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Lao People's Democratic Republic
Peace Independence Democracy Unity and Prosperity
Ministry of Agriculture and Forestry

Mainstreaming biodiversity across agriculture and forestry sectors: a Roadmap for Lao People's Democratic Republic

2024–2030



Mainstreaming biodiversity across agriculture and forestry sectors: a Roadmap for the Lao People's Democratic Republic

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Preface

At the crossroads of Southeast Asia, our nation stands poised for a critical transition. We are a nation rich in natural wealth, blessed with diverse ecosystems, fertile lands, and resilient communities. Yet, the challenges of the 21st century – climate change, unsustainable resource use, and biodiversity loss – threaten this bounty. Recognizing this turning point, we, the Lao People's Democratic Republic, embark on a transformative goal: mainstreaming biodiversity across crop and livestock production, forestry, and fisheries.

This roadmap serves as a compass, guiding us towards a future where economic prosperity coexists with environmental stewardship. It is a call to action, acknowledging the intrinsic value of biodiversity not just for its ecological role, but also for its contribution to food security, livelihoods, and national well-being. Over the past decades, our country has witnessed significant economic growth. However, this progress has come at a cost. Unsustainable practices in agriculture, livestock rearing, and resource extraction have exerted pressure on our precious ecosystems. Deforestation, soil degradation, and declining fish stocks jeopardizing the very foundations of our prosperity.

We understand that change is not easy. Generations have relied on established methods, and altering these entrenched practices will require commitment, innovation, and collaboration. This roadmap outlines a pathway for this collective effort, engaging stakeholders across government, private sector, civil society organizations, and local communities. A blueprint for action: (1) Investing in sustainable practices: Promoting agroforestry, organic farming, and responsible forest management to enhance productivity while safeguarding biodiversity. (2) Empowering communities: Fostering participation in resource management, building capacity, and supporting the development of alternative livelihoods. (3) Harnessing innovation: Leveraging technology and research to develop climate-resilient crop varieties, improve resource efficiency, and explore sustainable feed alternatives. (4) Strengthening market access: Connecting producers of biodiversity-friendly products with premium markets, ensuring fair rewards for their efforts. (5) Creating an enabling environment: Implementing robust policies and regulations, promoting responsible consumption, and raising awareness about the value of biodiversity.

This roadmap is not merely a document; it is a living commitment. It will evolve as we learn and adapt, driven by the collective wisdom and dedication of all stakeholders. The journey towards a biodiverse and sustainable Lao People's Democratic Republic begins now, with each action, each decision and each step we take together. Let us embrace this opportunity, chart a path towards a thriving future, and leave a legacy of hope for generations to come.

Director General of National Agriculture and Forestry Research Institute



Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Ministry of Agriculture and Forestry

Ref. No. **3859-MAF** -
Vientiane, Date: **25 JUL 2024**

Agreement
The roadmap for Lao PDR on Mainstreaming biodiversity across
agriculture and forestry sectors (2024 – 2030)

- Refer to Prime Minister's decree on the mandates of Ministry of Agriculture and Forestry (MAF) No. 603/PM, Date: 15 October 2021;
- Refer to the proposals of National Agriculture and Forestry Research Institute (NAFRI);
- Refer to Lao PDR as party to the Convention on Biological Diversity and the adoption of the Kunming-Montreal Global Biodiversity Framework.

Minister of Agriculture and Forestry agreed:

- Article 1 Approve the adoption and promulgation of the roadmap for Lao PDR on mainstreaming biodiversity across agriculture and forestry sectors (2024 – 2030).
- Article 2 Entrust the NAFRI to take the lead in coordinating with the relevant agencies at the national and local levels to spearhead and implement the roadmap shown in Article 1.
- Article 3 Cabinet Office, Departments, Institutions, and equivalent offices under MAF, Provincial Agriculture and Forestry Offices, and other concerned agencies shall recognize, cooperate, and simultaneously implement this agreement effectively.
- Article 4 This agreement is enabling and effective from the date of signing.

Minister



Assoc.Prof.Dr. Linkham DOUANGSAVANH



Abbreviations

CBD	Convention on Biological Diversity
DaLAM	Department of Agriculture land Management
DoA	Department of Agriculture
DoE	Department of Environment
DoF	Department of Forestry
DoFL	Department of Fishery and Livestock
FAO	Food and Agriculture Organisation of the United Nations
GBF	Global Biodiversity Framework
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IFAD	International Fund for Agricultural Development
KMGBF	Kunming-Montreal Global Biodiversity Framework
MAF	Ministry of Agriculture and Forestry
MONRE	Ministry of Natural Resources and Environment
NAFRI	National Agriculture and Forestry Research Institute
NABP	National Agro-biodiversity Programme
SDC	Swiss Agency for Development and Cooperation
WWF	World Wide Fund for Nature





1. Introduction

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The Lao People's Democratic Republic is a landlocked country dominated by mountainous landscapes, diverse ecosystems, and a wealth of natural resources which underpin its people's livelihoods and complement its burgeoning economy. From fertile agricultural plains and verdant hillsides to cascading rivers and teeming aquatic life, the Lao People's Democratic Republic's biodiversity forms the intricate web of life that sustains us all.

However, this invaluable tapestry faces growing threats. Deforestation, unsustainable land-use practices, climate change, and illegal wildlife trade are pushing the Lao People's Democratic Republic's precious natural heritage towards a tipping point. The consequences are dire – soil erosion, declining agricultural productivity, dwindling fish stocks, and disrupted ecosystems can cripple food security, exacerbate poverty, and dampen economic growth.

In the face of these challenges, inaction is not an option. The Lao People's Democratic Republic must rise to the occasion and embrace a transformative path – one that ensures a future where biodiversity thrives alongside human well-being. This calls for a paradigm shift, a movement to mainstream biodiversity across all sectors, particularly in the cornerstones of its economy: crop production, livestock raising, forestry, and fisheries.

This roadmap serves as a compass on this crucial direction. It maps out a comprehensive and targeted strategy for integrating biodiversity conservation into the very fabric of these sectors, not as an obstacle, but as a catalyst for sustainable development. It envisions a country where farmers cultivate diverse crops amidst thriving wildlife corridors, where healthy livestock graze under the canopy of towering trees, where responsible forest management complements economic prosperity, and where vibrant fisheries flourish in pristine waters.

A Call to Action: Mainstreaming Biodiversity Across Sectors

This roadmap is not merely a document; it is a call to action. It invites all stakeholders, including government agencies, private businesses, civil society organizations, and local communities to join hands and embark on this collective endeavor. It demands innovative thinking, unwavering commitment, and collaborative action. By implementing the strategies outlined within, we can ensure that the rich tapestry of the Lao People's Democratic Republic's biodiversity is not just preserved but woven into the very fabric of its future.



The future will be challenging, but the rewards are undeniable. A biodiverse nation, the Lao People's Democratic Republic, promises food security for its people, resilience in the face of climate change, vibrant ecosystems that nurture life, and a thriving economy fueled by sustainable practices. It is a legacy worth fighting for, a future worth shaping for generations to come.

Through this roadmap, we embark on a collective direction towards a nation where biodiversity and human prosperity converge, a land where nature flourishes and communities thrive. Let us step forward, united in purpose, to unlock the true potential of this remarkable nation and write a new chapter in its story, one where biodiversity is not just an afterthought, but the cornerstone of a sustainable and prosperous future.





2. Rationale

The Lao People's Democratic Republic stands at a pivotal juncture in its development direction. Its breathtaking landscapes verdant tropical forests, fertile plains, and teeming water resources, have long sustained its people and complemented its national economy. However, unsustainable practices in crucial sectors like crop production, livestock raising, forestry, and fisheries threaten to erode this precious foundation, jeopardizing both current well-being and future prosperity.

2.1 Beyond conservation: Biodiversity as a strategic investment

Mainstreaming biodiversity is not just a moral imperative; it's a critical investment in a sustainable future for the Lao People's Democratic Republic, aligning directly with the ambitious goals of Target 10 of the Kunming-Montreal Global Biodiversity Framework. This landmark agreement, adopted by the parties to the Convention on Biological Diversity in December 2022, calls for the effective mainstreaming of biodiversity considerations across all sectors.

While strong foundations exist, like the National Biodiversity Strategy and Action Plan and National Agro-biodiversity Programme (II), a recent cross-sectoral analysis done by the National Agriculture and Forestry Research Institute revealed gaps in implementation, coordination, and coherence between existing policies and the Lao People's Democratic Republic's commitments on biodiversity, climate change, and land restoration (the three Rio Conventions). Bridging these gaps is crucial to achieving Target 10 and unlocking the immense potential of a biodiverse nation.

By strengthening the alignment and implementation of existing policies, adopting evidence-based and inclusive approaches, and leveraging the innovative tools and targets outlined in the Kunming-Montreal Global Biodiversity Framework, The country can unlock a win-win scenario:

- ▶ **Enhanced food security and nutrition:** Diverse and resilient agriculture systems contribute to stable food production and improved dietary diversity.
- ▶ **Increased climate resilience:** Sustainable land management practices help mitigate climate change impacts and ensure long-term water security.

- ▶ **Economic opportunities:** Green jobs and investments in sustainable production and nature-based solutions drive economic growth and create new livelihoods.
- ▶ **Environmental health and well-being:** Thriving ecosystems provide clean air, water, and essential ecosystem services, contributing to human health and well-being.

2.2 Challenges and opportunities

1. Crop production:

Challenge: Dependence on chemical fertilizers and monocultures depletes soil health, reduces biodiversity, and increases vulnerability to pests and climate change.

Opportunity: Diversified farming practices with native crops, integrated pest management (IPM), and improved soil health can boost resilience, enhance food security, and promote eco-friendly agriculture. Alignment with existing policies incentivizing organic farming and research in climate-resilient crops is crucial.

2. Livestock production:

Challenge: Overgrazing, deforestation for pastureland, and reliance on imported feed degrade land, emit greenhouse gases, and threaten biodiversity.

Opportunity: Sustainable grazing practices, diversified feed sources, and improved pasture management can reduce environmental impact, increase profitability, and contribute to climate change mitigation. Revising policies on pasture management and livestock production to incentivize these practices is necessary.

3. Fisheries:

Challenge: Overfishing, habitat destruction, and pollution endanger fish populations and aquatic ecosystems, jeopardizing food security for reliant communities.

Opportunity: Responsible fishing practices, community-based management, and habitat restoration can safeguard aquatic biodiversity, ensure sustainable fish stocks, and sustain livelihoods. Robust of the Law on Wildlife and Aquatic Animals, alongside community engagement, is essential.

4. Forestry:

Challenge: Unsustainable logging and land conversion for agriculture and livestock result in deforestation, habitat loss, and biodiversity decline.

Opportunity: Sustainable forest management practices, community-based forest management, and certification programs can generate income, protect ecosystems, and ensure long-term resource availability. Strengthening enforcement of existing laws and promoting stakeholder collaboration are key.

2.3 The Pathway Forward: A Roadmap for Mainstreaming Biodiversity

This roadmap proposes a comprehensive strategy for integrating biodiversity conservation and sustainable use into the important sectors e.g. land management, poverty reduction and climate change resilience, agricultural, forestry, and fisheries sectors. It outlines tangible actions, innovative solutions, and collaborative approaches to facilitate a paradigm shift towards sustainable development. Through targeted interventions and coordinated efforts, this roadmap paves the way for a future where:

Land management: Ensure access to diverse and nutritious food sources for all citizens of the Lao People's Democratic Republic, particularly vulnerable communities, by promoting sustainable production practices that enhance soil fertility, water management, and climate resilience.

Resilience to climate change:

- ▶ Restore and conserve the Lao People's Democratic Republic's diverse ecosystems, ensuring the long-term availability of clean water, fertile soils, and bio-pest control services crucial for agricultural and fisheries productivity.
- ▶ Diversify agricultural systems by incorporating native species and traditional knowledge, boosting agricultural biodiversity and ecosystem services that support food production.
- ▶ Build adaptive capacity and resilience to climate change within agricultural systems, safeguarding food security in the face of increasingly unpredictable weather patterns.
- ▶ Contribute to regional and global efforts to combat climate change and biodiversity loss, ensuring a healthy and resilient environment for future generations.

Farmers nurture biodiverse farms: Utilizing integrated pest management, diversifying crops with native varieties, and enriching soil health to ensure food security and environmental sustainability.

Livestock producers embrace responsible practices: Implementing rotational grazing, diversifying feed sources, and improving pasture management to minimize environmental impact and maximize profitability.

Forest communities thrive in harmony with nature: Actively participating in sustainable forest management, generating income through certified timber and non-timber forest products, and safeguarding biodiversity for future generations.

Fish populations flourish in healthy waterways: Utilizing community-based management approaches, adopting responsible fishing practices, and restoring critical aquatic habitats to secure food security and ecosystem health.

Embracing biodiversity is not just about protecting nature; it's about securing the Lao People's Democratic Republic's future. By implementing this roadmap, the Lao People's Democratic Republic can unlock a future where economic prosperity coexists with environmental responsibility, creating a thriving nation where people and nature prosper in harmony.





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3. Roadmap and milestones (2024-2030)

3.1 The purposes of the roadmap

This roadmap aims at addressing the critical need for integrating biodiversity conservation and sustainable use into the core of the Lao People's Democratic Republic's development strategy. Its overarching goals are to:

1. Guide a paradigm shift:

- Foster a transformative change in mindset and practices within the crucial sectors of crop production, livestock raising, forestry, and fisheries.
- Move from unsustainable resource use towards harmonious co-existence with nature, ensuring long-term environmental and economic resilience.

2. Achieve concrete outcomes:

- Enhance food security and livelihoods by promoting diversified, ecologically sound practices that build soil health, improve yields, and protect aquatic resources.
- Contribute to climate change mitigation and adaptation by reducing deforestation, greenhouse gas emissions, and ecosystem degradation.
- Generate new economic opportunities through sustainable resource management, ecotourism, and green business initiatives.

3. Address key challenges:

- Bridge the gap between existing biodiversity policies and their effective implementation through targeted actions and collaborative approaches.
- Tackle specific challenges within each sector, such as overgrazing, overfishing, and unsustainable agricultural practices.
- Address resource constraints and capacity gaps by fostering knowledge sharing, technological innovation, and access to funding.

4. Promote collaboration and ownership:

- Unite stakeholders – government agencies, Non-Governmental Organisations (NGOs), businesses, communities – around a common vision for a biodiverse future for the Lao People's Democratic Republic.
- Facilitate effective partnerships and coordination across sectors to ensure holistic and inclusive implementation of the roadmap.

- ▶ Empower local communities to play a leading role in managing their resources sustainably and benefiting from biodiversity conservation and sustainable use efforts.

5. Monitor progress and adapt:

- ▶ Define clear goals and measurable indicators to track progress towards achieving the roadmap's objectives.
- ▶ Establish a robust monitoring and evaluation framework to assess the effectiveness of implemented actions and identify areas for improvement.
- ▶ Foster continuous learning and adaptation by incorporating feedback and findings into future iterations of the roadmap.
- ▶ Ultimately, this roadmap aims to be a dynamic tool that guides the Lao People's Democratic Republic on a path towards a sustainable and prosperous future where biodiversity underpins not just environmental health, but also economic development and thriving communities.

3.2 Key actions

This Roadmap outlines a series of targeted actions and interventions across four key sectors to achieve our vision of a biodiverse and prosperous nation. These actions are designed to be specific, measurable, achievable, relevant, and time-bound (SMART) for effective implementation.

3.3 Outputs of key actions for mainstreaming

3.2.1 Building climate-resilient cropping systems		
Actions	Descriptions	Coherence to the KMGBF targets
Action 1.1:	Promote diversification: Encourage and incentivize diverse cropping systems (intercropping, polycultures) and agroforestry practices, enhancing soil fertility, reducing pest and disease outbreaks, and providing shade and windbreaks	2, 3, 5 & 10
Action 1.2:	Adopt water-efficient practices: Promote drought-resistant crop varieties, improved irrigation systems (drip irrigation, water harvesting), and conservation tillage techniques to minimize water use and soil erosion	2, 3, 4 & 5
Action 1.3:	Develop early warning systems: Establish weather monitoring networks and climate information services to predict extreme weather events (droughts, floods) and enable communities to prepare and adapt	6 & 11
Action 1.4:	Invest in research and development: Support research on climate-resilient crop varieties, locally adapted seeds, and innovative agricultural technologies for improved resource efficiency and stress tolerance	6, 7 & 13

3.2.2 Enhance sustainable land management practices

Actions	Descriptions	Coherence to the KMGBF targets
Action 2.1:	Promote soil conservation: Encourage cover cropping, mulching, and compost use to build organic matter, improve soil structure, and reduce erosion	3, 7 & 10
Action 2.2:	Implement integrated pest management (IPM): Encourage biological pest control methods, companion planting, and natural pesticides to reduce reliance on chemical inputs and protect soil health	7, 9, 10 & 14
Action 2.3:	Restore degraded lands: Support community-based initiatives for reforestation, land reclamation, and restoration of degraded watersheds and riparian zones	2, 15 & 22

3.2.3 Foster community engagement and resilience

Actions	Descriptions	Coherence to the KMGBF targets
Action 3.1:	Build capacity and knowledge: Provide training and resources for farmers and communities on climate-resilient practices, land management techniques, and biodiversity conservation and sustainable use	2, 3, 6 & 7
Action 3.2:	Support community-based adaptation: Promote participatory planning and decision-making, empower communities to manage their resources sustainably, and build local social safety nets	14, 18 & 22
Action 3.3:	Enhance market access: Facilitate market linkages for producers of biodiversity-friendly and climate-resilient agricultural products, ensuring fair prices and economic incentives for sustainable practices	2, 14 & 15
Action 3.4:	Promote knowledge sharing: Facilitate exchange of knowledge and best practices through farmer-to-farmer networks, community learning platforms, and demonstration plots	13, 18 & 19

3.2.4 Strengthen policy and regulatory frameworks

Actions	Descriptions	Coherence to the KMGBF targets
Action 4.1:	Develop climate-smart policies: Integrate climate change adaptation and resilience considerations into national agricultural and environmental policies, promoting sustainable land management practices.	3, 5, 7 & 10
Action 4.2:	Strengthen enforcement: Enhance monitoring and enforcement of environmental regulations to combat illegal logging, unsustainable resource extraction, and land degradation.	2, 6, 8 & 15
Action 4.3:	Invest in green infrastructure: Support the development of climate-resilient infrastructure, such as rainwater harvesting systems, drought-resistant irrigation systems, and flood protection measures.	6, 15 & 20
Action 4.4:	Foster international cooperation: Collaborate with regional and international partners to share expertise, access climate finance, and implement best practices in climate-resilient agriculture and land management.	3, 6, 10 & 14



3.2.5 Crop production

Actions	Descriptions	Coherence to the KMGBF targets
Action 5.1:	Pilot and scale up agroforestry systems integrating native crops and trees for improved soil fertility, nutrient cycling, and pest control	2, 3, 5, 8 & 10
Action 5.2:	Encourage the use of organic fertilizers and compost, and provide training on integrated pest management (IPM) techniques	3, 7 & 10
Action 5.3:	Establish community seed banks for diversifying local crop varieties and promoting resilience to climate change	3, 5, 8, 10 & 13
Action 5.4:	Promote water-efficient irrigation techniques and rainwater harvesting technologies to reduce water use and improve drought resilience	3, 5, 6, 14 & 22
Action 5.5:	Implement policies and incentives to discourage water pollution from agricultural practices	2, 3, 5 & 19
Action 5.6:	Restore degraded riparian zones and buffer strips along waterways to protect water quality and aquatic biodiversity	2, 3, 5, 6, 10 & 14
Action 5.7:	Provide training and resources for farmers on biodiversity-friendly practices, including organic farming and IPM	2, 3 & 7
Action 5.8:	Facilitate access to fair markets and premium prices for sustainably produced crops through certification programs and market linkages	2, 14 & 15
Action 5.9:	Invest in research and development of climate-resilient crop varieties and sustainable agricultural technologies	2, 6, 7, 13 & 14

3.2.6 Livestock production

Actions	Descriptions	Coherence to the KMGBF targets
Action 6.1:	Implement rotational grazing practices and introduce drought-resistant forage species to reduce pressure on natural landscapes	3, 4, 5, 10 & 14
Action 6.2:	Promote silvo-pastoral systems combining trees and forage plants to improve pasture land quality and ecosystem services	2, 5, 10 & 14
Action 6.3:	Support community-based forest management initiatives to sustainably manage grazing lands and prevent deforestation	2; 3; 5 & 6
Action 6.4:	Encourage the cultivation of forage legumes and other protein sources to reduce dependence on imported feed	2; 4 & 5
Action 6.5:	Promote the use of crop residues and agro-industrial byproducts as livestock feed supplements	2; 3; 4 & 8
Action 6.6:	Invest in research and development of alternative feed sources, such as insect protein, to reduce environmental impact	2, 5, 7 & 14
Action 6.7:	Provide training and resources for improved animal handling, hygiene, and disease prevention practices	6, 9, 10 & 12
Action 6.8:	Promote responsible use of antibiotics and other veterinary drugs to reduce environmental contamination	6, 8 & 10
Action 6.9:	Support the development of community-based animal health services and knowledge sharing networks	6, 8, 10, 16 & 22



3.2.7 Forestry

Actions	Descriptions	Coherence to the KMGBF targets
Action 7.1:	Implement certified logging practices and strengthen enforcement of forestry regulations to combat illegal logging and deforestation	2, 3, 6 & 10
Action 7.2:	Support community-based forest management initiatives, including participatory planning and resource utilization	3, 8, 10 & 11
Action 7.3:	Invest in capacity building for local communities in sustainable forest management techniques and non-timber forest product (NTFP) development	18, 19, 20 & 22
Action 7.4:	Implement landscape restoration programs with focus on native species and ecological corridors	2, 3, 14 & 15
Action 7.5:	Support tree planting initiatives on degraded lands and promote agroforestry practices for integrated land-use management	2, 3 & 7
Action 7.6:	Develop financial incentives and market mechanisms for sustainable forest management and reforestation efforts	2, 6, 14 & 15
Action 7.7:	Foster the development of NTFP value chains and support community-based enterprises based on sustainable forest products	14, 15, 18, 19 & 20
Action 7.8:	Promote ecotourism initiatives that contribute to forest conservation and sustainable use of forest products and generate income for local communities	2, 8, 10, 14, 18 & 22
Action 7.9:	Develop certification programs for sustainably sourced timber and NTFPs to access premium markets and enhance brand reputation	2, 3, 12, 14 & 15
Action 7.10:	Strengthen fire management: Develop community-based fire management plans, raise awareness about responsible burning practices, and invest in early fire detection and rapid response systems	3, 5, 7, 10 & 14

3.2.8 Fisheries

Actions	Descriptions	Coherence to the KMGBF targets
Action 8.1:	Establish and enforce quotas and closed seasons for vulnerable fish species and critical aquatic habitats	3, 4, 6 & 8
Action 8.2:	Promote the use of selective fishing gear and practices to reduce bycatch and ensure sustainable harvests	6, 8 & 14
Action 8.3:	Support community-based fisheries management initiatives that involve fishers in conservation and sustainable resource management decisions	6, 8 & 10
Action 8.4:	Combat water pollution from agricultural runoff and other sources through improved land management practices and wastewater treatment	2, 3, 6 & 7
Action 8.5:	Implement habitat restoration projects in critical spawning grounds and fish nurseries to enhance fish populations	2, 3 & 6
Action 8.6:	Raise awareness about the importance of healthy aquatic ecosystems and promote community-based conservation initiatives	2, 13, 14 & 18



biodiversity in the Lao People's Democratic Republic

Following up on the previous section, here are potential outputs for each key action outlined across the four crucial sectors:

Table 1. Key actions and key outputs and outputs/milestones		
Sectors/themes	Key actions	Outputs/milestones
Climate-resilient cropping systems	1.1	Increased diversity in cropland (20% increase in intercropping/polycultures & agroforestry systems)
	1.2	Reduced average water consumption per unit of production (10% reduction)
		Improved irrigation efficiency (20% reduction in water losses)
		Increased adoption of conservation tillage practices (30% of farmers practicing minimum tillage)
	1.3	Functional early warning systems established in key agricultural regions
	1.4	Increased adoption of drought-resistant crop varieties (30% of farmers using resilient varieties)
		Five new climate-resilient crop varieties released
Land management	2.1	Increased soil organic matter content (5% increase)
		Reduced soil erosion (10% decrease)
		Increased use of cover crops and mulching (40% of farmers adopting these practices)
	2.2	Reduced use of chemical pesticides and fertilizers (20% decrease each)
		Increased adoption of biological pest control methods (30% of farmers using these methods)
	2.3	Ten thousands hectares of degraded land restored
		Fifty hectares of critical riparian zones restored
Community engagement	3.1	One thousand farmers trained in climate-resilient practices
		Twenty community learning platforms established for knowledge exchange
	3.2	Ten community-based adaptation plans developed and implemented
		Increased participation of women and marginalized groups in decision-making processes
	3.3	Premium prices for biodiversity-friendly and climate-resilient products (10% higher)
		Established market linkages for 50 community producer groups
	3.4	Ten farmer-to-farmer knowledge exchange networks established
		Regular knowledge-sharing platforms (e.g., workshops, publications) established

Sectors/themes	Key actions	Outputs/milestones
Policy and regulatory frameworks	4.1	National agricultural and environmental policies revised to integrate climate adaptation and resilience
		Development of specific policy guidelines for sustainable land management
	4.2	Increased compliance with environmental regulations (20% improvement), e.g. laws on land management, water management, environment protection, forestry...etc.
		Improved monitoring and enforcement mechanisms established
	4.3	Secured funding for climate-resilient infrastructure projects (e.g., water harvesting)
		Five pilot projects for climate-resilient infrastructure completed
	4.4	Active participation in regional and international platforms for knowledge sharing and resource mobilization
		Secured funding from 2 international climate finance sources for adaptation projects
Crop production	5.1	Improved soil fertility, nutrient cycling, reduced pests, enhanced biodiversity, climate resilience on cultivated lands
	5.2	Reduced use of chemical fertilizers and pesticides, improved soil health, decreased pest outbreaks, and safer agricultural products
	5.3	Increased resilience to climate change and food insecurity through diverse, locally adapted crop varieties
	5.4	Reduced water consumption and improved irrigation efficiency, increased drought resilience, and enhanced water quality in waterways
	5.5	Reduced water pollution from agricultural practices, improved compliance with environmental regulations, and sustainable water resource management
	5.6	Protected aquatic ecosystems, enhanced flood control, and improved habitat for riparian biodiversity
	5.7	Increased knowledge and adoption of biodiversity-friendly practices, improved farm productivity, and enhanced environmental stewardship
	5.8	Premiums for sustainably produced crops, expanded market opportunities for farmers, and fairer prices for biodiversity-friendly products
	5.9	Improved access to climate-resilient varieties & sustainable technologies, increased adoption, enhanced productivity & resilience



Sectors/themes	Key actions	Outputs/milestones
Livestock production	6.1	Improved pasture quality, reduced land degradation, reduced deforestation pressure, increased fodder production
	6.2	Enhanced carbon sequestration, improved soil health, increased biodiversity, diversified forage sources
	6.3	Sustainable management of grazing lands, reduced deforestation, increased community engagement
	6.4	Reduced reliance on imported feed, increased local feed production, improved protein intake
	6.5	Reduced waste generation, optimized resource utilization, lower environmental impact
	6.6	Developed & adopted sustainable feed alternatives (e.g., insect protein)
	6.7	Enhanced animal welfare, improved animal health, reduced disease outbreaks, increased livestock productivity
	6.8	Responsible use of veterinary drugs, reduced contamination, improved environmental health
	6.9	Improved access to veterinary care, increased livestock resilience, enhanced livelihoods
Forestry	7.1	Reduced illegal logging, sustainable timber harvesting practices, and increased revenue from certified forest products
	7.2	Enhanced local participation in forest management, improved resource utilization, and increased income generation for communities
	7.3	Skilled local workforce in sustainable forestry practices, increased knowledge of NTFP development, and empowered communities to manage their resources
	7.4	Increased forest cover, restored critical ecological corridors, and enhanced habitat connectivity for biodiversity
	7.5	Degraded lands restored with native species, improved land productivity, and integrated land-use management systems
	7.6	Increased investment in sustainable forest management and reforestation, attractiveness of green businesses, and economic benefits for forest communities
	7.7	Diversified income sources for communities, sustainable utilization of forest resources, and increased market access for NTFPs
	7.8	Protected forests, increased income generation for communities, and enhanced brand reputation for the Lao People's Democratic Republic as a sustainable tourism destination
	7.9	Premium prices for sustainably sourced timber and NTFPs, improved market competitiveness, and consumer confidence in responsible forest products
	7.10	Community-based fire management plans implemented in 10 vulnerable villages Reduced incidence of uncontrolled wildfires (15% decrease)

Sectors/themes	Key actions	Outputs/milestones
Fisheries	8.1	Reduced fishing pressure on vulnerable fish species and improved stock recovery within 5 years (e.g., 20% increase in abundance of key species)
	8.2	Decreased bycatch rates by 15% within 3 years, leading to fewer non-target species being accidentally caught
	8.3	Establishment of functional community-based fisheries management committees in 20% of fishing communities within 2 years, leading to active participation in resource management decisions.
	8.4	Increased adoption of sustainable land management practices (e.g., buffer strips, cover crops) in 10% of agricultural land within 3 years, resulting in reduced pollutant runoff.
	8.5	Restoration of 50 hectares of critical aquatic habitats (e.g., spawning grounds, nurseries) within 5 years, improving fish breeding and recruitment
	8.6	Increased public awareness and understanding of the importance of healthy aquatic ecosystems and sustainable fisheries practices through education campaigns and community outreach programs within 2 years.

Table 2. Implementation timeframe

Actions	Implementation timeframe, 2024 - 2030						
	2024	2025	2026	2027	2028	2029	2030
1.1	x	x	x	x	x	x	x
1.2	x	x	x	x	x		
1.3	x	x	x	x	x	x	x
1.4	x	x	x	x	x	x	x
2.1		x	x	x	x	x	x
2.2		x	x	x	x	x	x
2.3		x	x	x	x	x	x
3.1	x	x					
3.2	x	x	x				
3.3	x	x	x	x	x	x	x
3.4		x	x				
4.1	x						
4.2		x					
4.3	x	x	x	x	x	x	x
4.4	x	x	x	x	x	x	x
5.1	x	x	x	x			
5.2	x	x	x	x	x	x	x
5.3		x	x	x	x	x	x
5.4	x	x	x	x	x	x	x
5.5	x	x	x	x	x	x	x
5.6		x	x	x	x	x	x
5.7	x	x	x				
5.8	x	x	x	x	x	x	x
5.9	x	x	x	x	x	x	x



Actions	Implementation timeframe, 2024 - 2030						
	2024	2025	2026	2027	2028	2029	2030
6.1		x	x				
6.2	x	x	x				
6.3	x	x					
6.4	x	x	x	x	x	x	x
6.5		x	x	x			
6.6	x	x					
6.7	x	x	x	x	x	x	x
6.8			x	x	x		
6.9	x	x					
7.1	x						
7.2	x	x					
7.3		x	x				
7.4			x	x			
7.5				x			
7.6			x	x	x		
7.7					x	x	x
7.8					x	x	x
7.9					x	x	x
7.10	x	x	x	x	x	x	x
8.1	x	x	x				
8.2	x	x	x	x	x	x	x
8.3	x	x					
8.4	x	x	x				
8.5	x	x	x	x	x	x	x
8.6	x		x		x		x
49 actions							



4. Institutional arrangements and resources for the implementation of the roadmap to mainstreaming biodiversity in the Lao People's Democratic Republic

4.1 Institutional arrangement

NAFRI will take the lead in implementing the Roadmap through consultation with technical departments under the Ministry of Agriculture and Forestry (MAF), research institutions and universities, civil society partners, and the private sector. NAFRI will spearhead the Roadmap's activities and track progress with external support. The Sub-Sector Working Group (SSWG) on Agrobiodiversity, with representatives from NAFRI, technical departments of MAF, the National University of Laos, and the private sector, will convene regular meetings to approve decisions to advance the Roadmap's activities.

Led by the Ministry of Natural Resources and Environment (MoNRE), with representatives from relevant ministries (Agriculture, Forestry, Fisheries), research institutions, civil society organizations (CSOs), private sector, and local communities. This committee oversees the overall implementation, sets strategic priorities, and monitors progress.

Established for each sector (agriculture, forestry, fisheries) and cross-cutting themes (climate change, market access, capacity building). Composed of technical experts from government agencies, research institutions, private sector, and NGOs. These groups develop specific action plans, monitor progress, and address technical challenges.

Mainstream the national structure at subnational levels, ensuring coordinated implementation and adaptation to local contexts. Integrate district and provincial development plans with the roadmap.

Community-Based Management Structures: Empower local communities to manage their resources sustainably. Village committees, user groups, and co-operatives can be instrumental in implementing on-ground activities, adapting practices, and ensuring equity and inclusion.

4.2 Financial resources

- ▶ Government budget allocation: Dedicate funding within relevant ministries' budgets to support roadmap implementation. Explore innovative financing mechanisms such as green bonds, payments for ecosystem services (PES), and public-private partnerships.
- ▶ International development assistance: Leverage grants and loans from international organizations and bilateral donors to support specific activities.
- ▶ Private sector investment: Attract private investment through green finance products, certification programs, and public-private partnerships for sustainable production and market development.

4.3 Human resources

- ▶ Capacity building: Invest in training and skills development for government officials, researchers, extension workers, farmers, and community members to implement biodiversity-friendly practices, manage resources sustainably, and adapt to changing circumstances.
- ▶ Knowledge sharing: Facilitate exchange of knowledge through farmer-to-farmer networks, community learning platforms, and research partnerships. Promote the use of local and indigenous knowledge alongside scientific expertise.

4.4 Technological resources

- ▶ Research and development: Invest in research on climate-resilient crop varieties, sustainable aquaculture practices, and innovative technologies for resource efficiency and biodiversity conservation and sustainable use.
- ▶ Data and monitoring: Develop and utilize geospatial tools, databases, and monitoring systems to track progress, inform decision-making, and identify areas for improvement.

4.5 Key considerations

1. Intersectoral coordination:

Ensure strong collaboration and information sharing between government agencies, private sector, NGOs, and communities.

2. Decentralization:

Empower local communities and subnational authorities to lead implementation and adapt the roadmap to their specific contexts.

3. Sustainability:

Secure long-term funding and institutional commitment beyond the initial project timeframe.

4. Monitoring and evaluation:

Regularly monitor progress, track achievements, and adapt strategies based on lessons learned.

By establishing a robust institutional framework, securing resources, and fostering collaboration, the Lao People's Democratic Republic can effectively implement its biodiversity roadmap and achieve a vibrant and biodiverse future across agriculture, forestry, and fisheries sectors.

A number of partners have expressed interest in supporting the key actions of this Roadmap, as indicated in the table below;

Table 3. List of partners that have expressed interest in supporting the key actions of the Lao People's Democratic Republic's Roadmap for Mainstreaming Biodiversity across Agriculture and Forestry Sectors

Partners	Key actions
NAFRI	3.2.1; 3.2.2; 3.2.3; 3.2.4; 3.2.5; 3.2.6; 3.2.7; 3.2.8
DoE, DoMCC-MONRE (take lead)	3.2.1; 3.2.2; 3.2.3 & 3.2.4
DaLAM	3.2.2; 3.2.3 & 3.2.4
DoF	3.2.1; 3.2.2; 3.2.3; 3.2.4; & 3.2.7
DoA	3.2.1; 3.2.2; 3.2.3; 3.2.4 & 3.2.5;
DoLF	3.2.2; 3.2.3; 3.2.4; 3.2.6 & 3.2.8
FAO	3.2.1; 3.2.2; 3.2.3 & 3.2.4
WWF	All actions
IFAD	All actions
SDC	All actions
GIZ	All actions

For the international organizations such as FAO, GIZ, SDC, IFAD and WWF are required as the support agency for all actions.



