CHAPTER 1

Introduction

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Poverty, food security and climate change are central global issues and Viet Nam is no exception. The country's efforts to open its economy to foreign trade and investment have contributed to high GDP per capita growth rates over the past two decades and a drastic reduction in poverty: from nearly 70 percent of the population in the 1990s to less than 10 percent in 2015[2] . However, the multi-sector economic growth has also had unfavourable impacts on the environment, in particular deteriorating quality of land and water, and decreasing natural forest cover and biodiversity.

About 65% of Viet Nam's population lives in rural areas, with livelihoods highly reliant on the agricultural and forestry sectors. Thanks to the Đổi Mới reform, the agricultural sector has provided important contributions to the economy. Exports of major agricultural products such as rice, rubber, coffee, cashew nuts, and fishery products have steadily increased, resulting in substantial poverty reduction, at an impressive rate of 2% per year. Globally, Viet Nam is the biggest exporter of pepper, among the top-five rice exporters, and second only to Brazil for coffee. This achievement reflects the country's potential contribution to global food supply.

There are emerging risks in production and market volatility, disparity in economy among rural and urban areas and among regions in the country, as well as lack of knowledge of conservation techniques to limit soil degradation. Furthermore, extreme weather events and natural disasters related to climate change, such as storms, floods, droughts and associated outbreaks of pests and diseases, affect the country every year, resulting in substantial economic losses to the nation and rural communities, and degradation of land and water. The most vulnerable communities to such socio-economic and environmental shocks are those who live in mountainous and remote rural areas, which often are characterised by high poverty rates. Reconciling the economic and environmental pressures will require a low-emission development strategy that encompasses the whole landscape, both forestry and agriculture lands, and that incorporates the socio-economic targets in both sectors, as well as in national strategies on climate change, sustainable development, and environmental protection.

Forestry sector strategies and targets

In the forestry sector, Viet Nam is well known internationally for moving forward along the 'forest transition curve'. The country's target is a forest cover of about 42 percent by 2020, for both production and protection purposes. In terms of timber production, the Ministry of Agriculture and Rural Development (MARD) has an export target value of over USD 7.5 billion by 2020, to be met through sustainable forest management practices.

[2] Based on USD 1.25 per capita income per day following the World Bank's poverty standard

The 2006-2020 National Forest Protection and Development Strategy which builds on the 2001-2010 Forestry Development Strategy approved by MARD outlines the direction of the forestry sector in different regions and lists targets to be achieved through the contribution of smallholders' tree plantations in the region.

The northern mountainous area consists of the Northwest and Northeast regions, which is the home to many ethnic minorities and also challenged by high pover. Based on the 2006-2020 National Forest Protection and Development Strategy, in the Northwest, the targets aim to 'diversify income sources on the basis of social forestry development, gradually reduce and replace shifting cultivation by agroforestry for forest protection and development and improvement of livelihoods for communities' and to 'establish material supply areas for the timber-processing industry (paper, wood-based panels) and non-timber forest products'. For the Northeast, the targets aim to 'establish material supply areas linked with processing industries to meet essential demand for paper, woodchips, pit props, and furniture on the basis of intensive cultivation of 1.5 million hectares of production forests (including natural and plantation forests) and use high productivity sites on nearly 1 million hectares of bare land for establishment of industrial, concentrated, material plantations.' The role of smallholders is stressed to reach these aims.

In terms of forest plantations, one of the most popular systems is short-rotation acacia for the pulp and paper industry. Acacia has been promoted for about three decades in the afforestation programs to also restore soil fertility in degraded sloping land. Acacia has helped smallholders across the regions improve their economic condition.

To further improve economic returns as well as environmental benefits, such as carbon storage, that can be derived from the system, there is a need to design more permanent forest plantation systems for timber production. Currently, 80% of the national timber demand is satisfied by import. The main challenge facing farmers considering adopting more permanent forest plantation systems is to find ways to cover the income gap between investment and timber harvest, especially among those who depend on forest plantations as their main source of income.

Agriculture sector strategies and targets

Challenges in the agricultural sector include enhancing the resilience of farming systems and rural landscapes to climate change variability. Natural disasters reduce the agricultural productivity and pose extreme costs to the agriculture and forestry sector every year. In response, the National Strategy on Climate Change has set targets to 1) reduce greenhouse gas (GHG) emissions by boosting 'green' and low-emission agricultural production; 2) mitigate damage caused by natural disasters, including the prevention of erosion and degradation; 3) improve and strengthen institutions and rural communities, encouraging participation from non-governmental and civil society organisations; and 4) build communities that can effectively cope with climate change by developing and diversifying local production strategies that support adaptation.

The country's priority climate-change adaptation strategy for 2021-2030 aims at 'ensuring food security through protecting, sustainably maintaining and managing agricultural lands'. At the time of writing, the Government is in the process of reformulating targets for national GHG emissions to better comply with the Paris agreement on climate change. The GHG mitigation efforts have focused on the energy-related sectors, industrial and agricultural production, land-use, land-use change and forestry, and waste. The reformulated target is to reduce emissions by 8% by 2030, and by 25% with international support. The target for the a agricultural

sector is to contribute to 10% of the national emission reduction, and 23% with international support. Recently, the significance of the agriculture sectors in adapting to and mitigating climate change has been officially acknowledged through the Koronivia joint work on agriculture decided at COP23.

Strategies and targets on biodiversity conservation and land degradation

Viet Nam's commitment to the Convention on Biological Diversity by formulated in conservation strategies promulgated by the Ministry of Natural Resources and Environment. For example, the National Biodiversity Strategy to 2020 and Vision to 2030 aims to conserve 'naturally important ecosystems (including forests), endangered, rare, and precious species, and genetic resources; that should be used sustainably, and contribute to the development of a green economy, and actively respond to climate change'. The Strategy also highlights the on-farm conservation and agro-biodiversity.

Viet Nam ratified the United Nations Convention to Combat Desertification (UNCCD) in 1998 and developed a National Action Plan for implementing the Convention in 2002. For Viet Nam, combating desertification is mainly about reducing deforestation, degradation of agricultural lands, and drought. Implementation has focused on 1) programmes and projects that prevent deforestation, soil erosion, moving sand dune, land salination and acidulation; 2) reclaiming degraded land; 3) sustainable land use and use of water resources; and 4) forecasting and preventing droughts and floods. At the Twelfth Conference of the Parties to the Convention, held in Ankara, Turkey in 2015, it was agreed that Sustainable Development Goal criterion 15.3, including Land Degradation Neutrality (LDN), should be one of the measures supporting the implementation of the Convention. The Convention parties establishes voluntary targets for LDN and integrate into their national action plans. The Viet Nam's Voluntary National LDN Targets for the period of 2017-2020 with vision to 2030 has formulated targets for 13,048 km^2 of degraded land in the country.

Low-emission development pathway

In 2017, the Government promulgated a new Law on Planning. Focuses on the integration of multi-sector development planning rather than individual sectoral master plans as before, to lead towards environmentally sensitive and sustainable economic growth.

Each province must develop an integrated master plan to formulate and harmonize strategies and targets for different sectors, and pathways to achieve the targets. The master plans should be oriented towards green growth, characterized by low-emission economic development. Natural resources, such as water, forests, soils, biodiversity and ecosystem services are to be safeguarded to speed adaptation to climate change.

Aims of this book

This book covers some of ICRAF Viet Nam's key research over the past decade. We selected work that contributed to integrated land-use planning for low-emission development strategies in rural landscapes.

Three studies (Chapter 2, 4 and 5) were conducted as part of a programme that was developing land-use options for reducing GHG emissions from all types of land, not only forestland. Although the chapters present results from 2012-13, the land-use strategies developed in these studies continue to be relevant nowadays.

For example, the results recommending agroforestry as a strategy for reducing emissions and enhancing livelihoods in the uplands (Chapter 5), can be found in the 2006-2020 National Forest Protection and Development Strategy, which states "to diversify income sources on the basis of social forestry development, gradually

reduce and replace shifting cultivation by agroforestry for forest protection and development and improvement of livelihoods for communities". Furthermore, the new Law on Forestry in effect from January 2019, permits certain types of agroforestry in production and protection forests for development and conservation purposes. In the 2011-2020 National Strategies on Climate Change, agroforestry is taken as example for land-use that can reduce GHG emissions and boost 'green' and low-emission agricultural production, as well as strengthening resilience to natural disasters and prevent land degradation.

The other three studies (Chapter 3, 6 and 7) in this book are more recent (2015-2018) and ICRAF's work continues to bring evidence to policy dialogues, including assessing the possible roles of agroforestry for Viet Nam's targets to international conventions, such as the Nationally Determined Contributions.

The research has been *inclusive, integrative* and *informative*. *Inclusive* because the research includes strategies for both forest and agricultural land, for socio-economic and environmental objectives including hydrological functions, and was developed through participatory processes that took into account the perspectives and expectations of smallholders, local and national authorities, and scientists. *Integrative* because the research integrates diverse factors when assessing the impact of the strategies on the multiple functions of landscapes. *Informative* because the approaches were scientific and the findings were provided to national and provincial authorities and local communities.

The book consists of six chapters, formatted in the style of scientific papers. All research presented in this draws on original unpublished work from ICRAF's projects in Viet Nam with fieldwork conducted at different points in time.

The chapters encompass the main aspects to be considered when developing sustainable and low-emission development pathways. They also consider the projected impact of the strategies, mainly on the economic benefits as represented by smallholders' or provincial income; and environmental benefits as represented by carbon storage and hydrological functions.

- *Proximate and underlying factors, and actors of forest cover change* (Chapter 2). The chapter presents the case in Bac Kan province as one of the REDD+ pilot provinces in Viet Nam, with analysis of proximate and underlying factors, as well as actors of forest cover change between 1990-2010, and projected forest cover in the province by 2020.
- *Developing alternative forest plantation systems for enhanced economic and environmental benefits* (Chapter 3). This chapter highlights short-term acacia plantations for pulp and paper which is a popular forest plantation type. It describes eight alternative forest-plantation systems for Quang Nam Province, Southcentra Coast region that are expected to provide higher and more stable incomes and more environmental.
- *The role of participatory land-use planning in reconciling targets of conservation and economic development* (Chapter 4). This chapter demonstrates the use of the Land-use Planning for Low-Emission Development Strategies (LUWES) framework in multi-stakeholder negotiations for developing a participatory, low-emission, land-use plan for Bac Kan Province, Northeast region. Through LUWES, the different

impacts on conservation and economic development are compared using a 'top–down' approach and a participatory land-use planning approach.

- *Strategies to reduce emission from all land-uses* (Chapter 5). This chapter provides examples of strategies to reduce emissions from forest land as well as land outside forests at landscape level. The Reduced Emissions from All Land Uses (REALU) strategy which integrates the replacement of upland annual crops with agroforestry and restoration of degraded forests. The impact on economic benefits was assessed as income per capita and on environmental benefits as carbon storage.
- *Impact of land-use strategies on the hydrological function of a watershed* (Chapter 6). Many strategies for sustainable and low-emission pathways are concerned with carbon sequestration and economic benefits. However, when applied to a watershed the impact on hydrological functions also needs to be assessed. This chapter presents the case of Ho Ho sub-watershed, Northcentral Coast region of Viet Nam, where watershed functions were assessed for three forest-intensification strategies as part of provincial government plans. This case shows how expectations of local communities on the interventions and their watershed functions are included in the assessment.
- *Providing farmers with agro-climate advisories for integrated and agroforestry systems* (Chapter 7). Agroforestry has been widely recognized as a climate-resilient farming system. Still customized seasonal weather forecasts are needed combined with participatory agricultural advice, to reduce weather-related losses. This chapter demonstrates how farmers can be involved in co-producing agro-climate information, using the example of My Loi, a 'climate-smart village' in Northcentral Coast of Viet Nam.