mitigating and adapting to climate change to reduce farmers' vulnerabilities.** *However, these different objectives are complementary, not exclusive, and must be integrated into the national agroforestry strategy and Program.*

12. **Agroforestry promotion needs a national lead agency.** Besides the lack of policy, the absence of a strong lead agency at the Ministry responsible for the overall coordination of an agroforestry Program is another issue forcing individual departments to function in isolation and push only their agendas. *Establishing a lead agency for an agroforestry program at the national level is imperative, even while SFED in DoFPS has successfully carried out numerous activities. The time may have come for increasing the level of ambition and freeing agroforestry from its limbo status, caught between "three stools" (DoA, DoL, DOFPS) and establishing a specific agency to guide its development, allocated the same level as the existing three MoAF RNR-Departments.* ***The Green Bhutan Corporation Ltd., (GBCL) could be mandated to carry out an enlarged entrepreneurial agroforestry programme for Bhutan.***

13. **Value chain support makes agroforestry products valuable. Agroforestry can lead to rural enterprise development and new markets driven by consumer demand.** The calculations in the report were based on potential indicated production levels, farmers possessing a high level of expertise, and reasonable access to markets throughout the year. *Agroforestry value chains and market systems need to become profitable through investments that enhance technical and product marketing skills. However, the level of farmers' capacity and the state of markets in Bhutan are not yet sufficiently favorable. Agroforestry marketing opportunities need*

professional market development through private partners. Promoting SMEs and market opportunities through agroforestry can enable farmers to expand agroforestry production as a component of their farming activities. Agroforestry products may be aimed at: (1) Animal husbandry, for fodder; (2) Mushroom industry, for billets and other substrates; (3) Construction sector, for timber, poles, bamboo, handicraft industries. Other opportunities may exist in paper industries, the plywood industry, etc.; (4) Processing and packaging industry for nuts, fruits, etc.; (5) Fresh fruit and value chains for local markets or export to India; (6) Organic production for lucrative niche markets in India or beyond. A **Technical Agroforestry Systems Options Study** should define the best systems for added value.

14. **Economic analysis shows that specific agroforestry entrepreneurial systems are appropriate for different farmers:** As part of this study, the team collected data to tailor the FarmTree® Agroforestry Planning Tool to the situation in Bhutan.

Figure 4: The importance of agroforestry business plans as an element in farm planning

A **business plan is a financial action plan** utilized by a farmer or business owner that details the **inputs, outputs, and expected cash flow** during the first year of operation, sets out a road map for future years, and provides the user with a tool for performance evaluation and business promotion. Credit institutions do not have the expertise to assess agroforestry plans adequately, and the related cash flow or the financial mechanisms when farmers want to invest in planting on-farm trees. The Farm Tree® Model or similar cash-flow analysis program can be used to systematically produce the required data outputs.

However, standing trees constitute a type of capital that banks will not easily accept as collateral. *Suppose farmers can learn how to prepare viable business plans. In that case, they will gain insight into the time frames involved in calculating costs and returns, and this will also encourage institutions to invest in agroforestry projects. Adequate financing of bankable agroforestry models by the Government and financial institutions' is crucial.* The aim is to ensure that farmers are able (with some outside help) to develop a business plan which can be presented as a bankable project that is credible enough to open the door to grants, loans, and other forms of finance.

The Farm Tree® tool requires users to enter a farm plan ('plot definition' and 'plot cover plan') to generate a time series of some 20 indicators, such as plot-cover over time, production, cash flow, labor, revenue per labor-day, erosion, soil and plant carbon, and likely growth constraints. As the study's annex illustrates, farmers can use this tool to generate agroforestry business plan scenarios. Business plans need to account for the length of time required to generate returns on investments. Depending on the infrastructure, machinery, and equipment requirements, these may be rather long.

15. **Improved access to finance:** Credit institutions do not have the expertise to adequately assess agroforestry plans and cash flows when farmers want to invest in planting on-farm trees. *Adequate and proper financing of agroforestry programs from the Government and new Development Assistance programs, will enable bankable agroforestry models to be readily accepted by financial institutions, particularly for the costs of the initial stage establishment.*

IMPLICATIONS FOR POLICY AND INSTITUTIONS

A problem analysis of issues relevant at the institutional level reveals the following:

Many stakeholders lack an understanding of how **the evolving socio-economic context can increase the potential for the dissemination of agroforestry systems.** Given that Bhutanese rural society is rapidly changing, external agencies must stem the abandonment of villages, as household members seek employment in urban areas, leaving their land fallow. Agroforestry has the advantage that some tree species, such as high-quality timber species or nut-bearing

species, provide long-term benefits with little investment during the tree's growing period. *External agencies such as MoAF need to understand how inter-household differences (by gender, age, and land tenure type) determine the type of agroforestry to be practiced.*

Bhutan has a substantial shortfall in agroforestry research and technology development. *A dedicated system of integrated agroforestry research is needed to boost the adoption of new AF technologies.* Research directed towards generating high-quality inputs (such as seedlings) and outputs (for markets) is absent. *The institutions within Bhutan lack robust concepts of sustainable agriculture based on agroforestry that is multifunctional, and that uses agroecological methods adapted to specific ecosystems.* Addressing this shortcoming would help tackle increasing environmental challenges and social vulnerabilities.

Figure 6: Agroforestry landscape

There is a lack of coordination and integration between MoAF and other stakeholders. There is *weak coordination between different agroforestry-related departments due to the lack of a strong lead agency and policy strategy among the RNR departments, and between the RNR departments and other stakeholders such as trade and industry organizations, the Ministry of Finance, and the Ministry of Economic Affairs*. This leads the **DoFPS, DoA, and DoL to function in isolation and push their agendas within their domains, thus limiting (rather than opening up) the concept of agroforestry to all users, as a set of specific land-use systems.** Consequently, agroforestry practice is mainly a rural phenomenon undertaken by smallholder farmers who rely on indigenous knowledge with minimal innovation.

Several important strategic choices remain to be determined. Numerous sectoral policies and legislation in Bhutan support the agroforestry concept. Agroforestry is one of the best practices for tackling climate change, and is well recognized in the Third National Communication of Bhutan 2020. The following outline makes the argument for an Agroforestry Strategy that contributes optimally to the National Development Objectives:

(1) **Agroforestry has the potential to contribute to National Development Objectives** as defined in the 12th FYP, justifying national investments in an agroforestry development and promotion program, and this justification is likely to persist in the 13th FYP.
(2) **Agroforestry is primarily a private activity,** and landowners decide what kind of agroforestry they develop on their land. When organized via farmer groups, these units can benefit from focused capacity-building to implement specific agroforestry practices;

(3) **Research is needed because different farmer groups have varied objectives, but practice agroforestry in a range of production systems for which information is still lacking:** (i) for use in the household or cottage industries, differentiated by gender (as fodder for livestock, construction, nutrition, or on-farm industry activities), requiring analyses of livelihoods and cost-benefit; and (ii) for commercial use (for consumer markets, as raw materials for food processing or construction, etc.), for which economic cost-benefit analyses are crucial. The gender analysis of a future RGoB Agroforestry Strategy should enable both female and male farmers to grow trees and to coordinate with different government services and private partners. It is vital to develop on-farm demonstration plots, packaging the know-how in planning tools, and improve the communication amongst researchers, extensionists and farmers.

(4) **Linking agroforestry production to value chain development** will motivate farmers to establish and innovate. Supporting the value chain agents are not only the RGoB institutions, but also (i) research agencies capable of conducting experiments with critical species and retrieving know-how from India or Nepal, (ii) private input suppliers (of seeds, seedlings, farm machinery), as well as value chain actors (in transport and industry), and (iii) credit suppliers for investments in agroforestry-establishment and value-chain activities (in transport and industry).

The following **implications have been identified for policy and the lead agencies:**

POLICIES & LEGAL FRAMEWORKS

1. The Agroforestry Strategy proposes a national Agroforestry program objective: *"Increase, diversify and sustain production from limited land through improving agroforestry systems for self-sufficiency, economic, environmental and social benefits."* It focuses on forms of agroforestry that are not yet promoted via existing departmental programs. It proposes that the agroforestry potential in the country should be realized by achieving three broad program outcomes:

• Traditional agroforestry systems are preserved and promoted through value addition;
• Agroforestry entrepreneurship is promoted to diversify productivity & increase value;
• Synergies between Government, research, financial, and business services create a conducive environment for agroforestry.

• The Study Report sets out a budget for each proposed Outcome. *For agroforestry entrepreneurs to thrive, collaboration is needed involving the financial sector, researchers, extensionists, farmers, private industry, and markets.* **Such partnerships are developed around concrete agroforestry systems, particular products, and robust markets.**

ORGANIZATIONAL STRUCTURES

2. In the 12th FYP, MoAF mandates DoFPS to lead agroforestry programming. An **Agroforestry Section** has been created under the SFED of DoFPS. An Agroforestry Steering Committee has been formed, containing specialists and official representatives from the three central departments of MoAF. This group only operates at the thematic policy and planning level, effectively just as a MoAF grouping. However, this Steering Committee is not operative at all scales from the Gewog/provincial level, upwards to include leaders from relevant sectors, the National Statistics Bureau, and CSOs.

3. The proposed, upgraded, **Agroforestry Working Group** should replace the old Steering Committee and include members from DoA, DoL, National Bureau of Statistics, PPD, DAMC, Research Institutes, CSOs, Green Bhutan Corporation, RUB, RDTC. A high-level executive order should be issued to establish this group. Its members should ensure that the programs identified will be implemented within sectoral plans. The lead agency should be encouraged to liaise with international and regional AF knowledge centers. A vital role for out-scaling is to package-up AF systems for effective replication, viz., extension Manuals and Leaflets for each priority AF entrepreneurial system.

4. Stakeholders should consider whether the location of Agroforestry within DOFPS led by SFED risks maintaining agroforestry within its usual "silo" location. The study proposes that – given the significant potential for a substantial agroforestry program in Bhutan – and the need for better coordination between different Department-level agroforestry implementing agencies, MoAF and the GNHC should consider a separate lead agency established under the Ministry. Instead, a **national agency could take the lead role, guided by clear policy strategy, roles, and coordination mechanisms.** This would require some additional human resources plus budgetary support.

5. **The selected lead agency could develop an ambitious policy, Program, strategy and guidelines, roles and responsibilities, and coordination mechanism.** This will require extending the institutional and technical capacities of staff in planning, implementation and M&E. The lead agency role could be vested in the DoFPS by strengthening the existing Agroforestry Section under SFED, or by mandating the Green Business Corporation Ltd, or it could be performed by a separate agency under the MoAF secretariat for better implementation. **A separate office under the Ministry could be appropriate and preferable,** considering the importance and potential of agroforestry for restoring the fallow farmlands and increasing the productivity and cash incomes for rural communities to contribute to poverty reduction, and provide employment opportunities for unemployed people and youth.

VISIONS, MANDATES & ROLES

6. Agroforestry contributes to 8 specific SDGs: – 1. No poverty; 2. Zero hunger; 3. Good health & well-being; 8. Decent work & economic growth; 10. Reduced inequalities; 12. Responsible consumption/production; 13. Climate action; 15. Life on land.

7. The national Agroforestry Strategy and Program can contribute to 3 National Key Result Areas:
• NKRA 2. Economic diversity and productivity enhancement can be achieved by implementing the Key National Indicators (NKIs) of RNR marketing and enhancing value chain development
• NKRA 5. Healthy ecosystem services can be maintained by implementing the NKI to develop climate-smart disaster resilience and increase the effectiveness of RNR service delivery.
• NKRA 8. Water, food, and nutrition security can be achieved through the NKI of developing climate-smart disaster resilience and enhancing RNR marketing and value chain development.

8. At the national level, **agroforestry has the potential to contribute to two of the GNH domains** by enhancing Ecological Diversity and Resilience; and improving Living Standards. Agroforestry also would strongly contribute to the MoAF's goal for the 12th Five Year Plan of *"Inclusive and Sustainable development for ensuring food self-sufficiency and economic self-reliance."*

STRATEGIES & PROGRAMMING

9. The National Agroforestry Strategy and Program proposes realization of the following outcomes:

- **Traditional agroforestry systems are promoted through value addition.** The maintenance of conventional AF systems through value addition based on sustainable farming concepts would help farmers generate better outputs and preserve traditional farming practices. *Quantitative characterization of different traditional AF practices in different agroecological zones would help identify farmers' priority production and any needs for the appropriate support of value addition activities. This includes strengthening markets and post-harvest processing, and exploring opportunities for community-based AF through their inclusion in CF management practices.*
- **Agroforestry entrepreneurship is promoted by enhancing knowledge-practice-value chain linkages.** *Entrepreneurial agroforestry systems comprise the least-explored but high-potential agroforestry options that can only be fully realized with combined technical, input-related, value-chain, and financial support.* Agroforestry value chain systems need to become more efficient through investments to enhance technical skills and product marketing skills to improve farmers' incomes.
- Synergies between Government, researchers, finance providers, and business services will create a conducive environment for entrepreneurial agroforestry. RGoB will develop a conducive environment to encourage farmers to adopt AF. *Poor research and poor-quality information result in poor extension services to farmers. AF demands the efforts of multiple stakeholders, and integrated research with the participation of all players.* Research needs to focus on raw material production or high-value trees that can form the basis of thriving rural enterprises.

PROCESSES, PROCEDURES & GUIDELINES

10. Networking with regional and international organizations will support growth of institutional and technical capacities. The past RNR concept in Bhutan needs to be 'enriched' by developing links to finance providers and trade and industry objectives, and should include enterprises.

HUMAN RESOURCES & TRAINING

11. Human resources within the lead agency must be adequate, with focal staff placed in relevant Departments, and a stakeholder coordinating mechanism. Implementing the activities under each Outcome will require strengthened technical capacities in agroforestry planning, implementation and M&E. Adequate human resources and budgetary support are imperative for the rest of the 12th Five Year Plan and the coming 13th FYP.

MONITORING & EVALUATION

12. Entrepreneurial agroforestry requires robust, results-based M&E, and a strong knowledge system. An Agroforestry Working Group could meet at least twice a year to review the AF program. The AWG would ensure that findings are fed into the existing RNR M&E framework. Agroforestry programs will be effective if three main parameters are in place: (1) policy and strategy guidelines; (2) institutionalization of the lead agency with clear roles; and iii) a constant focus on research and development of technical capacities.

13. The successful implementation of agroforestry monitoring requires the development of an indicator framework, that monitors which technical services and input supply are found to induce farmers to undertake entrepreneurial agroforestry.

The monitoring would include surveys, land-use analysis using geodata, economic analyses and projections, and landscape-level or national planning of agroforestry production and social/environmental services. This would generate indicators for environmental and social performance, and could provide inputs for M&E of food security policy, or the country's Natural Capital Accounting. Bhutan would become able to demonstrate its performance towards Sustainable Development Goal indicators.

Policy Briefs

Policy Briefs provide highlights on development issues in the renewable natural resources sector in Bhutan. The Policy Briefs provide information on topics such as governance, livelihoods, natural resources and sustainability in an accessible way for decision makers and donors.

Many of the Policy Briefs are based on evidence-based statistics available at the Ministry of Agriculture and Forests together with Research Studies carried out by the Policy and Planning Division at MoAF, and are often a synthesis of study reports prepared by international experts on behalf of donor agencies assisting the MoAF in Bhutan.

The **EU Technical Assistance Complementary Support Project** (EU-TACS) has the aim of contributing to the sound implementation of the EU-Bhutan bilateral development cooperation strategy. Since its inception in March 2019, the EU-TACS project has provided technical assistance focusing on rural development, climate change response, and local government plus fiscal decentralization. EU-TACS has also supported the implementation of two EU sector reform budget support contracts for the MoAF and the DLG. The assistance has included consulting services, studies and communication-related inputs, to provide stakeholders with direction for capacity-building, dialogue and policy change in key development themes and subject areas.

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