

Reducing green house gas emissions from oil palm in Indonesia

Lessons from East Kalimantan

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Key Messages

- National and provincial emissions reduction goals and efforts to slow deforestation may come into conflict with provincial and district level economic ambitions based on agricultural development.
- Around half of existing oil palm concessions in East Kalimantan are on forested and peatland areas. If developed, these plantations will release ~206 MtCO₂e into the atmosphere.
- The expansion of oil palm plantations on currently allocated concessions will lead to the conversion of forested lands and swamp areas, including peatland, and represents a critical source of carbon emissions.
- To ensure the sustainability of plantation expansion the government needs to undertake a review of all existing plantation permits to ensure that they align with existing sustainability criteria.
- Green Growth does not present a win-win strategy and therefore requires strong political commitment, and awareness of social and environmental tradeoffs.

Introduction

Over the last few decades the 'green economy' has emerged as an effort to overcome the negative effects associated with conventional forms of development. These efforts include increasing investments in low-carbon technologies, shifting energy use toward renewable sources, and more sustainable management of natural resources such as fisheries and forests (OECD 2011; UNEP 2011). With the current push to realize a green economy in Indonesia, a number of pressing questions remain. They concern, for example, the role of the market versus state planning and regulation, the effects of commoditizing natural resources on equality and poverty, the possibility of vested interests blocking reforms, and the lack of political commitment (McAfee 2011; Brand 2012; Brockington 2012). More practically, it must be asked how continued economic development will be reconciled with efforts to reduce greenhouse gas (GHG) emissions and curb deforestation. It is also important to explore how subnational development trajectories will align with national environmental aims.

The concept of the green economy and its linked projects have been criticized for their reliance on market-based approaches to environmental protection (Lohmann 2009; McAfee 2011; Sullivan 2013), and the expectation that the problems caused by unrestrained development can be solved through further commodification and market expansion (McCarthy and Prudham 2004; Brockington et al. 2008; Castree 2008a, 2008b; Igoe et al. 2010; Corson and MacDonald 2012). Notwithstanding such criticisms, the concept has become popular among politicians and international organizations such as the OECD (e.g. OECD 2011), UNEP (e.g. UNEP 2010) and the World Bank (e.g. World Bank 2012).

Indonesia is the world's fifth largest emitter of GHGs. Although estimates of GHG contributions from different sectors vary, all analyses show that most emissions are caused by deforestation, forest degradation and land-use change, including the decomposing and burning of peatland (WRI 2014). Indonesia ranks among the largest deforesters in the world (Margono et al. 2014) and despite a moratorium on new concessions in

areas with natural forest and peatland, its rate of deforestation has increased in recent years (Hansen et al. 2013). Much of this deforestation and the associated GHG emissions are related to Indonesia's booming oil palm sector (Miettinen et al. 2012).

Indonesia is the world's largest producer of oil palm (World Bank 2012). Between 1967 and 2010 the area under oil palm expanded by 8300% (Indonesian Ministry of Agriculture 2011), often at the expense of lowland forests and peat swamp forests (Carlson et al. 2012; Miettinen et al. 2012). The area under oil palm was estimated to total 9.2 million ha in 2012, of which 4.98 million ha is managed by privately-owned oil palm estates, 3.64 million by smallholders and 0.64 million ha by government estates (BisInfocus 2006; 2012). According to the Indonesian Palm Oil Producers Association (GAPKI) crude palm oil accounted for 18.97% of Indonesia's total export earnings in 2011, surpassed only by oil and natural gas, and generated USD 5.7 billion in export taxes for the government. Enthused by the success of the palm oil sector, the Indonesian government plans to increase the production of crude palm oil to 40 million tons annually by 2020 (Kongsager and Reenberg 2012).

Indonesia not only aims to remain the world's largest palm oil producer, it also seeks to do so while pursuing green growth, based on a low-carbon development strategy. The country's green growth ambitions were established in 2009 when Indonesian President Susilo Bambang Yudhoyono publicly committed to reducing Indonesia's emissions by 26%–41% against business-as-usual by 2020. Most GHG emissions reductions are to be achieved through sustainable peatland management, reductions in the rate of deforestation and land degradation, and the development of carbon sequestration projects in forestry and agriculture (Bappenas 2010). In June 2013, the Indonesian government with the Global Green Growth Institute launched a countrywide Green Growth Program, confirming and reinforcing the government's intention to stimulate low-carbon investments. Concerns exist that combining the government's economic growth targets with a 26% reduction of GHG emissions is unrealistic (Strategic Asia 2012).

This infobrief presents initial lessons from East Kalimantan, Indonesia, to illustrate problems that may be associated with green growth policy and to facilitate the design of policy that will more realistically address Indonesia's environmental and development challenges. We examine the current state of oil palm development on the ground and assess how this situation and future expansion plans relate to Indonesia's green growth objectives. We focus on the province of East Kalimantan, which is considered a frontrunner in low-carbon development planning (DDPI Kaltim 2011; Gol and GGGI 2013). This research is based on a review of literature and government reports, analysis of spatial data from the Indonesian Ministry of Forestry and the World Resources Institute (WRI), and interviews with provincial and district-level government officials, academics, representatives of the private sector and staff from nongovernmental organizations in Samarinda, Balikpapan and Tanjung Redeb, East Kalimantan.

Green growth in Indonesia

The Indonesian government has set ambitious economic growth targets for the next decade. In 2011 it launched the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI), which aims for an annual GDP growth rate of 12.7%. That would raise the national GDP to USD 4.5 trillion by 2025 – a per capita income of USD 15,500 – and bring Indonesia into the world's top ten largest economies. The MP3EI has been criticized for not including the reduction of GHG emissions as a policy objective (Mongabay 2013). However, the government did eventually develop several separate initiatives aimed at 'greening' economic development. This includes a national action plan to reduce GHG emissions (RAN-GRK), under which all Indonesian provinces are expected to deliver provincial action plans in line with national climate change mitigation efforts and a number of other green growth initiatives.

Box 1. Green growth initiatives in Indonesia

- the promotion of biofuels through an energy mix policy
- the creation of national and provincial GHG reduction plans
- the promotion of REDD+ and development of a national REDD+ oversight body
- a moratorium on conversion of primary forest and peatland
- the One Map initiative to standardize spatial and concession data
- the introduction of the Indonesian Sustainable Palm Oil (ISPO) standard.

Green growth and oil palm in East Kalimantan

East Kalimantan is Indonesia's second largest province. Its economy is primarily based on oil, gas and mining, with these industries (including refining and processing) contributing 61.85% to the gross regional domestic profit (GRDP) in 2013 (BPS Kaltim 2014). These sectors, however, largely fail to absorb workers and unemployment has been rising in the last decade despite economic growth at the provincial level. In 2013, agriculture accounted for 6.74% of the GRDP (BPS Kaltim 2014b). The province has a large area of intact forest but this is currently being lost at a rate of 500,000 ha per year (Disbun Kaltim 2014a). Because of its reliance on land-based development, the province has become Indonesia's third largest GHG emitter with estimated emissions of 251 MtCO₂e in 2010 (DDPI Kaltim 2011). According to the government of East Kalimantan, agriculture and forest and peatland conversion account for 88% of provincial emissions (Provinsi Kaltim 2012). The province was selected as a focus area for efforts aimed at reducing GHG emissions (DDPI Kaltim 2011) and the national Green Growth Program designated the province as one of its pilot sites (Gol and GGGI 2013).

Under the MP3EI, East Kalimantan is slated to be a “center for production and processing of national mining and energy reserves.” In addition to investments in mining and oil and gas exploitation, the plan emphasizes the need to invest in oil palm production as an export crop and in support of the national energy mix policy (Coordinating Ministry For Economic Affairs 2011). The province plans to absorb USD 70 billion in investments from resource extraction industries including palm oil, timber and mining (DDPI Kaltim 2011). In light of climate change concerns and the depleting reserves of oil, natural gas and coal, the government of East Kalimantan intends to shift to a renewable resource economy, focusing particularly on industrial agriculture and the processing of crude palm oil (Bappeda Kaltim 2014; Disbun Kaltim 2014b). In the 2014–2018 Medium-term Provincial Development Plan (*Rencana Pembangunan Jangka Menengah Daerah*) the provincial government states that it aims to increase economic growth by 4.7%–5.3% and to increase the contribution of the agricultural sector to the economy by 10%. This growth will come primarily from the expansion of oil palm plantations. The question is how a further increase of palm oil production can be achieved while decreasing GHG emissions. Although agriculture currently contributes only a small percentage to East Kalimantan’s GRDP, it is the major contributor to the province’s GHG emissions. According to the Provincial Council on Climate Change (DDPI), oil palm alone accounted for 27.1% of the province’s GHG emissions in 2010 (DDPI Kaltim 2011).

East Kalimantan’s green growth ambitions

In 2009 East Kalimantan’s Governor pledged to make it a “green province.” This resulted in the establishment of the Green East Kalimantan (*Kaltim Hijau*) program (Provinsi Kaltim 2010). The vision of the program is to develop the province as a global example for how to combine GHG emission reduction goals with economic development, while ensuring that development is sustainable and environmentally friendly (Berau REDD+ Working Group 2011). Since the establishment of the *Kaltim Hijau* program, a number of steps have been taken at the provincial level to pursue green growth. These

Box 2. The Green East Kalimantan program

The Green East Kalimantan program has four overarching goals:

1. improving the overall quality of life in the province, balancing economic, social, cultural and environmental aspects
2. reducing the threat of ecological and climate change-related disasters such as floods, landslides, droughts and forest fires
3. reducing pollution and the degradation of terrestrial ecosystems, water and air
4. increasing knowledge and awareness among institutions, the government and the people of East Kalimantan about the importance of conservation of natural resources and the wise use of renewable natural resources.

include establishing the DDPI in January 2011 and creating new policy documents such as the regional action plan for reducing GHG emissions (RAD-GRK), the provincial action plan for REDD+ (SRAP-REDD+) and the East Kalimantan Sustainable Development Strategy. According to Governor Regulation No. 54/2012, carbon emissions from forest loss and land degradation will be reduced by 15.6% in 2020 (DDPI Kaltim 2011).

According to the SRAP-REDD+, which was published in August 2012, emissions should be reduced through: (i) a ban on burning; (ii) reduced-impact logging; (iii) using degraded lands for plantation expansion; (iv) reducing decomposition of peatland through rehabilitation and conservation; and (v) reforestation of degraded forestland. The plan further outlines that East Kalimantan aims to reduce deforestation and forest degradation, while simultaneously continuing to promote oil palm plantation expansion and mining. For oil palm expansion, it determines that environmental and social impact assessments should be strengthened and mechanisms for issuing plantation permits should be improved. As a designated green growth pilot province, East Kalimantan also became home to several donor-funded REDD+ initiatives, including the Community Carbon Measurement Project in Kutai Barat, the Malinau Avoided Deforestation Project, the Forest Resources Management for Carbon Sequestration Project in Nunukan, the Berau Forest Carbon Program, and several demonstration activities of the Forests and Climate Change Protection Program (FORCLIME) in Berau and Malinau.

Oil palm expansion plans

The landscape of East Kalimantan is changing rapidly due to the expansion of oil palm plantations, mostly by large-scale private plantation companies. The provincial government is faced with the immense task of planning the location of these plantations.

Table 1. Oil palm in East Kalimantan: Area planted, area allocated and production

Year	Area planted (ha)	Total area allocated as HGU (ha)	Production (ton)
2013	1,134,573	1,136,280	7,600,298
2012	961,802	961,802	5,734,464
2011	827,347	827,347	4,471,546
2010	663,533	663,533	3,054,707
2009	530,554	530,554	2,298,186
2008	409,564	409,564	1,664,311
2007	339,292	339,293	2,041,163
2006	225,337	225,337	1,268,600
2005	201,087	201,087	1,012,789
2004	171,580	171,581	957,058
2003	159,079	159,079	791,064
2002	132,173	132,174	760,293
2001	117,055	117,055	446,729
2000	116,887	116,888	433,645

Source: Dinas Perkebunan Provinsi Kalimantan Timur (2014).

Table 2. Concession area with forests and swamps

	Total (ha)	Percentage of concession area	Percentage of non-planted concession area	Percentage of non-planted concession area likely to be planted
Primary Dry Forest	79,903	2.88	3.30	3.66
Primary Mangrove Forest	6,613	0.24	0.27	0.30
Primary Swamp Forest	11,239	0.41	0.46	0.52
Secondary Dry Forest	758,464	27.33	31.37	34.78
Secondary Mangrove Forest	80,281	2.89	3.32	3.68
Secondary Swamp Forest	108,905	3.92	4.50	4.99
Swamp	16,295	0.59	0.67	0.75
Total	1,061,700	38.26	43.91	48.69

Sources: The Indonesian Ministry of Forestry; Global Forest Watch, WRI; and ESRI ArcGIS Online.

In December 2013 the province had granted location permits (*Ijin Lokasi*) covering 3.9 million ha to 344 companies, plantation business permits (*Ijin Usaha Perkebunan* or IUP) covering 3.1 million ha to 215 companies and cultivation permits (*Hak Guna Usaha* or HGU) covering 1.1 million ha to 127 plantation companies (personal communication from Disbun Kaltim, December 2013). In 2014 the Governor of East Kalimantan and the East Kalimantan Plantation Department Head suggested that phase two of oil palm development would add an additional 1.4 million ha over the next 5 years (Antara News 2014; Provinsi Kaltim 2014). Table 1 shows how the area under HGU concessions has grown since 2000.

To grasp the implications of the province's expansion plans we combined 2011 land-cover data from the Indonesian Ministry of Forestry¹ with oil palm concession data obtained from the WRI.² The spatial data collected by WRI indicates that in 2011 there were 2,774,798 ha of land under oil palm concessions in East Kalimantan. The data does not specify the type of concessions but we have assumed it is the total area under IUP permits. Of this area, 356,717 ha were planted with oil palm. This is slightly more than the number mentioned in Table 1 because the

government's plantation office (*Dinas Perkebunan – Disbun*) and WRI use different data and methods for collecting and compiling data. As of 2011, the area under concession that had not yet been planted totaled 2,418,081 ha, or 87% of the concession area. To calculate the area likely to be cultivated under a business-as-usual scenario, we subtracted the water bodies and areas that are already under cultivation or used for mining and settlements. The remaining area totaled 2.18 million ha. Our analysis showed that 48% of this area (1,061,700 ha) consists of areas classified as forested lands and swamps, which includes peatland (see Table 2). Figure 1 shows the province's land cover in 2011 and the land cover if all 2011 concession areas were to be converted to oil palm. We calculated the carbon stocks of these areas based on the carbon stock estimations for different land-use types defined by the Indonesian Ministry of Forestry. If the 2.18 million ha were to be fully planted with oil palm, this would lead to a decrease in the province's carbon stock of around 54 MtCO₂e. The opening and draining of 250,000 ha of peatland located inside the concessions would result in additional GHG emissions of 152 MtCO₂e. In total, oil palm development on all areas allocated for plantations would lead to the loss of approximately 206 MtCO₂e, which corresponds to approximately 74% of the annual GHG emissions in the entire province. Allowing this to happen would set back the province's emission reduction goals by nearly 5 years.

1 <http://appgis.dephut.go.id/appgis/download.aspx>

2 www.globalforestwatch.org/sources

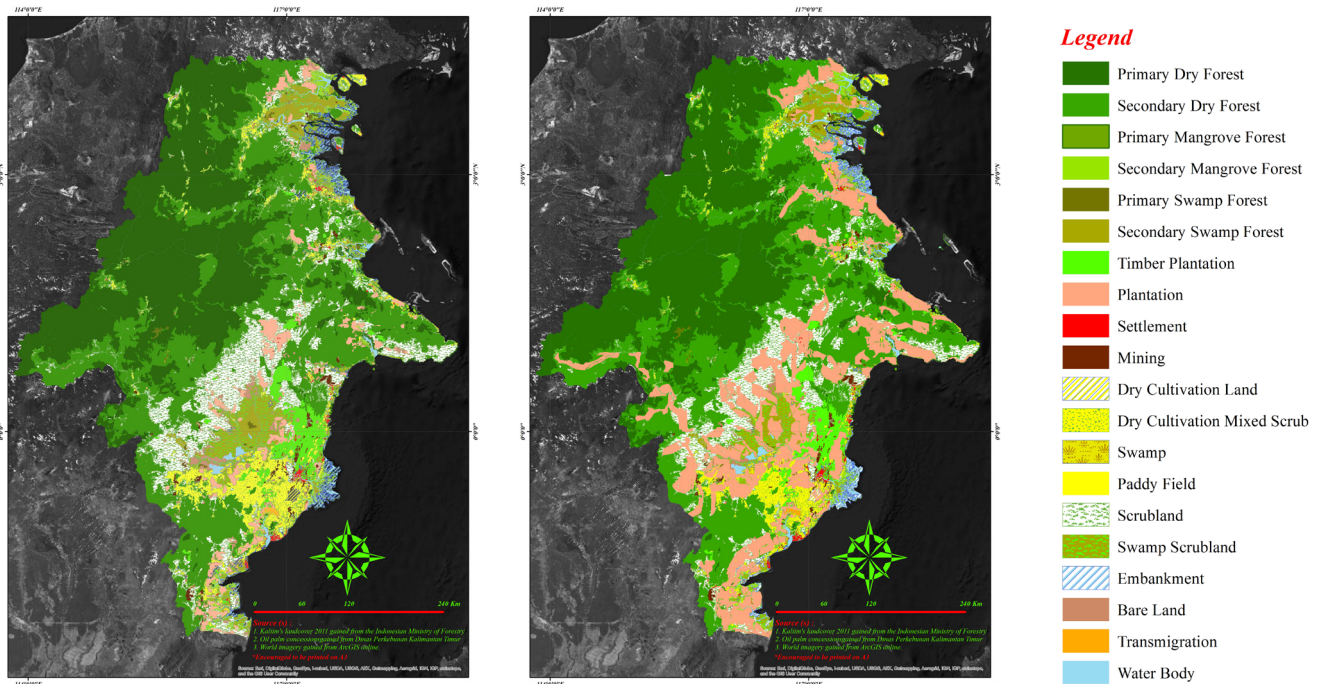


Figure 1. East Kalimantan land cover in 2011 (left) and if all concession areas were planted with oil palm (right)

Sources: The Indonesian Ministry of Forestry; Global Forest Watch, WRI; and ESRI ArcGIS Online.

Discussion

The example of East Kalimantan shows that expansion of oil palm plantations in areas that have been designated for this purpose will lead to the conversion of forested lands and swamp areas, including peatland. The analysis also shows that allocated oil palm leases represent a critical source of carbon emissions (Carlson et al. 2013). This conflicts with the government's target to reduce GHG emissions. To address this, the government needs to regulate the establishment of plantations in a way that is concurrent with its own REDD+ strategies (Venter et al. 2013).

Companies that have been awarded definitive land-use permits (HGU) for areas that include forests and swamps could be provided assistance to minimize the negative environmental impacts of their operations. This could include government support for avoided deforestation schemes based on carbon credits, although it is unlikely that such carbon payments will be competitive with earnings from oil palm development under current conditions (Butler et al. 2009). Another possibility is to engage in land swaps, through which a company could swap the part of its concession that contains forest or peat areas with suitable degraded land elsewhere. However such land swaps come with their own set of complications. It will also be important for the Indonesian government to enforce ISPO certification and work to align ISPO standards with the standards set by the Roundtable on Sustainable Palm Oil (RSPO), both of which require the protection of high carbon stock and high conservation value areas.

At present, large areas of designated concession areas in East Kalimantan and elsewhere have not yet acquired HGU permits. The government could reassess these concessions and, if necessary, relocate or revoke them. This requires sophisticated spatial data and participatory processes of ground-truthing to identify suitable areas for oil palm expansion in line with the REDD+ objectives and other sustainability criteria, while also accounting for unresolved land claims and customary resource access.

The work of Smit et al. (2013) in West Kalimantan provides an example of how suitable areas might be identified. The authors used spatial data to produce a map indicating the areas that fell in line with the sustainability criteria used by initiatives promoting sustainable oil palm, including the RSPO and ISPO. They found that a large share of the inactive concessions did not meet these criteria, while large areas outside of existing permits did. After ground checks, the resulting map could provide a good basis for the planning of oil palm plantations. Community maps (see Peluso 1995; Momberg et al. 1996) could also serve as an important resource when combined with spatial data and used as a form of ground-truthing, particularly in light of recent efforts by the government to officially designate customary land as separate from state forest or *Areal Penggunaan Lain* (APL) areas. They indicate the boundaries of villages or customary territories and are created by community members, often with the support of an independent organization, using Global Positioning System (GPS) technology. In Kalimantan, a vibrant community mapping movement has

emerged in response to conflicts over tenure that arose when the government gave concessions to companies for areas that were used or claimed by communities (Sirait 2009; Rietbergen 2011; Kusters et al. 2013). The integration of community maps in spatial plans can help to avoid such conflicts.

To limit GHG emissions and other negative environmental effects, the expansion of oil palm plantations would preferably take place on non-forested areas. However, using 'degraded' lands for oil palm plantations may be of limited appeal for reasons outlined above. Furthermore, clearing forestland gives oil palm plantation companies the opportunity to sell the timber through a wood utilization permit (IPK), which can be issued by the local government. This makes forested areas more attractive to plantation companies as this timber offers an additional source of revenue. In the past there have been a number of cases of companies using oil palm concessions as a means to gain access to timber; the companies logged the concession areas but never actually planted them (Sijabat 2006). Anecdotal studies have suggested that the decentralization of the land clearing permit process has resulted in the widespread deforestation of lands through reclassification of forest areas as APL lands (Casson 2000). In Berau, for example, most deforestation (72%) between 2000 and 2012 was detected within APL lands granted to companies (Casson et al. Forthcoming).

The question is whether the government will be willing and able to revoke permits located on forested and swamp areas, not least because of the vested interests of powerful economic actors. Although a review of existing permits is necessary to bring land investments in line with national green growth ambitions, plantation companies have little to win from regulation that limits their access to forested lands. Whether or not the (local) government will reassess existing permits thus greatly depends on the ability to operate independently from business interests. Often many ties exist between government and business actors – both at the national and local levels (Harvard Kennedy School 2011; Aspinall 2013), and the private sector has so far tended to oppose REDD+ and lobbied against the moratorium (Murdiyarto et al. 2011). Business actors that oppose restrictions to plantation expansion may find supporters among the general public, claiming that efforts to prevent further expansion of plantations are driven by a foreign agenda and will eventually curtail employment and economic growth. In line with this, Resnick et al. (2012), argue that the costs associated with green growth policies are likely to lead to anti-reform coalitions that include both powerful actors as well as the poor (Resnick et al. 2012). Such processes can be witnessed in Indonesia.

In East Kalimantan the political will to review existing permits seems to exist. Early 2013 the Governor declared a moratorium on the issuance of further permits for plantations to allow the provincial government to audit and review existing permits and determine if these permits had been issued correctly and in accordance with the law. Any permits found to not be in compliance with the law or to be tainted by other problems are to be revoked (Karim 2013).

Conclusions

In East Kalimantan more than 80% of the area under oil palm concessions is not yet planted. Around half of these concessions are located in forested and swamp areas. If these lands are indeed converted to oil palm plantations, this would release ~206 MtCO₂e into the atmosphere, frustrating the government's ambition to reduce GHG emissions from deforestation and forest degradation (REDD+). We conclude that Indonesia will not be able to reconcile its green aspirations with its economic growth targets unless land investments are redirected to slow down the expansion of plantations on forested land and peatland. This means that the location of existing concessions will need to be reassessed based on their compatibility with the government's REDD+ and GHG emission reduction objectives and, when necessary, they would need to be relocated or revoked. Without serious government efforts to redirect oil palm plantations away from forested and peat areas, REDD+ funds are not going to be effective. In East Kalimantan and elsewhere in Indonesia, such a critical reassessment of concession areas is likely to be met with resistance from powerful economic actors and their political allies, as it will curtail their economic opportunities. At the same time, any attempt to use REDD+ and other market-based schemes for protecting forest area without a concurrent effort to reform local land governance will likely lead to continued deforestation and land degradation (Sandbrook et al. 2010). The example presented in this article shows that pursuing a green economy poses trade-offs, particularly in the short term. Green growth does not always provide a win-win strategy, and is not simply a matter of providing market incentives. It should first and foremost be approached with strong political commitment based on a long-term perspective, and concern for the interests and wellbeing of communities in concession areas.

Acknowledgments

The authors gratefully acknowledge funds received from the European Commission, NORAD, AUSAID and UK aid. We would like to acknowledge the support of the USAID RDMA project "Economic Choices and Tradeoffs to REDD+ in Asia" and DFID supported project "Emerging countries in transition to a green economy: Will it make a difference for forests and people?". We are also acknowledge funding and support provided by the University of Toronto School of Graduate Studies and the Vanier Canada Graduate Scholarship.

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Forests, Trees and
Agroforestry

This research was carried out by CIFOR as part of the CGIAR Research Program on Forests, Trees and Agroforestry (CRP-FTA). This collaborative program aims to enhance the management and use of forests, agroforestry and tree genetic resources across the landscape from forests to farms. CIFOR leads CRP-FTA in partnership with Bioversity International, CATIE, CIRAD, the International Center for Tropical Agriculture and the World Agroforestry Centre.



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