PART IV – Chapter 1

Introduction and synthesis

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1.1 Introduction

Forestry sciences, just like most applied, empirically based sciences, adhere to reductionist, deductive principles. The analysis undertaken in Part III of this book aimed to compile generalisable evidence of factors that can causally be linked to sustainable forest management (SFM). It also attempts to link prerequisite conditions structurally or through agency with appropriate management of forests, reflected in forest condition and the quality of livelihoods of forest-dependent dwellers. The analysis of the case studies in Part II provides important and relevant evidence of how key prerequisite conditions do link to SFM. But, as explained in Part III, the relationships are complex and oftentimes appear context specific.

Providing more compelling evidence of the linkages between prerequisite and SFM conditions requires more rigorous data collection of a large number of cases (Zenteno 2013), something that is beyond the capacity of most researchers or organisations. Even with a much more rigorous and comprehensive analysis, however, a likely outcome will be that prerequisite conditions and SFM are best represented as a complex dynamic system characterised by stochastic and nonlinear relations. While this may be discouraging, the results summarised at the beginning of Part III do constitute valuable insights that can be used in pursuit of forestry objectives – either policy objectives, forest management objectives, or forest development assistance objectives.

In light of this, it makes considerable sense to explore other options to anticipate the futures of forests, SFM, or for that matter, the vagaries of prerequisite conditions. If prerequisite conditions and SFM behave like a complex dynamic system, additional options need to be sought that can support the design of policies, appropriate management plans, or interventions aimed at achieving SFM. Part IV of this book explores a different suite of options that can be helpful when short- and medium-term policies or more strategic forest-management decisions need to be made.

The options that Part IV explores are captured by terms such as *foresight, forward looking*, *future pathways*, or *future scenarios*. There are several reasons why such an SFM futurology exercise is relevant and useful. If relevant trends are known, it may be possible to also understand what possible futures of forests and SFM are, which at least in theory should make it possible to plan for appropriate interventions. Anticipating possible future pathways of forestry and related aspects complements a limited understanding of how prerequisite conditions actually shape SFM. The interaction goes both ways. The future of prerequisite conditions depends on measures taken by actors and stakeholders involved in SFM. But understanding the future trends of the very prerequisite conditions that influence SFM is useful, even though the links between the two are not easily understood.

Neither is the understanding of future trends an unequivocal matter. The forest sector has relied on outlook studies since the early 1950s (Hurmekoski and Hetemäki 2013). These provide important insights into future trends, and at least in theory are valuable when important policy or other strategic decisions need to be made. However, more complex processes, including the future trends of SFM or the prerequisite conditions that have a bearing on SFM, are difficult to capture by relying primarily on quantitative market models, as most outlook studies do. Foresight studies and related exercises that rely on qualitative methods is a new field that has emerged over recent decades and is increasingly gaining recognition for its important contribution to future planning and strategic decision-making.

Part IV chapters are all concerned with forward looking on issues related to forestry. Their primary intention is to complement Parts II and III, which draw lessons from the efforts of a considerable number of local experiences seeking to achieve SFM. While applying future studies to forestry matters is in itself very useful, projecting the findings of Parts II and III into the future adds additional value to the analysis in this book.

This first chapter of Part IV introduces its four chapters, creating links between these chapters and Parts II and III. Following this introduction, section 2 briefly reflects on foresight in forestry. Section 3 presents highlights of the four chapters of Part IV and section 4 links with the findings related to prerequisite conditions and SFM, summarised in the beginning of Part III.

1.2 Foresight in forestry

"Futures studies" is an academic field that develops approaches, methods, and tools to anticipate possible, probable, or desired future trends. Most futures-studies practitioners will argue, as Part IV, chapter 3 does, that futures studies is not about predicting the future so much as understanding the range of possible scenarios that may occur and how decisions taken today might lead to one scenario but not others. Future studies have become a common, although still not universally accepted, area of academic inquiry. Pelli (2008, p. 7) uses the term *foresight* as the concept that represents future-oriented explorations applied in sectors that combine science, technology, and innovation. One view of foresight or futures studies is that they include multiple approaches and methods. They include the more traditional quantitative methods that explore future trends by using data; apply computational techniques to establish functional relations between variables; and, once these relationships are determined, use them to predict future trends of variables of interest. Regression analyses are commonly used to establish functional relations between data and project future trends, but they are only one of an array of possible statistical interference methods, where future trends are deducted from observed data.

The more typical futures studies tools and methods employ carefully elicited anticipations of ranges of possible future trends. The trends may rely on data sets, for instance in the case of the International Futures project[1] that explores the possible linkages between multiple trends, each of which can be understood through time-series data but whose interactions are much more difficult to grasp. Hurmekosi and Hetemäki (2013) call this "integrated global system modelling." Related to the International Futures project, and similar to integrated systems modelling are so-called dynamic system analyses (e.g. Wilensky and Resnick 1999), which are increasingly being used to understand societal and environmental interactions to identify better development options (Leach et al. 2010). In addition to statistical interference and dynamic systems analysis, foresight tools like the Delphi method, scenarios, future scenarios, backcasting, and visioning have been used widely in businesses and, more recently, in environmental sectors, including forestry (Wollenberg et al. 2000, Evans et al. 2008 and 2010, Hurmekoski and Hetemäki, 2013). These procedures are employed to capture people's expertise on issues to anticipate ranges of possible future developments without depending on constructed statistic inference. These methods rely on the recognition that people may have either intuitive or conscious understanding of factors that will shape future developments and that, with the application of well-designed procedures, this understanding can be solicited, systematised, and made available to broader constituencies. While these methods and exercises are met with skepticism (Masini 2006, Ehliasson 2008), they are nonetheless finding acceptance in many fields, including in environmental sciences (e.g. Mieg 2004, Carpenter et al. 2006, Patel et al. 2007, Stock et al. 2007).

In the forestry sector, foresight studies have been undertaken for decades. Specifically, outlook studies have been attempted since the 1950s, but they relied until recently mostly on time-series data and statistical computations (Hurmekoski and Hetemäki 2013). Examples include quantitative market models or similar exercises that provide decision-makers with information on predicted long-term trends in the sector and projections of future developments (Hurmekoski and Hetemäki 2013). Outlook studies carried out by the United Nations Food and Agriculture Organization (FAO) are the best known and most comprehensive examples of forestry outlook studies. FAO Outlook Studies intend to "support policy reviews and strategic planning" for which they "depict the range of choices available to forestry policy makers and describe the alternative scenarios that might arise as a result of these choices" (FAO 2013).

FAO Outlook Studies compile multiple sources of information, including national outlook studies, and data provided by national experts. FAO Outlook Studies are particularly relevant to the context of Part IV since they are based on both supply and demand models and on the qualitative examination of topics and issues that could significantly affect future developments (FAO 2013). Pelli (2008) points out that the sixth FAO Forest Sector Outlook Study (FAO 2005) adopted a more holistic view of the forest sector in Europe. While these trends are welcomed by proponents of futures studies, Hurmekoski and Hetemäki (2013) argue that outlook studies still rely primarily on quantitative analyses of forest products production and trade and do not adequately address trends related to forest-based ecosystem services. As a result, they are inadequate for anticipating structural change, especially taking into consideration the growing strategic importance of these services.

Despite the modest shift towards the adoption of new foresight methods, including efforts alluded to in FAO Outlook Studies, Hurmekoski and Hetemäki (2013) argue that the use of these qualitative methods has to date only gained modest popularity in the forestry sector. For some time, however, the tropical forestry development community has been quite active in developing future scenarios in the context of social forestry. Several future scenarios guidelines were published during the 2000s (Wollenberg et al. 2000, Nemarundwe et al. 2003, Evans et al. 2006a,

[1] http://pardee.du.edu/history-ifs.

2006b) to aid practitioners in use of these tools and methods. The underlying objective was to promote greater community involvement in forestry planning and sub-national forest policy design (Sheppard and Meitner 2005). Future scenarios, and their various variants (Nemarundwe et al. 2003) were considered one set of a wider suite of tools (Evans et al. 2006a, 2006b) intended to "incorporate community knowledge, preferences, and values into decision making in natural resources management" (Lynam et al. 2007, p. 1). Several critical reflections on the use of these tools and methods (e.g. Kassa et al. 2006, Lynam et al. 2007, Evans et al. 2008, 2010) do underscore their value, based on multiple practical experiences, and also their shortcomings. The latter include the possibility that outcomes might be manipulated, their costs could be high, and their application requires trained facilitators (Evans et al. 2010). These constraints may explain why these quite successful participatory methods have not been used as widely as initially hoped for.

Pelli (2008) draws distinction between foresight studies implemented at the national level, including exercises to envision preferred futures, and those carried out by the private sector to facilitate strategic business decisions. Forestry issues, however, can be recognised implicitly or explicitly in foresight studies, including those that have a wider focus, beyond the forest sector. This is the case, for instance, with the European Union Foresight Expert group, which prepared foresight papers, one of which is on environment (EC 2002, Pelli 2008). In similar fashion, foresight exercises have been part of the Millennium Ecosystem Assessment and the various reports produced by the Intergovernmental Panel on Climate Change (IPCC) (Part IV, chapter 5).

1.3 Foresights and outlooks for SFM and prerequisite conditions

Part IV contains four chapters that address future perspectives of SFM, taking into consideration the prerequisite conditions of SFM included in the analytical framework introduced in Part I. Three of them can be located somewhere along the spectrum of forestry foresights studies. Chapter 2, for example, can be qualified as an expert assessment of a number of relevant trends in contemporary forestry; the authors rely on literature and their expert judgment to anticipate these trends. Chapter 3 takes a number of FAO Outlook Studies and summarises them for information on the prerequisite conditions for SFM. In essence, chapter 3 can be qualified as a meta-outlook study. Chapter 4 introduces multi-scale participatory scenarios as a tool for more effective and efficient policy-making. The tool draws on the options provided by future scenarios exercises (cf. Evans et al. 2008, 2010), exploring possible and alternative futures, but with the added value that they are pursued simultaneously among different constituencies and effectively communicated among the different constituencies and to decision-makers that represent the different constituencies. Chapter 5 uses narratives of shared socio-economic pathways (O'Neill et al. 2014), which are "part of a scenario framework for generating scenarios" that are to provide a common basis for future work on impacts, adaptation, and vulnerability and are currently being developed as one component of a new round of climate scenarios. Chapter 5 also explores, similar to chapter 3, trends of prerequisite conditions in alternative SSPs narratives. They also postulate alternative possible prerequisite-condition scenarios and try to match those with the SSPs.

Chapter 2 projects important trends in global forestry. For instance, biodiversity conservation and other services provided by forests will increasingly be derived from anthropogenic forests. The number and diversity of actors with a stake in or that are engaged with forestry matters will continue to evolve and increase, as has happened during the past two decades or so. As a consequence, the balance of forest goods and services that are valued by society will change, reflecting evolving needs, preferences, and values of forest stakeholders. These observed and projected trends will require that forest management, including silvicultural practices, should be adapted to this new reality. In general terms, forest management practices and the knowledge that drives them will need to be broadened to encompass the growing diversity of objectives and the changing nature of forests.

Chapter 2 also reflects specifically on the future of tropical forest logging, an issue particular relevant to local SFM. The current reality is that tropical timber logging generally exceeds replacement capacity; as a result, forest timber stocks are undergoing a process of depletion that will continue unless logging is drastically reduced. Over-harvesting is widely recognised but not taken into adequate consideration in the planning and implementation of logging practices. As this unfortunate reality becomes increasingly apparent, tropical forest logging will likely assume a minor role in global wood production, catering primarily to specialised niche markets. Forest encroachment will likely continue in only certain parts of the world. In the meantime, global forest-stocks will continue to be impacted by forest encroachment, but important regional variations are expected to become more marked over time. In this context, Sub-Saharan Africa is one of the last tropical forest frontiers and is still subject to increasing industrial and domestic pressures, resulting in the loss and degradation

of forests. Oil palm expansion in countries such as Indonesia will likely continue expanding to supply a growing market demand and relatively weak state land-use regulations are unable to curtail excessive conversion of forestlands to this crop. In contrast, in the Brazilian Amazon, a decoupling of deforestation and the expansion of agricultural crops can be observed, since new areas being planted with soybeans are taking place on already deforested lands.

Chapter 3 equally projects short- and medium-term future trends on issues relevant to SFM. Unlike chapter 2, it draws on outlook studies that have been produced by FAO since 2003 to assess trends in the prerequisite conditions for SFM and project them into the future. The chapter is structured according to the four categories of prerequisite conditions included in the analytical framework (see Parts I and III): policies, institutions, and governance; livelihoods, capacities, and cultural and social aspects; natural resources base; and research and monitoring.

Chapter 3 concludes that according to existing information, the dominance of public ownership of forests likely will change only slightly towards more private ownership. While this is the case, however, the role of governmental institutions will undergo drastic reductions, with a progressive shift to policy-making, regulatory functions, and the provision of goods and services that the private sector is unable or unlikely to provide. Meanwhile, the management of public forestlands is expected to continuing shifting to the private sector, including corporate businesses, farmers, and communities. The importance of the provision of ecosystem services and amenity values will be increasingly recognised, resulting in a notable shift from traditional forest products. These fundamental changes will also be reflected in forest policies, oriented away from timber-focused management to the provision of ecosystem services, poverty alleviation, and landscape approaches.

Disaggregating these trends, chapter 3 further observes that many countries will face challenges associated with the fragmentation of national environmental and forestry agendas and the simultaneous involvement of numerous governmental agencies. In these countries, environmental agendas will likely converge, but as a result, policy coherence and coordination will become a major issue. Economic transition and globalisation are also impacting the forest and environmental sectors. In Asia, many countries have been benefitting from more open economic policies, while in Africa a host of countries have suffered from global economic turbulence and cheap imports that undermine markets for local products. In the future, environmental issues of emerging importance could change the course of forestry in many ways. With climate change, forests and forestry will be at the forefront of global political discussions, with considerable potential for reshaping the future of the sector.

Wood supply will remain important, but wood production will continue to shift from logging in natural stands to planted forests, as observed in chapter 2. According to chapter 3, this process will reduce logging pressure on natural forests in the near future. Fast-growing plantations for biomass production are expected to be established, especially in Africa, which will also supply fuel to power plants to be built. This will concur with the development of new technologies, such as cellulosic conversion processes for biofuel production and efficient small-scale wood gasification technologies, resulting in significant impacts on wood use and corresponding trends in wood production. Production in existing plantations will possibly increase through improved management practices. Asia's share in global wood-product consumption will increase considerably between 2005 and 2020, but the Asia-Pacific region will also increasingly become a producer and exporter of value-added products, especially furniture, relying on imports of lower value-added items. Latin America will steadily increase production, consumption, and trade of most forest products. The largest increase in exports will be in the case of pulp and paper, which are a dominant component of forest-products exports from the region. The remarkable growth of exports of sawn wood, plywood, and other value-added products, such as mouldings, floors, and furniture, will also continue, supplied with wood from forest plantations. Europe will remain a net exporter of wood products. Consumption of wood energy will grow steadily, fully utilising residues from harvesting and other sources. Wood will play an important part in reaching the goals of increasing the use of renewable energy in Europe without expansion of the forest area.

While the overall trend indicates a reduction in the logging of natural forests and a growing dependence on wood supply from plantations, the state of the world's forest is still worrisome. The annual global area of forest conversion has oscillated around 13 million ha; forest converted to other uses or lost through natural causes. There are indications of declining forest conversion, but the picture is mixed across regions. The estimated forest growing stock of 527 billion m^3 (average 131 m^3/ha) has decreased slightly in recent years due to a global net reduction in forest area. The world's estimated 650 billion tons of carbon stored in forests has also decreased as a result of forest loss.

Chapter 4 describes how developing multi-scale participatory scenarios (MSPSs) can be an important tool for the integration and effective communication of aspirations, preferences, and needs of actors at multiple levels. The need to progressively integrate visions of diverse forest stakeholders that operate at different levels is accentuated by contemporary

drivers that influence forest, including global markets and investments (for example, carbon markets). Global and national demands for goods and services derived from forests may constrain local demand and will require adequate understanding and acceptance of changes in related policies, especially at local levels. Chapter 4 not only argues that MSPSs can support integrated forest planning and negotiations, build capacity for futures thinking, and integrate the global and local level forest processes and strategies but also proposes a framework for compiling and documenting evidence of successful examples of MSPSs.

Chapter 4 contends that MSPSs can generate plausible narratives of possible futures that have been derived using well-elaborated procedural steps and adopting coherent and internally consistent assumptions about key relationships and driving forces (c.f. van der Heijden 1996). A critical advantage of MSPSs is that they allow linking narratives of possible futures across scales, making it possible to identify synergies as well as conflicting visions of possible futures. MSPSs indeed appear to hold the promise for generating synergies between local and global scale, and to make progress towards shared visions among multiple stakeholders, facilitating the development of policies and actions that take into account the shared or contrasting visions.

The chapter, however, also points out that MSPSs are challenging and expensive and require an adequate process of capacity-building before they can be used effectively. In addition, they typically involve a large number of stakeholders, meetings, and preparatory work. The MSPS approach, although promising, is still in a pioneering stage, for example in forest sector literature.

The final chapter in Part IV (chapter 5) strives to establish links between elements of long-term global scenarios and the prerequisite conditions of SFM, as discussed in Parts I and III. The chapter uses the so-called shared socio-economic pathways (SSPs) narratives, which are scenarios that cover a spectrum of mitigation and adaptation challenges. The five SSPs provide narratives of the possible general state of global society, depending on how mitigation and adaptation issues shape societal values and measures undertaken. Of particular relevance to the present volume, the chapter tests how different SSP narratives relate to the prerequisite condition for SFM. The chapter pursues two approaches: 1) analysing how the prerequisite conditions are represented in the SSP narratives and 2), postulating prerequisite condition scenarios and linking those to the SSPs.

SSP narratives that reflect global concerns for sustainable resource management logically suggest positive trends for SFM. However, of greater significance are the contradictions between the two SSPs that, on one hand, assume dominance of adaptation challenges versus the alternative SSP that foresees a dominance of mitigation challenges. The two SSPs that foresee high adaptation challenges, characterised by the keywords "fragmentation" and "inequality," both envision deteriorating social cohesion and reduced international cooperation in addressing shared global challenges linked to climate change. As a consequence, the narratives of these two SSPs suggest several challenges for SFM, since the conditions that promote climate adaptation capacity, which are constrained under the SSPs "fragmentation" and "equality," are similar to the conditions that contribute to SFM. In other words, SFM would also be constrained under these scenarios.

The SSP that foresees high mitigation challenges, identified as "conventional development," generally suggests positive trends for the prerequisite conditions. The "conventional development" SSP, however, foresees progressive influence of market mechanisms with unpredictable outcomes for the environment. There is logic in these results since under the mitigation-challenged scenarios, there will be more value put on forest carbon stocks, while under adaptation-challenged scenarios, there is likely to be more pressure on forests and ecosystems in general, with a concurrent reduction in society's institutional capacity to resolve wider societal problems.

Chapter 5 derives three alternative possible scenarios for the prerequisite conditions and tests these against the SSP narratives. The three different prerequisite condition scenarios align comprehensively with different SSP narratives. The SSP identified as "sustainability" coincides well with prerequisite conditions that are also conducive for SFM. The analysis suggests marked difference between the two SSPs that foresee adaptation challenges ("fragmentation" and "inequality") and the prerequisite condition "tenure rights" (ambiguous tenure versus corporate land appropriation) and "public administration" (inadequate administration and corruption versus less effective over-regulation).

1.4 Futures of sustainable forest management

1.4.1 Outlooks for prerequisite conditions and SFM

As indicated in Part III, the case studies suggest a positive link between tenure reforms benefitting local forest users and progress towards SFM. Chapters 2 and 3 of Part IV both consider recent changes in forest tenure and how these policy measures will likely continue in the future. While changes in communal property of forest has been dramatic, this still largely occurs in only a small number of countries

(chapter 2) and the transfer of ownership has not been as universal as sometimes suggested. Chapter 3 provides detail on projected future trends of forest ownership, which will change most in China and somewhat in Africa, though benefits will often accrue to companies. In other words, not all reforms will target and benefit communities and smallholders. In Latin America, the great surge in forest ownership by communities, indigenous groups, and smallholders has stagnated somewhat, and further dramatic increases are not envisioned at this time. It is therefore, difficult to anticipate how future tenure reform will contribute to overall progress of SFM.

While the tenure trends are unclear in many countries and the contribution to SFM is hard to anticipate, chapter 2 does suggest that the importance of forestry-related activities for rural livelihoods may possibly increase, even though the analysis of Part III suggests that a trend of declining forest area and condition may be a challenging factor. Declines in forest cover are also anticipated in the FAO Forest Outlooks (chapter 3). However chapter 2 also anticipates that future forest benefits, including products, environmental services, and biodiversity conservation, will be derived from what it calls "anthropogenic forests." This conclusion suggests that even with progress towards SFM by communities and smallholders, mature, natural forests may become less common in many regions. Nonetheless, forestry production will likely remain important among rural forest dwellers in many parts in the world.

Therefore, the multiple conditions that favour communal and smallholder forestry activities should be adjusted to reflect these new realities and trends. This is the central and probably most important point of chapter 2. Because of changes in the forest, landscape, and reliance of society on forest benefits, the concept of SFM is changing. The implication is that the causal relations between prerequisite conditions and SFM will also change, but in ways that are difficult to predict.

One can observe a number of similarities between the analysis of Part III and trends signalled in the chapters of Part IV. The lack of reconciliation of land uses and how this affects local SFM is also reflected in the continued encroachment into forestlands that also will have detrimental impacts on local forest management. The support of public administrative bodies has been rather weak and ineffectual, and trends suggest further public administration withdrawal from the forestry sector. The lack of enforcement of laws and regulations, one of the major challenges of progress towards SFM in tropical forest countries, reflects the weak presence of public administration. While this problem is subjected to international and bilateral attention, major progress will likely be elusive while governments continue to reduce funding for forest administrative agencies. Similarly, the need for capacity-building in all aspects of SFM and research and monitoring will continue to remain a serious challenge, despite the acknowledgment of their importance for enhancing SFM and local forest-related development (Part IV, chapter 3).

1.4.2 Foresight in SFM projects

The majority of cases discussed in Part II and similar efforts seeking SFM are, in a sense, forward-looking exercises. Projects aimed at SFM have an important element of forward looking; consciously or not, they rely on approaches like visioning (cf. Wollenberg et al. 2000, Nemarundwe et al. 2003) or backcasting (cf. Hurmekoski and Hetemäki 2013). These projects postulate a future vision of healthy well-managed forests and the provision of adequate benefits from forests, deriving strategies intended to achieve those visions. This is similar to the procedures that have been suggested for visioning exercises (Evans et al. 2006a, 2006b). Few if any of the projects on which the cases of Part II are based mention the generation of knowledge about conditions that contribute to SFM as an explicit objective. Rather, the knowledge generated from the cases can be understood as a product of action research carried out as part of project implementation.

This implicit relationship between project planning and implementation and foresight activities deserves further attention, since ample opportunities exist to derive further insights from efforts seeking to pursue SFM. If these activities were recognised, in part, as foresight activities, it should be possible to improve project strategies over time by adopting available techniques like future scenarios and visioning. The recognition that SFM projects integrate important foresight components should lead to a growing understanding of the value of these tools and to their incorporation into SFM initiatives.

Chapter 4 points out that MSPS tools are not only useful for the development of appropriate policies that integrate views, aspirations, and needs of stakeholders at different levels but they are also useful tools for projects that pursue SFM, even when they are primarily executed at the local level. By incorporating some elements of MSPS, more explicit attention will probably be placed on efforts to address conditions outside the local arena that may have an impact on local efforts to promote SFM. An enhanced recognition of the forward-looking side of local efforts to pursue SFM should also contribute to an understanding of the value of foresight tools in forestry, such as visioning.

However, there is to date insufficient empirical evidence of how scenarios, visioning, or backcasting

exercises actually shape projects. Relevant questions can be posed, such as: How realistic were the visioning exercises? Did the visioning exercise facilitate the anticipation of observed outcomes? Trying to analyse systematically the foresight element of SFM projects could become an invaluable empirical approach to analysing the value of these tools in SFM projects.

1.4.3 The fate and role of forestry in climate change challenges

Chapters 2 and 3 of Part IV focus on quite specific trends related to forestry and linkages between these trends and potential progress in local experiences of SFM. Chapter 5 views forestry and SFM beyond the timeline considered in chapters 2 and 3. Specifically, the exercise examines linkages between SFM and how society may respond to challenges associated with climate change. The range of options of societal responses to climate change presented and their implications for human society are necessarily quite general. The scenarios are relevant, however, to understanding a wide range of possible options. Which options will have an important influence on the direction that human society will take? That in turn will strongly influence the prerequisite conditions of SFM. While the precise outcome of how society will address climate change in the future is difficult to predict, it is already useful to keep in mind that these responses may take different directions and that those directions will have a strong bearing on the future of forests and forestry. Understanding possible trends of prerequisite conditions and SFM under alternative plausible scenarios of responses to climate change will be important for strategic decisions to be made at the global level, in organisations with global mandates, by national governments when strategic directions of forest or broader environmental policies are to be made, and by organisations that have more focused mandates.

Again, it is difficult to anticipate choices that society will make regarding responses to climate change. Likely future efforts to project climate change will become more robust, resulting in greater clarity of the relative importance of global mitigation and adaptation challenges. Along with greater clarity and enhanced understanding of associated trade-offs, more is expected to be known about multiple societal processes, including possible trends of forests and the conditions that contribute to SFM. An important take-home message from chapter 5 is the understanding that there is an implicit link between SSPs and future prerequisite conditions; there is a link between future challenges for SFM and the SSP that best reflects reality.

It is quite possible to recognise reciprocity between the prerequisite conditions and SSPs. On the one hand, alternative SSPs will shape the prerequisite conditions in a variable fashion, consequently impacting forests and forestry. On the other hand, forests and forestry may contribute in a significant fashion to the ensuing SSPs. Progress in future efforts towards SFM, regardless of the precise path taken (chapter 2), should increase the options to address climate change challenges, both in terms of mitigation and adaptation. While this link is not overtly explicit in chapter 5, it is implicit in the underlying objective of this volume: to capture lessons and enhance understanding of efforts to promote SFM. The use of methodologies associated with SSPs offers a potentially powerful approach to progress towards SFM. By better understanding how to foster SFM, it should be possible to explore options to orient future trends towards a preferred SSP, for example, a pathway that results in better lives for a larger number and greater proportion of human society.

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