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*Forests, Forest People, and UN 2030 Agenda's Ethical
Mandate: "LEAVE NO ONE BEHIND"*

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Summary

The contributions of the forest, trees outside forests, and agroforestry sector (FTA) are crucial for achieving the United Nation’s (UN) 2030 Agenda for Sustainable Development fairly and inclusively. This paper reviews FTA sector contributions to the 17 Sustainable Development Goals (SDGs) of the Agenda—both individually and collectively—in the specific context of the development and well-being of the more isolated Indigenous Peoples and local communities (IPLCs) that are part of the explicit “leave no one behind” commitment expressed in the Agenda.

The discussion is divided into four parts. Part One lays out the paper’s objectives, scope, and background. Part Two discusses how the FTA sector, working with and through other sectors, contributes to achieving the interconnected SDGs. It provides evidence of the breadth and strength of the FTA sector’s contributions across the SDGs to sustainable development. Part Three focuses on the prerequisites for strengthening the ability of IPLCs to sustainably use their forests to meet their livelihood needs and support their own sustainable development goals and approaches. Part Four provides conclusions and implications for the way forward in the context of achieving UN Agenda 2030.

The paper reaches three main conclusions about FTA sector resources, IPLCs, and meeting the ethical mandate of the UN Agenda 2030:

- 1) The FTA sector resources traditionally held, managed and used by IPLCs provide them with an absolutely necessary input in moving toward the SDGs most relevant to them. Their customary rights to these resources are increasingly being challenged by outside groups, which reduces community-level incentives to invest in the maintenance and sustainable use of their resources and their ability to move toward their chosen path of sustainable development.*
- 2) Formal statutory recognition of the customary FTA resource rights of IPLCs is key to meeting the 2030 Agenda to “Leave no one behind.”*
- 3) Clear and secure rights to FTA resources are a necessary but not sufficient condition to ensuring that IPLCs have an autonomous path to sustainable development. To ensure progress towards the UN 2030 Agenda, IPLCs also require access to health resources, knowledge (technology, education, traditional practices), social capital (organizational and cross-sector linkages, etc.), and adequate financial resources.*



1. Introduction

"As almost anyone involved with SDG implementation is aware [...] The need for integrated implementation is among the most important lessons to be learned from the Millennium Development Goals." (Jungcurt 2016)

"Forest sector activities in most countries are separated between private, public, and civil society sectors based on the nature of forest tenure. Efforts to improve interactions and exchanges across the tenure divide [will require] ... [g]reater integration between the forest and other sectors..., major changes in policies and institutional arrangements..., [and] improved connections with those outside the forest sector." (Agrawal et al. 2013)

"We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path. As we embark on this collective journey, we pledge that no one will be left behind." (United Nations 2015)

The UN 2030 Agenda for Sustainable Development was adopted in 2015, with nearly all UN members voting in favor. It is structured around 17 Sustainable Development Goals (SDGs) that are interconnected, meaning success in one affects success for others. (see Box 1 below).

Backed by 2030 targets to guide policy actions into the future, the Agenda is designed to support cross-scale interactions and integration of information and technologies over time, yielding a living, dynamic framework that will define the pace of change for the foreseeable future. Two interrelated advances set the SDGs apart from previous international development commitments. First, the 2030 Agenda presents a clear and unambiguous recognition of the need to embrace and pursue "sustainable development."¹ Second, it provides the inclusion of an ethical mandate and clear promise by UN members that "No-one must be left behind" and that "People who are hardest to reach should be given priority." (UN Deputy Secretary General 2016)²

In the context of these two advances, the present paper analyses the role of the forest, trees outside forests, and agroforest (FTA) sector in implementing the 2030 Sustainable Development Agenda. The three constitutive elements of this sector all involve trees as contributors to both climate and

¹ Cf. Jungcurt 2016, Boas et al. 2016; Gregersen, El-Lakany and Blaser 2017, Elder et al. 2016, FAO 2015a, Adams and Judd 2016. United Nations 2018 points out: *There are many reasons to think that the adoption of the 2030 Agenda may significantly change the prospects for integration, including at the national level. In a nutshell, the Agenda and the SDGs have elevated the status of sustainable development on the international policy agenda, increasing the legitimacy and relevance of integrated perspectives and approaches. In addition, the explicit focus of the Agenda on institutions provides an impetus for governments to devote more attention to finding institutional models and public administration approaches that effectively support integrated approaches. These positive changes in legitimacy and relevance are further supported by progress in the scientific understanding of interlinkages among sustainable development issues on the one hand, as well as by the development of analytical methods, tools and information systems that support integration in public institutions in practice.*

² See also: UN Deputy Secretary General. 2018. Transforming the world requires input from all society: UN deputy chief. UN News Centre, 23 May 2018. <https://news.un.org/en/story/2018/05/1010522>

sustainable development pathways.³ The purpose of this paper is twofold: (1) highlight the physical, economic and institutional linkages of the FTA sector with other sectors that contribute to achieving the SDGs; and (2) identify policy linkages and cross-sectoral actions needed to optimize FTA sector contributions to the UN 2030 Agenda, focusing on the more isolated forest communities who are at the heart of the ethical mandate of the UN Agenda.

Box 1. List of the Sustainable Development Goals (SDGs)

GOAL 1 – End poverty in all its forms everywhere

GOAL 2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture

GOAL 3 – Ensure healthy lives and promote well-being for all at all ages

GOAL 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

GOAL 5 – Achieve gender equality and empower all women and girls

GOAL 6 – Ensure availability and sustainable management of water and sanitation for all

GOAL 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

GOAL 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

GOAL 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

GOAL 10 – Reduce inequality within and among countries

GOAL 11 – Make cities and human settlements inclusive, safe, resilient and sustainable

GOAL 12 – Ensure sustainable consumption and production patterns

GOAL 13 – Take urgent action to combat climate change and its impacts*

GOAL 14 – Conserve and sustainably use the oceans, seas and marine resources for sustainable development

GOAL 15 – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

³ In fact, there is evolving discussion about “landscape management” and “integrated watershed management” and similar concepts that bring land uses together in the context of coordinated land-use optimization. (SDG15). (Cf. Freeman et al. 2015, IUCN 2017, Kozar et al. 2014, Minang et al. 2015, Reed et al. 2016, Sayer et al. 2015, WRI 2014.)

GOAL 16 – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

GOAL 17 – Strengthen the means of implementation and revitalize the global partnership for sustainable development

1.1 The FTA Sector and Leaving No One Behind

Throughout the developing world, forest communities are among the most vulnerable and marginalized populations (World Bank 2016). Collectively, indigenous and non-indigenous forest communities represent 12-20% of the world's population (See box 2, also FAO 2014, p.12, Newton et al. 2016), making them critical to achieving the ethical mandate and promise of the 2030 Agenda. As noted by World Bank (2016), “[a]ctions taken to enhance the governance and sustainable management of forests contribute directly to developing economic opportunities for the poorest.”

Box 2. Forest Dependent Population Estimates

- 1.6 billion rural people are dependent upon forests to some extent
- In developing countries about 1.2 billion people rely on agro-forestry farming systems
- 1 billion out of 1.2 billion people extreme poor depend on forest resources for all or part of their livelihoods
- 240 million people live in predominantly forested ecosystems
- 300 – 350 million people are highly dependent on forests and live within or adjacent to dense forests on which they depend for their subsistence and income
- 600 million forest users qualify as long-term users
- There are an estimated 500 million forest-dependent people of which 200 million are Indigenous Peoples

Source: Chao, 2012, from sources: World Bank 2002; World Bank 2004; World Bank 2008; World Bank 2009a; Rainforest Foundation (n. d.); World Rainforest Movement 2005.

For Indigenous Peoples and local communities (IPLCs) who depend on forests and trees for their well-being, the FTA sector remains critical to the realization of their livelihood needs and development priorities, including food security (SDG 2), health/medicine (SDG 3), water (SDG 6), energy (SDG 7), and environmental and physical needs in human settlements (SDG 11) and in relation to climate change and its impacts (SDG13). Advancements in technology and the development of non-forest product-based alternatives for meeting basic needs (e.g., food, water, energy and medicines) have made some direct forest outputs relatively less important to some societies. At the same time, however, a deeper and broader understanding has emerged of the critical nature of the indirect values of forests through

the ecosystem services they provide in moving toward a number of the SDGs such as those related to climate (SDG 13) and biodiversity (SDG 15 and others).

Recognizing that the SDGs are inextricably linked and interdependent propositions, it follows that the sectors involved in achieving them should likewise be better integrated. As originally conceived by the UN World Commission on Environment and Development, all “parts” must work together to create a “whole” dynamic process of sustainable development through time.⁴

1.2 Structure of this Report

Following this introduction, Part Two examines the complex biophysical and socioeconomic relationships that link the FTA Sector and the different SDGs, and addresses cross-sectoral policy linkages and options for maximizing the impact the FTA sector. Part Three explores the relationship and synergies between the FTA sector and other factors essential for sustainability outcomes that leave no one behind. Part Four summarizes the discussion and provides some concluding remarks on the actions needed to scale-up FTA sector contributions to the SDGs, and the ethical mandate and promise of Agenda 2030.

⁴ WCED 1987.

2. Towards Agenda 2030: FTA Sector & the SDGs

"The impacts of forests and trees go well beyond SDG15 to contribute to achieving multiple goals and targets across the 2030 Agenda... [including] SDGs relating to livelihoods and food security..., access to affordable energy, sustainable economic growth and employment..., sustainable consumption and production, and climate change mitigation. Qualitative evidence suggests that forests and trees also make significant contributions to SDGs through the informal sector, agroforestry, opportunities to empower women, sustainable water management, tourism, sustainable cities, climate change adaptation, and tackling land degradation and biodiversity loss."
(FAO 2018)

The importance of protecting and restoring forests for human well-being is a recognized global imperative. As noted by the Global Commission on the Economy and Climate, the need to "stop deforestation and restore at least 500 million hectares (mha) of lost or degraded forests and agricultural lands by 2030" constitute two fundamental priorities of its Global Action Plan (GCEC 2015). Forests and trees are formally included in SDG 15,⁵ but also play a direct and visible role in poverty alleviation (SDG 1), climate regulation (SDG 13), access to clean water (SDG 6), and the pursuit of sustainable and equitable economic opportunities (SDG 8)—among others⁶.

Forests cover almost a third of the world's land mass and different elements of the FTA sector are important in all regions. While the international community struggles to curb the relentless pace of deforestation, ongoing efforts to restore forests in cut over areas and abandoned agricultural lands are helping to expand the reach and contribution of the FTA sector. For example, planted forest area increased by over 110 mha between 1990 and 2015, and by then accounted for 7% of the world's forest area.⁷ Such forests clearly do not replicate all the environmental services of old growth natural forests, but when sustainably managed, can provide a wide range of benefits, including the production of timber and other important non-timber forest products that can help alleviate pressures on natural forests.

More broadly, the FTA sector is best understood as a continuum of change in human-managed landscapes that moves from natural forests, to integrated landscapes of mixed woodlands and agriculture (agroforestry), and non-integrated landscapes with only scattered trees, such as savannahs or even more urbanized settings. As such, the FTA sector is proportionally significant. Agroforestry for instance, which accounts for agricultural landscapes with greater than 10% tree cover, occupies more than 40% of all agricultural land globally. This represents over 1 billion hectares of land that supports the needs of some 900 million people, or 30% of the world's rural population⁸. While boundaries across different land use sectors may not always be clear, optimal land use patterns for

⁵ SDG **15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

⁶ E.g., SDGs 3,6, 7 and others also link closely to forests and trees. Cf. Seymour and Busch 2017, Seymour 2015, Reeves and Milledge 2015.

⁷ FAO 2015b, Gregersen et al. 2017

⁸ Zomer et al 2014

sustainable landscapes and the well-being of rural populations invariably involve integrated land use policies and management systems. The paper returns to this point in Part Three.

The positive and far reaching implications of the FTA sector are thus considerable. Thanks to the renewable nature of trees and agroforests, the sector's contributions to sustainable development and human well-being are essentially boundless.⁹ To achieve such ends however, the FTA sector will need to make new, stronger and more effective linkages with other sectors, mainly through policy linkages and cohesion in the context of elaborated synergies, but also through other means.¹⁰

Cross-Sectoral Linkages

Complex systems linkages underpin sustainability outcomes for the SDGs and the FTA sector. While SDG 15 explicitly includes FTA sector resources as part of its overall focus on the conservation of terrestrial ecosystems,¹¹ the FTA sector remains instrumental to the realization of many of the SDGs, whether directly or indirectly, and the same may be said about the interdependency of most of the targets or goals associated with the 2030 Agenda.¹² In effect, given that the SDGs are inextricably linked and interdependent propositions, it follows that the sectors involved in achieving them should likewise be better integrated.

As such, two distinct categories of linked SDGs are associated with efforts to address poverty (SDG 1) and thus improve human well-being:

- The first category, to which the FTA sector contributes, is the **“resources, production and consumption” SDGs** (2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14 and 15; see Figure 1).
- The second category, which we call the **“governance and equal opportunity” SDGs** (5, 10, 16, and 17; see Figure 1) are prerequisites for acceptable advancement toward the “resources, production and consumption” goals.

It should be noted that, although equity/equal opportunity is primarily mentioned in SDGs 5 and 10, it remains a cross cutting theme of all SDGs, and constitutes the foundation for human well-being and meeting the ethical mandate of the SDGs. Success related to the governance and equal opportunity SDGs depends on progress in the sectors—including the FTA sector—associated directly with achieving the resources, production and consumption SDGs. Thus, sustainable development involves

⁹ The concept of “sustainability” has been recognized by foresters for several centuries (See Unasylva, 2013 Vol.64/240: *300 years of sustainable forestry* -- the whole issue is devoted to the birth and growth of sustainable forest management, except for one article that looks at where forests might be 300 years from now.)

¹⁰ Some believe that the role of forests in human activity will expand greatly into the future as technology finds new uses for trees and other uses for forests, e.g. in the health and biotechnology fields. Cf. Blaser and Gregersen 2014.

¹¹ The term “conservation” is used here as Gifford Pinchot defined it: as wise use of forest resources over the long run, expressed in the popular phrase in the early 1900s: “greatest good, for the greatest number in the long run.” Cf. <http://www.foresthistory.org/ASPNET/People/Pinchot/Pinchot.aspx>.

¹² Cf. Elder et al. 2016.

dynamic systems of interacting sectors and their processes that contribute to progress toward achieving both sets of SDGs and ultimately the overall aim of Agenda 2030.¹³

This section argues that it is essential to understand and further build on the institutional, economical, and biophysical linkages of the FTA sector with other key sectors and functions involved in achieving the SDGs. In short, cross-sectoral linkages and policy cohesion between the FTA sector and other sectors and priorities are key to achieving sustainable and equitable outcomes (e.g., Seymour and Busch 2017; FAO 2015a, 2018; Reeves and Milledge, 2015).

¹³ Cf. UNCED 1987. As noted by FAO 2018, “There is a nascent literature, both academic and ‘grey,’ conceptualizing and addressing SDG interactions (e.g. Weitz et al. 2014; Coopman et al., 2016; Jönsson, 2016) growing out of earlier research in areas such as institutional interactions (Oberthür and Gehring, 2006), policy coherence (Nilsson et al. 2013; May et al. 2006), earth system science (Steffen et al. 2005) and the ‘nexus’ approach (Bazilian et al. 2011; Hoff et al. 2012). In addition, there are debates about goal interactions in the literature on ‘governance through goals’ (Kanie and Biermann, 2016; Swedish EPA, 2000 and International Council for Science 2016).”

2.1 Food Security & Agricultural Sector (SDG 2)

"Close to one out of every six persons directly depends on forests, with food being one essential aspect of this dependence. An even greater number rely on the ecosystem services of forests—notably soil and water protection and pollination—specifically for food and nutrition for the poorest and the most vulnerable, including women." (Vira et al. 2015)

The FTA sector plays a critical role in the maintenance of agricultural productivity and the food security of IPLCs and thus, in a major way, helps to achieve SDG 2. Direct contributions include forest and tree-based foods, which includes everything from fruits, nuts, oils, and other forest-based edibles to bushmeat and aquatic resources derived from freshwater fisheries. For many, forests provide the only accessible sources of protein, balancing what they can derive from agricultural activities (Vira et al. 2015).

Indirect contributions to food security from forest and agroforest systems are many. They play an essential role in the regulation of critical environmental services, such as biodiversity protection, watershed management, soil and wind protection, and the maintenance of pollinator populations that help to improve and sustain agriculture. Forests and trees provide wood for agricultural tools, fuelwood for cooking, fodder, compounds for natural insecticides and herbicides, fertilizers/minerals (e.g., nitrogen fixation), and the necessary environments to support the wildlife and insects humans depend on for their food needs (Reed et al. 2016, 2017).

Agroforestry systems are unique for several reasons. They involve a physical, spatial and/or temporal blending of agriculture (SDG 2) and forestry (SDG 15) on a given area of land that take full advantage of the synergies between the two sectors and increase the productivity of a given area of land. At the landscape level, agroforestry can substantially increase yields per hectare by maximizing the horizontal and vertical productivity and synergies of integrated bioecological management schemes. As such, agroforestry systems are associated with: (1) improved economic benefits; (2) increased access to tree products; and (3) the creation of more resilient food production systems, thanks to the environmental services that only trees and forests can provide (e.g., crop, watershed, and wind protection, microclimate influences, shade, pollination, nitrogen fixation, biodiversity conservation, etc.).

By maximizing the benefits and synergies of context-specific socioeconomic and biophysical systems, the FTA sector can provide needed complements to mono-culture agricultural food crops by ensuring dietary diversity (the number of different food groups consumed over time) and avoiding malnutrition (under-nutrition and micronutrient deficiency and over-nutrition and obesity).¹⁴ In the context of increasing deforestation and forest degradation, growing market demand from urban areas for bushmeat and other forest food products from the forest is a critical issue for the 1.5 billion people

¹⁴ Obesity can no longer be seen as only a disease of affluence (Vira et al. 2015).

who depend on the FTA sector for most of their food and nutrition. Finding strategies to maintain and enhance sustainable forest-food off-take is key to ensuring no one is left behind over the longer term.

FTA and Agriculture

Throughout history, competition for land has largely been unidirectional: agriculture expands onto forest land, not the other way around. However, the opposite is increasingly taking place, as less productive agricultural lands are repurposed towards agroforest uses, reforestation or afforestation efforts. The agriculture and FTA sectors together are by far the most dominant land uses globally, accounting for some two thirds of the global land area.

Forest losses, mainly due to agricultural expansion, have amounted to about 100 million hectares over the past 20 years. Projections indicate a need for about 100 million hectares of additional forest land for agricultural use by 2050 (FAO 2016b, Alexandratos and Bruinsma 2012). However, the reality is that this projection is likely far below the actual conversion that will take place into the future. By and large, deforestation or conversion of forest to agriculture are linked to a few major globally-traded agricultural commodities.¹⁵ Despite concerted efforts to reduce tropical deforestation, tree cover loss has been rising steadily in the tropics over the past 17 years. According to Global Forest Watch (2018),¹⁶ 2017 was the second-worst year on record for tropical tree cover loss. In total, the tropics experienced 15.8 million hectares of tree cover loss that year.

Clearing of forests for agriculture and other uses continue to drive large-scale deforestation. Globally, some two billion hectares of abandoned agricultural and deforested land is in need of restoration, both for the many ecosystem services that trees and forests provide, and in order to meet the emerging needs of a growing population.¹⁷ The “ecosystem services provided by tropical forests are estimated to be worth an average of US\$6,120 per hectare per year.”¹⁸ The widespread public recognition of the value of forest ecosystem services being lost has brought out the urgent need to reduce deforestation and forest degradation and at the same time restore degraded forests and engage in widespread reforestation efforts on abandoned and unproductive land, as demonstrated by recent international commitments (see Boxes 3 and 4, for example).

Box 3. The Bonn Challenge

The Bonn Challenge was established at the UN ministerial roundtable in September 2011. It calls for restoration of 150 million hectares of deforested and degraded lands by 2020. This is a practical, action-

¹⁵ Cf. Persson et al. 2014. They studied 4 commodities (beef, soybeans, palm oil and wood products) in eight case study countries (including the major tropical deforestation ones). They found that about a third of global tropical deforestation and associated carbon emissions (3.9M ha and 1.7Gt CO₂) in 2009 can be attributed to the four commodities in the eight case countries. Excluding Brazil, on average 57% of deforestation attributed to the four commodities was embodied in exports.

¹⁶ <https://blog.globalforestwatch.org/data-and-research/2017-was-the-second-worst-year-on-record-for-tropical-tree-cover-loss>

¹⁷ Cf.: IUCN: <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration>

¹⁸ E.g., UNEP 2014.

orientated platform to facilitate the implementation of several existing international commitments that require restoration, including the CBD Aichi Target 15, the UNFCCC REDD+ goal, and the Rio+20 land degradation target.

Several governments, private sector companies, and community groups have signalled their intent to align with and invest in achieving the Bonn Challenge, and almost 20 million hectares have already been pledged. Commitments of a further 40 million hectares are being finalised.

The Bonn Challenge is available at: <https://www.bonnchallenge.org/about-the-goal>

Box 4. The New York Declaration on Forests

The New York Declaration on Forests is a political declaration that grew out of dialogue among governments, companies, and civil society, spurred by the Secretary General's Climate Summit of 2014. It calls for restoring forests and croplands of an area larger than India. Meeting these goals would cut between 4.5 and 8.8 billion tons of carbon pollution every year—about as much as the current emissions of the United States. The Declaration is endorsed by dozens of governments, some of the world's biggest companies, and influential civil society and Indigenous organizations. Its voluntary Action Agenda serves as a guide to governments, companies, and organizations regarding the diverse set of actions that can achieve these transformational goals. The entities endorsing the NY Declaration announced dozens of concrete actions and partnerships to demonstrate their commitment to implement the Declaration and Action Agenda. One hundred and ninety different organizations, including 57 transnational companies have committed to eliminating deforestation from the agriculture and forestry sectors by 2020 denoted as the Zero Deforestation Commitment (ZDC).

The New York Declaration on Forests is available [here](#).

In the context of climate change and population growth, however, the need for food security (SDG 2) cannot not be achieved at the expense of forests (SDG 15).¹⁹ More sustainable and resilient means of production are now urgently needed, and efforts to combine forests, agroforestry, trees, and food crops in integrated landscapes (*i.e.*, agroecology) are yielding new opportunities for achieving the SDGs.

Some of the impacts of loss of productive forest land to agriculture are being moderated by the rapidly increasing restoration of degraded agricultural and other land to forest.²⁰ There are many other means of limiting the loss of forest land and to creating more productive uses, such as through

¹⁹ https://www.google.com/search?rlz=1C1CHBF_enCA755CA758&q=Climate+Focus+-+deforestation+data&tbm=isch&source=univ&sa=X&ved=2ahUKEwiPnfmjztfiAhUPCuwKHRrOA1MQsAR6BAgAEAE

²⁰ Cf. Gregersen et al. 2012, Calmon 2017.

integrated landscape management approaches and the introduction of agroecological systems, including agroforestry and silvo-pastoral production systems.²¹

Even though agroforestry is treated here as part of the FTA sector, it provides a good example of a productive, integrated landscape approach for forest and agriculture sectors. As one of the oldest, and most successful forms of integrated landscape management approaches, agroforestry is practised widely precisely because it increases total benefits derived from a given land area. Agroforest systems are estimated to occupy over 1 billion hectares of land, supporting more than 900 million people or 30% of the world's rural population.²²

The benefits of agroforestry are many. In a thorough review of studies of the contributions of trees to local food production, Reed et al. (2017a) conclude that yields of food crops can be maintained or enhanced, compared to intensive monoculture systems, when forests and trees are incorporated within an appropriate and contextualized natural resource management strategy. Furthermore, they illustrated the potential of achieving net positive gains through integrating trees on farms, providing farmers with additional income sources and greater resilience strategies to adapt to market or climatic shocks. Most IPLCs practice various forms of agroforestry.

²¹ An interesting and potentially major opportunity to reduce forest land conversion is through a reduction in food wastage (i.e., both food loss and waste, the former dominating in developing countries, the latter in developed countries). FAO (2013c) estimates that produced but wasted food vainly occupies almost 1.4 billion hectares of land which represents close to 30 percent of the world's agricultural land area. Thus, even a conservative 1% reduction in food wastage across the board could mean a reduction of 14 million hectares of land needed to produce the same amount as now of effectively consumed food.²¹ This could also lead to increased areas available for reforestation and/or reductions in future conversion of forest land.

²² Zomer et al. 2014.

2.2 Water and Sanitation (SDG 6)

"Forests and trees must be recognized as prime regulators within the water, energy and carbon cycles. If these functions are ignored, planners will be unable to assess, adapt to or mitigate the impacts of changing land cover and climate" (Ellison et al. 2017).

"Forests play a crucial role in the hydrological cycle. They influence the amount of water available and regulate surface and groundwater flows while maintaining high water quality. Moreover, forests and trees contribute to the reduction of water-related risks such as landslides, local floods and droughts and help prevent desertification and salinization. Forested watersheds supply a high proportion of the world's accessible fresh water for domestic, agricultural, industrial and ecological needs in both upstream and downstream areas." (FAO 2013)

Water is necessary for human survival. At present, billions of people suffer the effects of inadequate access to water (Mekonnen and Hoekstra 2016, Ellison et al. 2017). An adequate quantity of safe drinking water is a prerequisite for all sectors to contribute to the SDGs. The FTA sector is unique in that sense, since the water cycle is intimately tied to the existing forest domain and the maintenance of forested watersheds that regulate the flow and quality of water across landscapes and into urban and peri-urban areas.²³ The world's biggest cities obtain a significant portion of their drinking water directly from forested watersheds and protected areas that were managed specifically for water (FAO 2013). If managed appropriately, these multiple use forests can create a win-win situation, and increase FTA sector contributions to a number of the other SDGs besides water (SDG 6); for example, 13 (climate change), 11 (urban settlements), and 3 (health and well-being).

In terms of the water-forest-agriculture nexus, agriculture is by far the most important sector in terms of water use. Thus, the water footprint²⁴ of agriculture accounts for 92% of the global water footprint, with industrial production only accounting for 4.4% and domestic water supply for 3.6%. Any contribution that the FTA sector can make in terms of improving the water-agriculture linkages can have a significant impact on global freshwater use, thereby contributing to food security (SDG2) and access to clean water and sanitation (SDG 6).

2.3 Health and Well-Being (SDG 3)

The relationship between health (SDG 3) and FTA sectors closely mimics previously discussed linkages with water. The FTA sector supports both mental and physical health and thus human well-being, a

²³ Cf. Gregersen et al. 2013, and section below on FTA sector links to SDG 11, human settlements.

²⁴ In the figures cited, the WF refers to the consumptive water use of a given output, which is the sum of rainwater (green water footprint), ground and surface water (blue water footprint) and polluted water (grey water footprint) used. Virtual water consumption refers to the WF impact of imported products/outputs, i.e., the water footprint of product delivered to the importing country. Figures refer to avg. annual WFs during the 1996-2005 period.

prerequisite for sustainable poverty reduction and the underlying aim of Agenda 2030,²⁵ (see also Box 5).

²⁵ The mental health benefits are most noticeable for urban dwellers and in wealthier societies. Little research has been done on links between the FTA sector and mental health benefits among poorer members of the global society.

Box 5. Ecosystem services

Forests and trees supply an abundance of ecosystem services that help in creating healthy living environments and in restoring degraded ecosystems. In addition to tangible products, forests, for example, mitigate floods, droughts, and the effects of noise; purify water; bind toxic substances; maintain water quality and soil fertility; help in erosion control; protect drinking water resources; and can assist with processing wastewater. Forests can mitigate climate change and may help in regulating infectious diseases. Woodlands and trees have a positive impact on air quality through deposition of pollutants to the vegetation canopy, reduction of summertime air temperatures, and decrease of ultraviolet radiation. Forests also provide recreational, cultural, spiritual, and aesthetic services (Karjalainen et al. 2010).

“In view of increasing urbanization, trees, parks and forests are a must for planners designing the sustainable cities of the future and peri-urban landscapes. Removing pollution, offering shade and contributing to numerous health benefits, greenery is crucial for the well-being of city people, who globally outnumber those living in rural locations. Trees and green spaces in urban areas are also associated with the multiple targets across the 2030 Agenda”, FAO (2018).

A large number of researchers²⁶ have assessed the connections among nature, biodiversity, ecosystem services, and human physical and mental health and well-being. They have looked especially at the role and importance of green-spaces or green-infrastructure in the mental and physical health of urban and coastal settlements as well as rural residents, particularly forest dwellers. The general conclusions are that these linkages are very important globally and that they are widespread, but there are no detailed and reliable quantitative estimates on a global scale of the benefits and costs involved.

Many pharmaceutical products derive from tropical forest species (see Box 6 for some examples). Some of these products are now synthesized, but others are still collected from the wild, or domesticated and cultivated commercially, oftentimes far from the forests and regions where they were first found.

Box 6. Many western pharmaceutical products derive from tropical forest species

Quinine from *Cinchona* spp.; cancer-treating drugs from rosy periwinkle (*Catharanthus roseus*); treatments for enlarged prostate gland from *Prunus africana*; forskolin, which has a variety of medicinal uses, from the root of *Coleus forskohlii*; medicine for treating diabetes from *Dioscorea dumetorum* and *Harungana vismia*; and several medicines based on leaves of the succulents of the *Mesembryanthemaceae* family (Colfer et al. 2006a,b).

²⁶ Cf. The following review documents and the citations therein: Sandifer et 2015, Karjalainen et al 2010, Colfer (ed.) 2012, Colfer et al 2006a, b,

The economic value of the forest medicines used by rural communities is substantial. According to Colfer et al. (2006a), the World Health Organization (WHO) estimates that 80% of people in the developing world rely on traditional medicines, particularly plants, for their primary health care (Farnsworth et al. 1985; Walter 2001). In other words, the links between the FTA sector and SDG 3 are strong. The wide use of traditional medicines is attributed to their accessibility, affordability and compatibility with cultural norms (WHO 2002). Medicinal products gathered from forests are often the only remedies available to people in the developing world (Elisabetsky and Wannamacher 1993, for Amazonia, FAO 1991).

The financial value of forest-based medicines sold in formal and informal markets is likewise substantial. Kaimowitz (2005) reports that \$75 billion USD of pharmaceuticals of natural origin are sold each year. More than 580 animal species, distributed over 13 taxonomic categories, are used in traditional medicine in the Amazon region (Alves and Alves 2011 as reported in Vira et al. 2015).

The total amount of forest dweller income from collection, processing, and trade of plants for biomedicines is available only at the disaggregated, case study level (see Box 7).

Box 7. Villagers produce biomedicines and contribute to SDGs

In the village of Thach Ngoa, Viet Nam, members of a small producer group of forest farmers are seeing big returns on a winning decision to start distilling oil from the local star anise tree. The oil is a major source of shikimic acid, an important component in anti-influenza drugs, making star anise a valuable forest crop. Following training by the Viet Nam National Farmers Union, group members have invested more than €2,000 in distillation equipment and are making a good profit, selling to provinces bordering China as well as local buyers. After just one year, some 30 people are now employed collecting fruit, working in the plant and selling the oil.

Group members are directly contributing to three Sustainable Development Goals (SDGs) – ending poverty (SDG 1), zero hunger (SDG 2), and good health and well-being (SDG 3) (Campbell 2016).

Achieng (1999) reports that the bark of *Prunus Africana* (used for prostate cancer in the West) was worth \$220 million USD to the pharmaceutical industry, based on an average annual harvest of 3,500 tons and prices up to \$60 USD per kg.

2.4 Access to Energy (SDG 7)

Agricultural and forest landscapes have long provided humans with food, fiber and energy. In fact, biomass-based energy is the oldest source of consumer energy known to humans, and it is still the largest source of renewable energy worldwide (UNEP 2015, Richard and El Lakany 2015, Brack 2017). About an eighth of the world's population still depends almost entirely on traditional biomass for energy, mainly to cook and heat (FAO 2014). The biophysical and socio-economic linkages between the FTA sector and the energy sector (SDG 7) are longstanding and still significant.

Total renewable energy (including solar, wind, hydro, etc.) accounts for 19% of the total primary energy supply (UNEP 2015, FAO 2014), with traditional biomass' share of the total—8.9%—being larger than for any of the other sources of renewable energy.²⁷ In 2014, total biomass energy accounted for 10.3% of the total global energy supply; and the FTA sector accounts for 87% of the biomass energy, with 67% being fuelwood, followed by 7% from charcoal, 6% from recovered wood, and 5% from wood industry residue (World Bioenergy Association 2017, FAO 2014, Brack 2017).

In terms of regional use, wood as percentages of total primary energy supply in 2014 was as follows: Africa 27%, Latin America and the Caribbean (LAC) 13%, Asia and Oceania 5%, Europe 5%, North America 2%. In 13 African countries, as well as in Bhutan and Lao PDR, wood energy accounts for more than 90% of all energy used (FAO 2014).²⁸

The wood-food-energy nexus is significant; about one-third of the world's households, or some 2.4 billion people, rely on wood fuel for cooking. This includes charcoal, which is used by about 10% of households, mainly in urban areas.

At the global level, wood fuel accounted for slightly more than half (51%) of all roundwood harvested in 2014. This proportion declined only slightly, from 52%, over the 2010-14 period. Wood fuel production is most important in Africa, where it accounted for 90% of roundwood production in 2014. It is also relatively important in the Asia-Pacific region, where it accounted for 64% of roundwood production. Wood fuel use in Latin America and the Caribbean (at 54% of all roundwood production) was close to the global average, whereas in Europe and Northern America it accounted for only 20% and 8% respectively of all roundwood production. These proportions did not change much in most of the regions over the period 2010-2014.

Wood fuel in most parts of the world is not an efficient source of energy—though considered a renewable resource when managed properly. There is urgent need to increase efficiency and thereby reduce the total use of wood as fuel, which in parts of the world is a major cause of forest degradation and deforestation, as pointed out by Bull (2018).

One example of how to improve the sustainability of forest resource with one energy product is illustrated by the FAO report on charcoal products (FAO 2017). New technology in wood kilns can reduce the wood used to produce 1kg of charcoal from 12kg to 3kg (FAO 2017). This needs to be combined with the adoption of efficient stoves which could further reduce the need of wood energy for cooking. Since charcoal represents nearly 17% of wood fuel usage and generates employment for some 40 million people it is an important economic sector to manage sustainably, particularly since it is expected to increase in its use of forest resources (see Box 8).

²⁷ "Traditional" biomass includes, in addition to woody biomass, crop residues, livestock manure and other non-woody biomass.

²⁸ Total primary energy supply is measured in million tons of oil equivalent.

Box 8. Greening the charcoal value chain

The FAO (2017) report had the following recommendation to 'green' the charcoal value chain:

1. Introduce measures to reduce greenhouse gas emissions, targeting the entire supply chain.
2. Increase the financial viability of the green charcoal supply chain through land reform, fair pricing and policy reform to push sustainability.
3. Develop national policy frameworks to incentivize the sector.
4. Provide more research outputs and develop information systems to manage.

The importance of woody biomass fuel in the future energy mix is likely to increase, despite growing concerns over related impacts on greenhouse gas emissions, deforestation and forest degradation. The challenge, according to Bull (2018), is how to develop market and regulatory mechanisms that support the participation of the rural poor in this burgeoning economy (SDG 1), while strengthening food security (SDG 2), gender equality (SDG 5), and the sustainable use of forests (SDG 15)? The key economic and policy instruments that are likely to support such ends "include tenure allocation, market mechanisms, financing and loans, use of appropriate subsidies and the introduction of newer technologies."

2.5 Climate Change Action (SDG 13)

The links between climate change and the FTA sector—both positive (trees sequester and store huge amounts of carbon) and negative (deforestation and forest degradation account for some 8-15% of GHG emissions)—are significant in terms of ongoing global change. Improved contributions of the FTA sector to SDG 13—combating climate change and its impacts—involve reducing deforestation and increasing land restoration, including afforestation, reforestation and rehabilitation of abandoned lands, mainly old agricultural lands (see Box 9).

Box 9. Intact forests reduce GHG emissions substantially

Halting deforestation and re-growing forests together have the potential to cut annual emissions of greenhouse gases by 24–30%. And forest countries themselves have much to gain by protecting their forests, including ecosystem services and resilience to the impacts of climate change. Intact forests protect watersheds, reduce the impact of natural disasters, and provide food and energy. (CDG 2015)

The FTA sector-climate change interactions are significant. Plants and soils in terrestrial ecosystems currently absorb the equivalent of about 20% of anthropogenic greenhouse gas emissions measured in CO₂ equivalents (Le Quere et al 2018). However, worldwide, there was a slight decline in the amount of carbon in the world's forests from 1990 to 2005 (FAO 2008).

Despite an average net loss of 3.3 million hectares of forest per year (FAO 2016c), CO₂ emissions from forest conversion decreased significantly in recent years, averaging 4 billion metric tons of CO₂ per year between 2001–2010, to 2.9 billion tons per year during 2011–2015. More than half of the estimated reductions over the last five years, some 600 million CO₂ per year, took place in Brazil (Federici et al. 2015).

More recently, Pearson et al. (2017), working with data for 74 countries covering 2.2 billion hectares of forest, estimated “annual emissions from forest degradation during 2005–2010 of 2.1 billion tons of carbon dioxide, of which 53% were derived from timber harvest, 30% from wood fuel harvest and 17% from forest fire.” These percentages differed by region: timber harvest was as high as 69% in South and Central America and just 31% in Africa; wood fuel harvest was 35% in Asia, and just 10% in South and Central America; and fire ranged from 33% in Africa to only 5% in Asia. Of the total emissions from deforestation and forest degradation, forest degradation accounted for 25%.²⁹ In 28 of the 74 countries, emissions from forest degradation exceeded those from deforestation.

Forests globally are estimated to have contributed a net sink of 1.1 billion tons C per year between 1990 and 2007 (Pan et al. 2011). However, carbon storage in agroforestry systems could also be substantial. For example, in 2010, 43% of all agricultural land globally had at least 10% tree cover and this has increased by 2% over the previous ten years. (Zomer et al. 2016).

What happens in the FTA sector can significantly impact global climate change, negatively or positively. On the one hand, if deforestation is not halted and the pace of tree planting does not pick up momentum, the sector could well become a net contributor of GHG emissions, which has happened in some regions.³⁰ On the other hand, if deforestation is drastically reduced and afforestation, reforestation, and agroforestry systems expand further, and if more wood is used as a renewable construction material where feasible in cities, the sector could become an even greater GHG sink, further accelerating progress towards other priorities in the 2030 Agenda. Effectively, developmental choices in the FTA sector can, through their impacts on other sectors, influence the ability of societies to mitigate and adapt to climate change³¹

In this context, climate compatible development implies efforts to minimize “the harm caused by climate impacts, while maximizing the many human development opportunities presented by a low-emissions, more resilient, future.”³² Many recent studies examine policies that work across scales—national, regional and local—to address the natural resource dynamics at each level. Effective policy

²⁹ Federici et al. 2015 agree that degradation accounts for about a quarter of the total emissions from deforestation and degradation.

³⁰ In fact, in tropical and sub-tropical regions, while intact forests absorb 1.2 billion tons of C per year, this amount is offset by the net emissions resulting from land-use changes (i.e., deforestation and clearing emissions minus regrowth storage) of 1.3 billion tons of C per year, making (sub-) tropical forest regions a net source of atmospheric carbon of approximately 100 million tons C per year (Pan et al. 2011).

³¹ Cf. Yohe et al. 2007. <https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter20.pdf>.

³² Mitchell, T. and Maxwell, S. (2010). Defining climate compatible development. CDKN ODI Policy Brief November 2010/A. <file:///F:/C4-FAO-GCF/Climate%20compatible%20development.%20Mitchell%20and%20Maxwell%202010CDKN-CCD-DIGI-MASTER1.pdf>.

making and delivery across scales can help to secure the joint adaptation and mitigation and human development benefits of numerous sectoral policies, particularly in the FTA and other land use sectors.³³

Climate change impacts are acutely felt in the FTA sector, and, in turn, the sector's impacts on climate change are significant. Thus, climate change adaptation and mitigation policies must be developed together, in a synergistic way. For instance, where climate change has a negative impact on ecosystems and forest communities, this can endanger investments in sustainably managed forests, including the successful implementation of REDD+ projects. Again, cross-scale dynamics are a part of this complex picture.

Therefore, any role for the FTA sector in climate change mitigation and adaptation should be planned and implemented within a sustainable development context. For example, use of woody biomass for energy is still controversial as far as its contribution to GHG emissions under different circumstances.³⁴ While it continues to play a critical role for the rural poor in pursuit of the SDGs, it is not a climate neutral solution. (cf. Holmgren 2017 for further discussion of the controversy).

2.6 Sustainable Cities and Communities (SDG 11)

Although sometimes overlooked, the linkages between the FTA sector and urban and peri-urban areas are significant and widespread. These include the provision of climate control, (cooling through shade and heat uptake, protecting against weather damage), air purification, providing food, (SDG 2), fuel wood and other products in some cases, and well-being benefits through proximity to nature and outdoor recreation. FAO (2016a) points out urban and peri-urban forests provide many hundreds of millions of dollars' worth of benefits annually to urban landscapes through watershed protection as well as provision of forest food and medicine, fuelwood, and charcoal, as discussed in earlier sections.

On urban and peri-urban forests, FAO (2016a) suggests that forests and trees help make cities a): safer – by reducing stormwater runoff and the impacts of wind and sand storms, mitigating the “heat island” effect, and contributing to the adaptation and mitigation of climate change; b) more pleasant, by providing space for recreation and venues for social and religious events, and ameliorating weather extremes; c) healthier, by improving air quality, providing space for physical exercise, and fostering psychological well-being; d) wealthier, by providing opportunities for the production of food, medicines and wood and generating economically valuable ecosystem services; and e) more diverse and attractive, by providing natural experiences for urban and peri-urban dwellers, increasing biodiversity, creating diverse landscapes, and maintaining cultural traditions. Although there are very few quantitative analyses of these linkages in the global south, estimates from developed countries could just as well apply to urban landscapes in the developing world:

³³ The Energy and Resources Institute (2012). Climate and Development Research Review, Synthesis Report. <https://cdkn.org/wp-content/uploads/2012/11/Synthesis-Report.pdf>.

³⁴ Cf., Cornwall 2017, Brack 2017, and <https://www.economist.com/news/business/21575771-environmental-lunacy-europe-fuel-future>.

- Total tree carbon storage in US urban areas (c. 2005) is estimated at 643 million metric tons (US\$50.5 billion; 95% CI ¼ 597 million and 690 million tons) and annual sequestration is estimated at 25.6 million tons (US\$2 billion; 95% CI ¼ 23.7 million to 27.4 million tons) (Nowak et al. 2013). In other words, urban forests are doing their part in reducing GHGs. The value of the carbon storage and sequestration alone makes them a valuable urban asset, in addition to all the other values.
- An assessment in five cities in the United States of America (McPherson et al. 2005) showed that the benefits of urban trees outweighed the costs by ratios of between 1.37 and 3.09. Costs included in the analysis were: tree planting and maintenance, including pruning and the removal and disposal of damaged trees; infrastructure damage; inspection; litter clean-up; and damage claims. Benefits included energy savings based on the cooling effects of trees, carbon sequestration and storage benefits, air quality improvements, improvement in property values, and reduced stormwater runoff.
- McPherson et al. (2016) did a more recent assessment of the value of street trees in the State of California, USA. They found that the state's street trees remove 567,748 t CO₂ (92,253 t se) annually, equivalent to taking 120,000 cars off the road. Their asset value is US\$2.49 billion (\$75.1 million se). The annual value of all ecosystem services is US\$1.0 billion (\$58.3 million se), or \$110.63 per tree (\$29.17 per capita). Given an average annual per tree management cost of \$19.00, \$5.82 in benefit is returned for every \$1 spent.
- Tzoulas et al. (2007), in a review of the evidence on human health in urban areas in relation to green infrastructure (urban forests and trees included as major components), found general agreement from the studies reviewed that “ecological functions and ecosystem services derived from a Green Infrastructure contribute to ecosystem health and to public health, respectively.” Some of the reasons include that urban forests and trees in a living environment can ameliorate air pollution and reduce temperatures; they may lead to people being more physically active, for example, by walking in green areas. Evidence of this relationship is discussed by Tzoulas et al. (2007).³⁵
- Integrated studies of tree effects on air pollution reveal that management of urban tree canopy cover could be a viable strategy to improve air quality and help meet clean air standards (Nowak et al. 2006). Later work by Nowak et al. (2014) estimated that trees and forests in the conterminous United States removed 17.4 million tons (t) of air pollution in 2010 (range: 9.0-23.2 million t), with human health effects valued at US\$6.8 billion (range: US\$1.5-13.0 billion). Health impacts included the avoidance of more than 850 incidences of human mortality and 670,000 incidences of acute respiratory symptoms.

³⁵ The authors caution, however, that health effects of green spaces cannot be generalized.

- According to the FAO (2016a), recent valuation of urban forests carried out by the City of London showed that the 8 million trees growing in the urban area produce annual benefits of about £132 million, mostly related to the removal of air pollution, and they have an amenity value estimated at £43 billion (Rogers et al. 2015).

Based on all the evidence reviewed, there is a strong case for an integrative approach to urban planning that would include disciplines such as nature conservationists, environmental psychologists, and public health specialists to further improve urban and peri-urban environments and their use of green infrastructure. This relates directly to the aims of SDG 11.

Even without having hard numbers, one can infer from the above that the values are significant on a global scale. There is need for much closer policy interaction and linkage between the FTA sector and the urban sector. Urban areas now hold more than half the world's population, even though they only cover about 2% of the world's land area (FAO 2016a), and cities will become even more important in the future.

Finally, there is the contribution of FTA sector resources to human settlements in terms of dwellings, furniture, etc. In Europe, wood is now used in about 25% of residential construction, up from 5–10% in the 1990s; while in the US 80% of dwellings already are wood-based. A point often missed is that using wood for construction is less energy intensive than concrete or steel, and the carbon sequestered in the tree as it grows remains stored in the wood used for construction.³⁶ By substituting wood from sustainably managed forests, the building industry could curb up to 31% of global carbon emissions.³⁷

A 2010 Finnish government report³⁸ estimates that a mere 4% increase in annual wood use in construction throughout Europe would avoid 150 million tonnes of carbon emissions, almost as much as the Netherlands emits each year. The climate benefits of building with wood hinge on the assumption that the world's forests will be managed sustainably.

In sum, FTA sector resources have an important role to play in creating more liveable human settlements and thus helping achieve SDG 11. But while urban planners recognize this in new settlements being created, it becomes more difficult to establish trees and open spaces in many existing urban areas, because of, among other things, mounting property values, and traditions established in existing environments.³⁹ Yet there are vast opportunities still to expand the use of FTA sector resources in existing human settlements regardless of the size and type of settlement.

³⁶ Tollefson 2017 and references cited therein.

³⁷ Oliver et al. 2013.

³⁸ *The International Promotion of Wood Construction as Part of Climate Policy* (Ministry for Foreign Affairs of Finland, 2010); available at <http://go.nature.com/2phy6rk>.

³⁹ C.f. Miller, R. W. (1988). *Urban Forestry: Planning and Managing Urban Greenspaces*. Prentice Hall College Division. Pp. 432.

2.7 Economic Growth, Infrastructure & Responsible Production (SDGs 8, 9 & 12)

FTA sector links to market-based economic activity and growth, and to the employment, industrial, and infrastructure sectors are broad and complex. Activities that contribute to economic growth range all the way from local hunters and gatherers selling their products in local markets to large-scale global forest industry conglomerates. They include both timber and non-timber forest products (NTFPs) as well as environmental services for which forest owners are paid, either by government or by private entities (e.g. carbon markets, watershed services, etc.). In terms of infrastructure and competition for forest land, the range of public and private entities that encroach on forests is also broad, from roads and urban expansion to hydropower, mining, and, of course, agriculture, discussed above.

In the case of infrastructure, the links with the FTA sector are mixed, since infrastructure development often requires forest land to be converted to other uses. At the same time, infrastructure such as roads, processing facilities, and housing is needed for the FTA sector to contribute to economic growth. As discussed in Part Three, such exchanges can yield positive social and environmental outcomes when the benefits of the FTA sector are fully considered.

Commercial forestry and the forest industry formally employed 13.2 million workers in 2012, about 1% of the world's total formal employment. Part-time workers and workers in the informal sector, especially in developing countries, numbered more than 40 million. There also are an estimated 840 million people who collect wood fuel and produce charcoal, primarily for their own use.⁴⁰ They mainly are paid in kind, either by using the product themselves or through barter or other means. There are also many millions of people who collect and process all kinds of NTFPs, either for subsistence or for sale in local markets. There are no estimates of the number of people who work with trees in agroforestry systems. However, it is fair to assume that all farms with trees/agroforestry systems involve some labor and that the tree component of such farms adds to the income of the farmers and those working for them. (As pointed out earlier, the best estimate is that agroforestry is practiced on over 1 billion hectares of land, with more than 900 million people—or 30% of the world's rural population -- living on them).⁴¹

Income generation in the formal forest sector (including formal sector production of roundwood and forest products) amounted to about 1% of total GDP globally, or some US\$606 billion in 2011. More than two-thirds of this total was generated in Asia and Oceania, Europe, and North America. However, the regional averages hide the variability among countries. For example, for India and China, the percentage of total incomes generated by the forest sector are around 2% of GDP, (FAO 2014).

According to the FAO (2014), US\$33.3 billion of income was generated by informal production of wood products (mainly for construction and fuel), this in addition to the formal income noted above. NTFPs generated around US\$78.3 billion (85% plant products and 15% animal products). In addition, medicinal forest plants generated around US\$700 million. By 2011, US\$2.4 billion of income was

⁴⁰ FAO 2014.

⁴¹ Zomer et al. 2014.

generated annually through Payment for Ecosystem Services (PES) programs around the world (FAO 2014).

Total global income in 2012 for the FTA sector (excluding agroforestry) was conservatively estimated to be US\$730 billion and much of it was derived from trade. Total global exports of commercial forest products amounted to US\$226 billion in 2015. This value represents, respectively, a 56% and 300% increase over the 2000 and 1980 levels respectively (FAO 2016d).

2.8 Summing Up: FTA Contributions

Part Two illustrates that:

- FTA sector contributes directly and indirectly to achieving many of the SDGs and thus improving the well-being of the global population, especially the poor.
- IPLCs are significantly dependent on the FTA sector's natural capital for livelihoods, and in some cases survival. As societies become more technologically complex, the importance of the FTA sector *relative* to the importance of other sectors declines, while its absolute importance across SDGs remains strong.
- The level of progress in most of the "resources, production and consumption" SDGs depends on effective interaction between the FTA sector and the many other sectors that affect SDGs (e.g., agriculture). Thus, the need exists for the broad and productive intersectoral and inter-SDG linkages envisioned in Agenda 2030. This is particularly so for the FTA sector because of the role it has to play in the success of so many of the SDGs.
- Cross-sectoral policy coherence and action are important elements in optimizing direct and indirect contributions of the FTA sector to the 2030 Agenda, its ethical mandate to leave no one behind, and more specifically, in meeting the needs of IPLCs.

3. Sustainable Development & IPLCs: Leaving No One Behind

"The new Agenda is ... a universal, integrated and transformative vision for a better world. It is an agenda for people, to end poverty in all its forms. An agenda for the planet, our common home... It is rooted in gender equality and respect for the rights of all. Above all, it pledges to leave no one behind." (BAN Ki-Moon, Secretary-General, United Nations, 2016)⁴²

"[T]o contribute to sustainable development...[forestry experts and policymakers] ... are calling for an integrated, inclusive, bottom-up approach to forest management, which seeks to ensure local

⁴² <https://www.un.org/sg/en/content/sg/statement/2015-09-25/secretary-generals-remarks-summit-adoption-post-2015-development>

benefits, while resolving conflicts among competing interests and priorities for land use.” (Reeves and Milledge 2015)

The 2030 Agenda, with its set of deeply interlinked goals, has generated new interest in sectoral policy integration (Persson 2016), to resolve inconsistencies and strengthen synergies between diverse policy goals. Breaking down the “silos” reflects the long-standing call for policy integration and policy coherence (see Box 10).

Box 10. Policy integration

Integration means balancing the three dimensions of sustainable development (environmental, social, and economic) whilst also systematically addressing ‘interlinkages’ among the SDGs, and across sectors, policy areas, place, and time. It also means coherence across the SDGs and other governance frameworks. For forests—as for many other areas—to maximize their contribution to sustainable development, efforts must extend way beyond the ‘forest sector’. Forestry experts and policymakers are appealing for the SDGs to create the enabling conditions for forests to contribute to sustainable development on many fronts. They are calling for an integrated, inclusive, bottom-up approach to forest management, which seeks to ensure local benefits while resolving conflicts among competing interests and priorities for land use. (Reeves and Milledge 2015, cited by FAO 2018).

As reflected in the previous section, FTA sector contributions represent essential components of any sustainable development pathway. The question of how IPLCs can best be supported in determining their own paths of development needs to be addressed in much greater detail.⁴³

Taking into account the *sustainability condition* and the *ethical mandate* of the 2030 Agenda, and given the widespread importance of the FTA sector to achieve the SDGs, as discussed in Part 2, two major preconditions need to be in place to ensure that IPLCs are able to exercise self-determination, and choose their own socio-economic and conservation paths to sustainable development:

Precondition 1: To reduce vulnerability and create secure environments and incentives for IPLC development, ***it is essential that IPLCs’ customary rights to their land and FTA sector resources are converted to statutory rights that are effectively protected under modern law.***

Precondition 2: To ensure that IPLCs can effectively implement their chosen development paths in a ***sustainable manner, they need opportunities to access other, complementary resources to maintain or expand and/or change the basis for their evolving livelihoods and sustainable well-being.***⁴⁴

⁴³ Although a number of encouraging examples already are available. Cf. FAO and Agricornord 2012 and 2016.

⁴⁴ This precondition derives from the accepted concept of sustainable development as: “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. (WCED 1987). Obviously, if the bases for their livelihoods are depleted and no substitute resources are available to serve as base for future livelihoods, the condition of sustainable development cannot be met.

These two preconditions are the subject of the remainder of this discussion.

3.1 Legal Recognition of IPLC Forest Resource Rights

"Tenure reforms recognizing the rights of Indigenous Peoples, local communities, rural women, and smallholders are a prerequisite for the realization of the Sustainable Development Goals (SDGs), including poverty eradication (Goal 1), food security (Goal 2), gender equality and women's empowerment (Goal 5), inclusive economic growth (Goals 8 and 10), climate change mitigation and adaptation (Goal 13), sustainable resource use (Goal 15), and peace and justice (Goal 16)." (RRI 2018a)

"The world's primary objectives of ending poverty and achieving sustainability will be greatly enhanced by strengthening legal frameworks that recognize and secure the rights of local communities and smallholders to access forests and trees....With clear and secure rights, people are more likely to take a longer-term approach to forest management, as they know that they or their successors will benefit from this." (FAO 2018)

As indicated in Part 2, local FTA sector resources are essential to the livelihoods, and in many cases survival, of IPLCs. In this context, the legal recognition and protection of the forest and resource rights of IPLCs constitutes an essential first step towards the advancement of their self-determined development and conservation priorities, including the realization of nearly all SDGs and state commitments to fulfil the ethical mandate of the 2030 Agenda. Of particular concern under the mandate is women's rights to their lands, considering that "the rights of indigenous and rural women to inheritance, community membership, community-level governance, and community-level dispute resolution are consistently unjust [in a review of 30 lower and middle income countries], falling far below the requirements of international law and related standards" (e.g., the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW); the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (VGGT); and the Sustainable Development Goals (SDGs)) (RRI 2018a.).

While Indigenous Peoples and other forest communities rely on FTA sector resources they have managed for generations, they legally own only 13% of the world's forests, according to the latest figures from RRI. As demand for land and resources continues to increase, IPLCs face increasing threats of violence and rollback of their rights, hampering ongoing efforts to secure legal title to the lands and resources they have traditionally managed and upon which they depend.

Whether legal or illegal, large-scale land acquisitions are often perceived by IPLCs as land grabbing investments by either local or foreign owned companies.⁴⁵ The World Bank reported 56 million hectares of such large-scale land transactions worldwide in 2011, while the Land Portal's data indicated a total of 49 million hectares of deals globally in 2013, although only 26 million hectares of

⁴⁵ Deininger and Byerlee 2011; RRI 2018a.

these were transnational.⁴⁶ Most estimates seem to arrive at a rough figure of 20-60 million hectares. Transnational land acquisitions play a significant role in ongoing deforestation trends, and the increasing threats of violence and criminalization faced by frontline defenders—a problem made worse by corruption, graft, and insensitivity to local rights.

Unregulated forest activities stemming from illegal logging, trade, and poaching, can severely impact IPLCs. Based on UNEP and INTERPOL estimates, the annual global value of forest crime, mainly from commercialization of illegally logged timber, is between US\$30 and 100 billion, or 10-30% of the total global timber trade (Nellemann et al. 2014).⁴⁷ This activity robs IPLCs and governments of revenue. If it were all legal and only 10% of the lost value was secured through stumpage fees and/or various other legal fees and taxes, governments could generate an additional US\$3 to 10 billion in public revenue annually. Also, of course, there are the social costs of lower earnings for IPLCs and reduced biodiversity, watershed protection, and wildlife habitat, and the global social costs of reduced carbon storage and sequestration, etc., which are difficult to evaluate in monetary terms. Illegal timber and wood products sold in the global market also reduce prices and thereby hurt legitimate wood products producers and exporters.

As is the case with clarification and rationalization of forest rights and responsibilities, controlling illegal commercial forest activities will help to expand the FTA sector's contribution toward achievement of a number of the SDGs and the fundamental goals of poverty reduction and improved opportunity access, which can lead to expanded human well-being, particularly among IPLCs. In many cases the first necessary step is to address corruption that aids illegal commercial forest activity (see Box 11 cited by FAO 2010).

Box 11. Corruption in the Forestry sector

According to the "Corruption Perception Index" of Transparency International, almost half of the world's forest area is in countries exhibiting a high level of corruption. This is often coupled with a lack of transparency and accountability of the public and private sectors, weak forestry institutions that lack motivation and enforcement capacity, and unclear regulations or conflicting laws, especially as they relate to the tenure of land and forest resources. Furthermore, poor governance is in most cases not limited to the forest sector but is a country-wide issue and therefore difficult to solve at the sector level. It requires collaboration across sectors, which in many cases is also weak.

At both the local and national levels, much stronger linkages between the FTA sector and the legislative and law enforcement sectors are needed to reduce illegal commercial forest activities. The case of the Brazilian Amazon shows that integrated policies and strong collaborative action by the government FTA and law enforcement sectors can be successful in reducing illegal commercial forest

⁴⁶ Ibid.

⁴⁷ An estimated 50–90% of the wood in some individual tropical countries is suspected to come from illegal sources or has been logged illegally.

activities and deforestation.⁴⁸ Unfortunately, the same country also has shown recently what happens when such strong collaboration disintegrates.⁴⁹ An important factor in success is having local populations guarding their own forests against outside illegal activity; this requires effective state-level support, and the motivating incentives of secure rights and benefits that stem from sustainable land use management and investment.⁵⁰

Despite significant progress in the legal recognition of local and indigenous communities' forest rights, more is urgently needed. Data from 41 countries permitting an analysis of trends over time indicates that just over 15 percent (521 million hectares) of total forest area in those countries was legally owned by and designated for IPLCs as of 2017—an increase of 5.6 percent since 2013.⁵¹

To scale-up actions to secure community forest rights, a new target for the future was set in 2015, consistent with the SDGs: at least 50% of the developing world's forests should be formally under community control by 2030.⁵² To reach this goal, governments, international agencies, and private and NGO sectors will all have to work together with IPLCs— another example of the urgent need for increased and more productive cross-sectoral action and cooperation.

3.2 Expanding Opportunities: Key Factors Beyond Secure Tenure

Beyond secure tenure rights, the ability of IPLCs to build on FTA sector contributions to pursue their development priorities hinges on the realisation of a wide range of complimentary inputs, including access to organizational, technical, financial and other resources. To this end, the concept of “community driven development” provides a useful framework for advancing the 2030 Agenda per their own terms and pace.⁵³ As of September 2017, the World Bank was supporting 187 active community driven development projects in 77 countries totalling US\$19.1 billion. The Bank's experience illustrates that community driven development has led to the efficient delivery of basic services and, when sustained over time, measurable reductions in poverty, particularly among the poorest populations and communities.⁵⁴

Regardless of the choice of development framework and approach, having the opportunity to access ideas, technologies, health resources, markets and financial resources is key to ensuring necessary conditions for the advancement of development pathways that are relevant to communities. What

⁴⁸ Cf. Yale School of Forests and Environmental Sciences. 2018

⁴⁹ Fearnside and Schiffman 2018; Between 2004 and 2012, the annual amount of rainforest that was cleared for agriculture fell by nearly 84% to 4,571 square km. Those numbers subsequently crept back up, peaking at 7,893 square km cleared in 2016. However, deforestation dropped by 16% to 6,624 square kilometers in 2017, partly because of lower demand for beef and the restoration of law-enforcement funding, which had been cut during a prolonged financial crisis. (Tollefson 2018);

⁵⁰ There is of course also the internal issue of distribution of the rights and benefits from natural capital (FTA sector resources) among community members. C.f. Luttrell et al. 2013 and references cited therein.

⁵¹ Rights and Resources Initiative 2018a.

⁵² Rights and Resources Initiative 2016.

⁵³ “Community-Driven Development (CDD) programs operate on the principles of transparency, participation, demand-responsiveness, greater downward accountability, and enhanced local capacity.” World Bank 2018:

<http://www.worldbank.org/en/topic/communitydrivendevelopment>.

⁵⁴ <http://www.worldbank.org/en/topic/communitydrivendevelopment#2>.

follows are suggestions of opportunities needed for access to human resource development (education, health maintenance); financial resources, technology and the tools to apply it; and enterprise development and markets and linkages to entities beyond the local community.⁵⁵

Human Capacity Development

The prerequisites to human capacity development (health, knowledge, skills,) are complex but essential to sustainable development and the realisation of human well-being. In general terms, efforts to strengthen human capacity and accelerate social-economic development depend on:

- Equal access to adequate nutrition and health services.⁵⁶
- Equal access to relevant knowledge, technology, and tools—whether obtain through formal or informal education and training opportunities.⁵⁷

Equal opportunities are key to avoiding imbalances in the flow of benefits and the development or reinforcement of power structures.⁵⁸ To this end, gender equality and in particular, women's ability to own land, participate in community-decision making processes, and assume leadership roles (cf. SDG 4 and 5) cannot be overstated.⁵⁹ Decades of development research has shown that investing in women and girls' education constitutes one of the most impactful ways to contribute to sustainable development.⁶⁰ (see box 12).

Box 12. Girls' education

"There is no question the biggest bang for the buck in development is girls' education.... Research shows that educating girls has a multiplier effect. Better-educated women tend to be healthier, participate more in the formal labor market, earn more, give birth to fewer children, marry at a later age, and provide better health care and education to their children" (President of the World Bank 2018).

⁵⁵ Economists suggest that the dynamic process of sustainable development in a community or country requires that a balanced portfolio of the five forms of capital is created, available, used wisely and is replenished as the process of moving towards the SDGs continues, hopefully in a sustainable, positive direction. Thus, a balanced portfolio of the five capital stocks (financial, natural, produced, human and social) is a prerequisite for sustainable development and advancing well-being. Cf. World Bank 2011 and Goodwin 2003 who defines the five "capitals" as follows: **Financial capital** facilitates economic production, though it is not itself productive, referring rather to a system of ownership or control of physical capital. **Natural capital** is made up of the resources and ecosystem services of the natural world. **Produced capital** consists of physical assets generated by applying human productive activities to natural capital and capable of providing a flow of goods or services. **Human capital** refers to the productive capacities of an individual, both inherited and acquired through education and training. **Social capital**, the most controversial and the hardest to measure, consists of a stock of trust, mutual understanding, shared values and socially held knowledge.

⁵⁶ Cf. Tompa 2002.

⁵⁷ Blundell et al. 1999 and references cited therein.

⁵⁸ Cf. Dutta, 2009

⁵⁹ Related to gender equality and forests cf. RRI 2018a

⁶⁰ Goodwin 2003, citing World Bank 1992. See also Kim 2018.

Financial & Technological Resources

Sustainable development as a process leads to recognition of a dynamic, ever-changing set of opportunities for new technologies and tools to use them. The positive results from using them can be many: reduced toil, increased safety in work and better health, and gain of financial resources, in short improved livelihoods.

Many avenues exist for IPLCs to obtain needed financial resources to fund their chosen development approach. Some of the sources are internally generated from their activities related to their forest resources; some are external in the form of grants, low interest loans, and other forms of access to capital.

Internally generated sources of capital for financing development include forest-based products and environmental or ecosystem services from IPLC lands. With regard to the later, increasingly it is being recognized that major ecosystem service values from IPLC forest lands accrue to populations far beyond, and that payments for such ecosystem services (PES) or “conditional transfers” (CT) are fully justified, just like payments for forest products. Such services vary widely and include biodiversity protection, watershed and water management, wildlife habitat, climate change mitigation (GHG sequestration and storage).⁶¹ Successful CT/PES schemes exhibit a series of enabling conditions: high level political support, sustainable financing streams, lean institutional set-ups, tools and systems for effective implementation, and a clear ability to demonstrate impact.

Indigenous Peoples and local forest communities manage lands that contain at least 17 percent of the total carbon stored in the forestlands of the countries for which reasonable ownership and carbon data are available (countries containing around 92% of global forests as of 2017).⁶² This estimate is likely very low considering that carbon storage in collective lands is far greater and more extensive than what can be assessed through available data.⁶³

Through existing and emerging funding mechanisms, there are opportunities for IPLCs to gain resources for sustainable protection, management, and expansion of forest resources that move toward this global ecosystem service goal related to climate change mitigation, as well as for other ecosystem services.

A background analytical study for the thirteenth session of the United Nations Forum on Forests (Jenkins and Schaap 2018) identifies several programs that fund co-benefits related to various SDG targets. Programs include the World Bank’s Forest Investment Program (FIP) and the Forest Carbon Partnership Facility (FCPF), both of which engage Indigenous Peoples and forest communities in the

⁶¹ C f RRI 2018b on the climate change mitigation contribution from IPLC lands.

⁶² RRI 2018b

⁶³ This assessment remains an underestimate of carbon stored in collective forestlands worldwide. The full extent of forests and other lands held by indigenous and local communities— and particularly those where communities have yet to achieve legal recognition of their rights—is unknown and spatially explicit data concerning these areas remains lacking. Thus, vast stores of carbon within collective lands in carbon-rich countries such as Indonesia and the Democratic Republic of the Congo remain undocumented.

governance and implementation of their climate mitigation programs. The relatively recently established Green Climate Fund (GCF)⁶⁴ is an active player in this domain as well.

With long-term tenure rights in hand, IPLCs can take advantage of both internally and externally generated support from national and international governments, agencies, the private sector, and NGOs. Active international public entities include UN agencies, development banks, GEF, the Forest and Farm facility at FAO, and entities associated with the Collaborative Partnership on Forest Sourcebook on Funding for Sustainable Forest Management⁶⁵ and via the UNFF's Global Forest Financing Facilitation Network⁶⁶, among others.

Social Capital & Institution Building

"Social capital comprises relations of trust, reciprocity, common rules, norms and sanctions, and connectedness in institutions. Recent years have seen remarkable advances in group formation, with in the past decade some 408,000±478,000 groups emerging with 8.2±14.3 million members in watershed, irrigation, micro-finance, forest, and integrated pest management, and for farmers' research". (Pretty and Ward 2001)

"There is growing empirical evidence that social capital contributes significantly to sustainable development.... Social capital is the glue that holds societies together and without which there can be no economic growth or human well-being. Without social capital, society at large will collapse, and today's world presents some very sad examples of this." (Grootaert 1998)

The prerequisites for social capital include development of, and access to relations of trust; reciprocity and exchanges; common rules, norms and sanctions; and connectedness in institutions, networks and groups.⁶⁷ Successful cross-sectoral linkages involve the creation of social capital. Success in terms of SDG 16 and the ethical mandate of the 2030 Agenda relates to the creation and expansion of productive social capital and governance institutions that help IPLCs get on their chosen path of sustainable development. SDG 17 includes international partnerships, meaning that eventually, if communities develop growing forest-based enterprises, linkages will be made with international trade groups, other private sector groups, and NGOs.

Most IPLCs operate based on rules and norms set up by tribal or other groups of people who make up the community and through which they create social capital. Most of their natural capital is managed and used under common property rules or under various forms of private rights and ownership rules that have the community's collective well-being in mind. These rules do not

⁶⁴ www.greenclimate.fund.

⁶⁵ <http://www.cpfweb.org/73034/en/>

⁶⁶ <https://www.un.org/development/desa/capacity-development/tools/tool/website-of-the-global-forest-financing-facilitation-network-gfffn/>

⁶⁷ Pretty and Ward 2001.

necessarily have “equal opportunity” in mind, e.g., in the case of the property rights of women vs. men.

Examples of local collaborative groups that commonly exist (and are part of local social capital) include cooperatives, land users’ associations, watershed collaborative groups, water users’ associations, labour exchange groups, tribal or clan groups, youth groups, and trade groups. They are all set up to ease and improve the functioning of individuals in the groups, to increase the efficacy of their enterprises, and to enhance the sustainability and equitability of their benefit-sharing.

There is some evidence that social and human capital formation in rural communities is associated with improvement in communities’ natural capital, and, in some contexts, loss of local institutions (social capital) can provoke natural resource degradation⁶⁸ (see Box 13).

Box 13. Local institution building

One study of 25 completed World Bank agricultural projects (Cernia 1987) found that continued success was clearly associated with local institution building: Twelve of the projects achieved long-term sustainability, and it was in these that local institutions were strong. In the others, the rates of return had all declined markedly, contrary to expectations at the time of project completion. Outcomes were unsustainable where there had been no attention to institutional development and local participation.

Outside support needs to be available to provide information on enterprise development and advice on how to create independent, “entrepreneurial” and evolving local competitive enterprises that will remain to manage a community’s natural capital once outside support and incentives are gone. This is where policy reform enters the picture,⁶⁹ including, of course, the needed tenure reforms as mentioned under the discussion above on forest tenure for IPLCs. Such policy reforms are a top priority for creating the environment, rules, and incentives for local enterprises to thrive and evolve to manage and use local forest and land capital on a sustainable basis.

Several major international programs exist that support communities in organizing, establishing and managing community-based forest and farm enterprises that can help them get on a path of sustainable development. Success stories abound.⁷⁰

In some communities, the best way forward is to build cross-sectoral linkages with existing farmer organizations and encourage them to broaden their scope to include forestry. As stated by FAO (2012): “In many parts of the world the distinction between farming and forestry is blurred. Agricultural organizations are therefore well placed to help their members to develop forestry enterprises. They

⁶⁸ Pretty and Ward 2001 and references cited therein; Blackman et al. 2017.

⁶⁹ Pretty and Ward (2001) provide some positive examples of policy reforms in a number of countries (cf. pp220-221).

⁷⁰ Cf. IUCN 2017; Macqueen and Bolin, 2018; FAO and Agricord 2016. See also: Forest and Farm Facility (www.fao.org/partnerships/forest-farm-facility/about/en/), and FAO Community-based forest enterprise development (<http://www.fao.org/forestry/enterprises/en/> and <http://www.fao.org/forestry/enterprises/73077/en/>)

might require support to improve their management capacities and technical expertise but could build on existing strengths in terms of local credibility and organizational cohesion.”

3.3 Concluding comments on prerequisites for IPLC participation in 2030 Agenda

It is clear that without secure long-term tenure rights to the FTA sector resources they depend on for their livelihoods, it will be difficult for forest communities to get on a path of self-sufficient, *sustainable* development and to successfully participate in the 2030 Agenda for the SDGs and the improvements in well-being envisioned for present and future generations.

Once secure legal rights to, and responsibilities for, their FTA sector resources have been established, IPLCs can effectively access new opportunities for health and education, technology, tools, financial capital, and local organizing institutions (e.g., related to markets and trade, credit, community forest enterprise development). In many cases, initial support from the outside world will be needed to take advantage of such opportunities and to reach a state of community self-sufficiency, a desirable and necessary step on the path of *sustainable* development.

Sustainable development as a process requires building and maintaining a balanced portfolio of natural resources, knowledge, financial, and social resources. The portfolio needs to be such that it serves to increase well-being and meet the needs of current generations without limiting the ability of future generations to meet their needs and improve their well-being. UN member states have made a promise that no community shall be left behind in building the processes to achieve this goal of sustainable development.

4. Conclusions & Implications

As a background for this paper, it is evident (Part One), that: (1) The 2030 Agenda gives added emphasis to the importance of building strong, more effective cross-sectoral interactions in order to achieve the 17 inter-related SDGs; and (2) a minimum of 10-15 percent of the world’s population are IPLCs fitting the context of the ethical mandate and promise of the Agenda to “leave no one behind.”

Part Two provides the context for understanding the breadth of the importance of the FTA sector and its resources to the “grand” goal of UN Agenda 2030, namely to get the global population out of poverty and on a path of sustainable development. In order to do so, the Agenda recognizes that the resource, production and consumption SDGs have to be considered in a much more holistic fashion, particularly when it comes to use and management of the biosphere.⁷¹ Part Two illustrates in

⁷¹ As indicated the resources, production and consumption SDGs include: 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14 and 15. See Fig.1. For the purposes of this paper, we have called the rest of the SDGs (excluding SDG 1) the “governance and equal opportunity” SDGs. See Part 2.

particular how the FTA sector and progress in SDG 15 contribute to most of the “resources, production and consumption SDGs.”

Coming back to the promise of Agenda 2030 and its ethical mandate, Part Three points out the important objective of support for IPLC efforts to securely meet their livelihood needs and not be left behind. A first step on the path of long-term self-sufficiency is securing legal rights for IPLC to their forest and land resources.

However, gaining legal tenure rights is a necessary, but not a sufficient condition to assure incentive and opportunity to access the chosen path to sustainable development. Also required are the knowledge, financial, and institutional resources and mechanisms for IPLC to effectively and sustainably manage and utilize their forest lands; create community enterprises and other sources of livelihoods; and increase well-being on a sustainable basis.

The preceding parts of this paper lead to three broad, interconnected conclusions and associated messages related to making progress in emphasizing the role of the FTA sector in moving toward achieving the SDGs and ultimately fulfilling the 2030 Agenda’s ethical mandate not to leave behind poorer, more isolated IPLCs.

Conclusion 1: A major priority group in the context of the ethical mandate of the UN Agenda 2030 is the IPLCs dependent on FTA sector resources. These communities make up at least 10-15% of the global population.

Message: IPLCs should be given special attention in the overall context of meeting the ethical mandate of the 2030 Agenda and achieving SDG 1 to end poverty. The “special attention” should be in terms of broadening the access of IPLCs to options and means for their development rather than prescribing the “right” pathway for them, as has been done in the past.

Conclusion 2: For many, if not most IPLCs, their FTA sector resources meet the needs that are most relevant to the physical resource-related SDGs. Furthermore, as communities evolve, it is evident, as indicated in Part Two, that FTA sector resources and outputs remain critically important and closely linked to achieving most of the resources, production and consumption SDGs of relevance to IPLCs.⁷²

Message: IPLC need to have their customary rights to the FTA sector resources they depend on converted to secure, legally instituted statutory rights. That is a necessary first step in maintaining self-sufficiency and self-governance along their chosen path to sustainable development.

⁷² As other sectors more prominently related to particular SDGs become more important, the *relative* importance of the FTA sector declines. As Angelsen et al. (2014) point out, the literature on this subject⁷² suggests that: “*absolute environmental income rises with total income, while relative environmental income (i.e., the share of environmental income in total household income) decreases, i.e., household’s environmental “dependence” or “reliance” decreases with higher incomes.*”⁷² However, FTA sector links to other important sectors remain widespread and strong as does the direct importance of the sector itself to the poorer, more isolated IPLCs

Conclusion 3: Conversion from customary rights to FTA sector resources to clear, secure statutory rights for communities is a necessary, but not sufficient condition for progress in communities that wish to move toward a path of sustainable development. A balanced portfolio of knowledge, health, financial, and social resources will also be essential, in addition to forest and land resources. While each community will have its unique combination of specific needs, all will have to balance building, using, and maintaining their full resource base as they navigate their chosen path to sustainable development.

Message: After secure local control over forest and land resources has been established and supported (i.e. through capacity building), the central challenge is to develop collaborative bottom up/top-down processes that combine local understanding, knowledge, and resources with key external resources that can help communities use and manage their natural capital effectively and efficiently on a sustainable basis.

Much work remains to be done to meet the needs of IPLCs. This includes making more rapid progress in:

1. Securing IPLC statutory legal rights and responsibilities for lands and natural resources they traditionally hold, manage, and utilize based on customary rights. This is a first essential step in giving communities secure, legal access to their traditional livelihoods and the incentive to manage their resources on a sustainable basis and to get on a path of sustainable development that fits their needs and at the same time benefits the nations involved.
2. Creating adequate opportunity to access health resources, knowledge, technology, and education and training to strengthen local human capital, to sustainably manage their natural capital and develop adequate social capital.
3. Providing opportunity to access needed financial and produced capital and market access to start a productive process of sustainable development without depleting existing resources.
4. Creating and encouraging productive intersectoral linkages, both as a means of increasing effectiveness of access to different key sectors and as a means of increasing efficiency and effectiveness of outside support and community organizations.
5. Changing from “project” to program/process approaches in operationalizing the above suggested support activities, recognizing dynamic nature of sustainable development as a process implied by the UN Agenda 2030.

Ultimately, achieving the United Nation’s 17 SDGs and the overall aim of the 2030 Agenda to “end extreme poverty by 2030” will require a transformative and ambitious commitment from the world’s leaders and their governments, as well as action from everyday citizens, the private sector, and NGOs to ensure that the world gets on a path to sustainable development that “leaves no one behind.” The FTA sector and its resources have a vital role to play in this process, particularly as it relates to those Indigenous Peoples and forest communities for whom FTA sector resources are a means for survival, livelihoods, and for the sustainable well-being of current and future generations.

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About the Rights and Resources Initiative

The Rights and Resources Initiative is a global Coalition of more than 200 organizations dedicated to advancing the forestland and resource rights of Indigenous Peoples, local communities, and particularly women within these communities. Members capitalize on each other's strengths, expertise, and geographic reach to achieve solutions more effectively and efficiently. RRI leverages the power of its global Coalition to amplify the voices of local peoples and proactively engage governments, multilateral institutions, and private sector actors to adopt institutional and market reforms that support the realization of rights. By advancing a strategic understanding of the global threats and opportunities resulting from insecure land and resource rights, RRI develops and promotes rights-based approaches to business and development and catalyzes effective solutions to scale rural tenure reform and enhance sustainable resource governance.

RRI is coordinated by the Rights and Resources Group, a non-profit organization based in Washington, DC. For more information, please visit www.rightsandresources.org.

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