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No. 385, May 2023 DOI: 10.17528/cifor-icraf/008867 | cifor-icraf.org

Towards Indonesian carbon market

Input from REDD+ projects

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Key messages

- REDD+ projects in Indonesia are commercial 'heavyweights'[1] in global voluntary carbon markets and among the largest suppliers of carbon offset credits in the world despite only a few of them operating in such markets.
- REDD+ projects employ diverse approaches to secure financing (ranging from direct carbon offset sales to donor aid and donations). They offer a range of activities to achieve their conservation and rural development objectives, mostly tailored to local contexts.
- Legislation to support a domestic carbon market already exists (and continues to emerge). It will be crucial to ensure the market is designed in a way that maximizes benefits for all stakeholders, and ensures REDD+ projects continue to play a key role in mitigating climate change.

Introduction

REDD+ (Reducing Emissions from Deforestation and Forest Degradation) was created to tackle the complex challenges of climate and forest governance, and aims to bring about transformational change in the forestry sector by departing from the traditional business-as-usual practices that have led to deforestation (Brockhaus and Angelsen 2012; Moeliono et al. 2014). There were two parallel pathways in the early stage of REDD+ development more than a decade ago; one focused on preparing the nuts and bolts of REDD+ at the national level under government oversight, while the other involved numerous smaller-scale projects across the tropics, often led by non-governmental organizations. There has been a surge of interest in nature-based solutions, and REDD+ projects are now successfully attracting international financing through voluntary carbon markets (VCMs) backed by certification from carbon standards (e.g., Verra, Plan Vivo). At the same time, national governments in major REDD+ countries such as Colombia, Indonesia and Brazil are developing domestic carbon pricing legislation to 'put a price on carbon'. They are developing emissions trading schemes in which REDD+ projects are expected to supply carbon credits (ICAP 2022). These changes are expected to have significant impacts on the financing of REDD+ projects and their contribution to the global supply chain of carbon credits.

This brief explores the evolving regulatory and carbon market landscape in Indonesia from the point of view of REDD+ projects by tracing the shift from a condition where they focused more on the global supply chain of forest carbon credits to one where they are expected to play a more integral role domestically. REDD+ projects as referred to in this brief are private- or non-government-led projects rather than the ongoing jurisdictional REDD+ programmes in East Kalimantan and Jambi provinces. We examine how REDD+ projects are navigating regulatory developments, and ask for their input on the upcoming domestic carbon market. We interviewed representatives of five REDD+ projects that have traded carbon credits in voluntary carbon markets, some of which are new players that have never conducted business in Indonesia.

Indonesian REDD+ projects – commercial 'heavyweights' in global voluntary carbon markets

REDD+ projects refer to avoided deforestation (AD) projects that aim to avoid planned and unplanned deforestation, and ARR projects aimed at afforestation, reforestation and forest restoration. They are often included as types of natural climate solutions (NCS) and play an increasingly important role in the global trade of carbon credits. In recent years, the commercialization of carbon credits from REDD+ projects has grown dramatically, with a 166% increase in Avoided Unplanned Deforestation (AUD) projects and a 972% increase in Avoided Planned Deforestation (APD) projects globally between 2020 and 2021 (Forest Trends' Ecosystem

1 Indonesia's REDD+ projects are considered commercial heavyweights as they accounted for almost ten percent of global carbon offsets issued in 2020, despite only six of them operating in voluntary carbon markets.

Table 1. Summary of operational REDD+ projects in Indonesia with experience in voluntary carbon markets

Project location	Type of project	Description
Seruyan, Central Kalimantan	Private for-profit	What: this project is intended to become the model for for-profit national park conservation against rapid forest conversion (to plantations), benefiting rural communities and orangutan habitat conservation. How: by acquiring land-use rights for forests bordering protected areas, project proponents can create a self-sustaining park system that benefits both the park and communities. Offset revenue is used to fund alternative livelihoods both within and beyond the project boundaries, community-based patrols, floating healthcare facilities, drinking water provision, and various educational opportunities for locals.
Katingan, Central Kalimantan	Private for-profit	What: this project seeks to reduce GHG emissions by avoiding planned deforestation and restoring and conserving peat swamp forests. Major threats to forest and peatland are illegal logging, fires, forest conversion to agriculture and small-scale mining. How: there are numerous activities centred on carbon (e.g., ecosystem restoration, enrichment planting, fire prevention) and alternative livelihoods (e.g., agroforestry, ecotourism, microfinance, aquaculture). Offset revenue is used to fund various initiatives at the village level, including but not limited to community development, fire response teams, and local business incubation.
Bungo, Jambi	Non-profit	What: The project aims to support five forest-dependent communities to protect their conservation forest against rapid land-use change driven by oil palm and rubber plantation expansion. How: by generating alternative livelihood sources through developing trade in non-timber forest products (NTFPs); and helping build the capacity of the forest management council. Offset revenue is used for, but not limited to, funding village forest (Hutan Desa) operational costs, providing various village programmes and infrastructure, and procuring staple foods.
Merangin, Jambi	Non-profit	What: this project took shape as a payment for environmental services from avoided deforestation and degradation (ADD) project. Village forests in the area are under threat from land-use change due to in-migration, particularly from coffee farmers. How: the project aims to set up sustainable enterprises focusing on improving coffee production and onsite processing. Offset revenue is used to fund activities including enrichment planting, protection and natural regeneration of native species, tree planting and agroforestry improvement. Communities are involved through forest patrolling and sustainable forest management activities.
Musi Banyuasin, South Sumatra	Private for-profit	What: the project aims to restore 22,922 ha of peatland ecosystems in Musi Banyuasin Regency, which constitute habitat for critically endangered species (e.g., Sumatran tiger and sun bear), and protect them and from fire risk, illegal logging and plantation development. How: by implementing ecosystem and habitat restoration activities while establishing sustainable avenues for economic growth in local communities. Offset revenue is used to fund restoration and replanting, local fire brigades, forest patrols and station posts, restoration in fire affected areas, and various community-centred activities.
Multiple regencies, Aceh*	Private for-profit	What: the project aims to restore mangroves, re-establish mangrove ecosystems and foster new community livelihood options (e.g., fish, crabs, shrimps, honey). How: by planting a suitable mixture of mangrove species and restoration of original hydraulic systems, providing employment opportunities to local communities, constant local engagement in economic and land management planning.

* Aceh Besar, Pidie, East Aceh and North Aceh regencies

Sources: International Database on REDD+ Projects and Programs (Simonet et al. 2020); Sills et al. 2014; data obtained during interviews

Marketplace 2021).[2] A 2022 World Bank report entitled State and Trends of Carbon Pricing showed a 159% increase in carbon credit issuances from forestry and land-use projects over the previous year, accounting for more than one-third of all credits issued in 2021. The majority of these credits (around 70%) were produced in Asia, with Indonesia being one of the primary contributors along with Cambodia and China.

In 2020, Indonesia had the world's third highest number of ongoing REDD+ projects (18) after Brazil (27) and Colombia (28) (Atmadja 2021). Six of these projects have sold carbon credits multiple times in voluntary carbon markets (Table 1). Despite their smaller number, data from Ecosystem Marketplace shows Indonesian REDD+ projects producing around 3.4 million metric tons ($MtCO_2e$) of carbon offsets in 2020, or almost ten percent of all global offsets issued that year. By September 2020, there were 17 ongoing REDD+ projects in Indonesia covering approximately 1.5 million hectares (Mha) (Simonet et al. 2020, updated by the authors). Of these, six were certified and five were in the process of securing certification under the Plan Vivo voluntary carbon standard. The remaining six projects were not seeking certification. By 31 October 2021, the six certified projects sold a total of more than 65.8 $MtCO_2e$, or more than 7.5 times the volume sold a little more than a year earlier (Table 2). Hence, these Indonesian REDD+ projects experienced tremendous growth during 2021. This underscores the significant contribution of Indonesian REDD+ projects to global climate mitigation efforts. Promoting the emerging value of carbon storage as a non-timber forest product could boost GDP growth from the forestry sector.

Generally, REDD+ projects have been developed by non-governmental organizations (non-profit), private companies (profit oriented), or through collaboration between the two. Consequently, start-up funding has come either from donor aid or from investors. Some projects discontinued, either because they had fulfilled their intermediate objectives (e.g., capacity building or clarifying ownership over or access rights to forest resources to enable REDD+ implementation) or because their funding had expired. A few that are still ongoing have successfully raised revenue from trading carbon credits. Some projects do not put carbon credits up for sale, but instead set up donation systems whereby donated amounts correspond to carbon price and quantity. In the latter case, no carbon credits are transferred to donors/buyers; project developers provide certificates of donation in return. In addition to funding project operational costs, some portions of revenues are also shared with local communities living inside REDD+ project areas. Such revenue is used to fund various rural development and conservation measures, including alternative livelihood creation, providing start-up funding for local businesses, financing and providing equipment to village fire brigades, supporting local social forestry initiatives, providing infrastructure and procuring staple foods.

Table 2. Certified projects and verified carbon unit (VCU) amounts in Indonesia, 2020–2022

	Number of certified projects (VCS or Plan Vivo)	Number of VCUs retired (accumulated total, in tCO2e)
By September 2020 (1)	6	8,762,655
By 31 October 2022 (2)	6	65,789,022

Sources: (1) International Database on REDD+ Projects and Programs (Simonet et al. 2020); (2) authors' calculations

New rules and playing field

Recognizing the importance of and risks to achieving Paris Agreement targets (Ministry of Environment and Forestry 2016), the government started reshaping domestic carbon governance by preparing regulations and guidelines for achieving Nationally Determined Contribution (NDC) and overall carbon market development targets, while temporarily suspending REDD+ project trading in voluntary markets.[3] This reshaping included the submission of Indonesia's Enhanced NDC in September 2022, which increased emission reduction targets to 31.89% unconditionally (previously 29%) and 43.20% with international support (previously 41%). This move certainly constrains REDD+ project developers financially, whether they are non-profit or profit-oriented entities. The financial risk to their core business increases the longer the suspension of carbon trading goes on. Some have had to scale down their operations while prioritizing core activities that prevent deforestation and forest fires. One respondent highlighted the contribution of their emissions reduction credit/REDD+ project to the Indonesian economy, and their hope for the upcoming ministerial regulation, saying,

> *"In addition to global mitigation and local (livelihood) benefits, we pay non-tax revenue (penerimaan negara bukan pajak/PNBP) on each (carbon trading) transaction to the state. … hopefully there will be a fair arrangement on what [REDD+ projects'] roles [in the upcoming domestic carbon market] and responsibilities [to the state] are"* (interview #2, June 2022).

Regardless of the suspension, one interviewed REDD+ project developer voiced their optimism that domestic and international carbon trading is the future of the Indonesian forestry sector, saying,

2 *'Avoided unplanned REDD+'* projects refer to those that aim to protect forests from multiple threats (e.g., illegal logging and small-scale conversion for cultivation/livestock grazing), whereas *'avoided planned REDD+'* projects refer to those that seek to protect forests that have been legally authorized for conversion to non-forest land (Forest Trends' Ecosystem Marketplace 2021).

3 The temporary suspension of carbon trading in voluntary markets was conveyed through a circular letter (SE) addressed to emission reduction credit (ERC) permit holders (Ministry of Environment and Forestry 2022).

"We want to prove that forest and peatland protection can be a source of development capital. We believe the dichotomy between the economy and the environment should no longer be the case. We hope this [idea] is further mainstreamed from now on." (Interview #5, August 2022).

Indonesia has implemented several pieces of legislation relevant to the development of a new low-carbon economy (Box 1). These include Presidential Regulation (*Perpres*) No. 98/2021 on Carbon Economic Value, and Law (UU) No. 7/2021 on Tax Regulation Harmonization, which sets a minimum carbon price of USD 2 tCO_2e^{-1}. More recently, the government has stipulated procedures for implementing carbon trading under Minister of Environment and Forestry Regulation (*Permen LHK*) No. 21/2022, which further paves the way for the establishment of a domestic carbon market. These pieces of legislation regulate how Indonesia can benefit from carbon trading or an emissions trading system (ETS), results-based payments (RBPs), and a carbon tax/levy in achieving a low-carbon economy. Carbon trading can occur at domestic or international levels, with domestic trading recorded in the national registry system (SRN) and foreign trading recorded by the relevant carbon authority when transactions involve international buyers. Carbon rights are transferred from suppliers to buyers, where trade can take place across economic sectors. RBPs are awarded for GHG emissions reductions (ERs) achieved by national and subnational governments, as well as by the private sector without transfer of carbon rights.[4] Just like the ongoing government-led jurisdictional REDD+ programmes in East Kalimantan and Jambi provinces, this can be done in cooperation with international donors, but the resulting ERs cannot be linked to donors' own ER targets. Thus, ER performance under RBPs can be directly linked to the NDC target. A carbon tax/levy is to be imposed on any goods and/or services based on their carbon content or emissions generation potential.

Although the upcoming carbon market/emissions trading system (ETS) is currently focused on the energy sector and is targeted for launch this year (Ministry of Energy and Mineral Resources 2023), these pieces of legislation represent a significant shift towards the development and implementation of REDD+ projects as the government targets ETS expansion to other economic sectors by 2025. For now, REDD+ projects could be impacted by this legislation in at least three ways. *First*, projects that previously participated in voluntary carbon markets must register and report their mitigation actions and remaining carbon credits to the SRN. *Second*, as international carbon trading is legally permitted, it remains unclear whether REDD+ projects can immediately restart offset trading in global voluntary markets. This is because trading must be done in accordance with a sectoral carbon trading roadmap, which has yet to be released by the Ministry of Environment and Forestry (MoEF) in the context of forest carbon trading.[5] Regardless, for now carbon trading seems to be decided on a case-by-case basis as any trade involving private (including REDD+ projects) and global entities must ultimately be conducted under ministerial authorization.[6] *Finally*, the government imposes an 'offset buffer' of at least five percent for domestic trading and between 10 to 20 percent for international trading to mitigate the risk of not achieving NDC targets due to trading being conducted prior to 2030. Rights to these offset buffer credits can be returned to REDD+ projects at least by 2032, and sold elsewhere if the sectoral NDC target is achieved without the need to claim the buffer credit.[7]

The government's openness to continued trading with foreign buyers was very much welcomed, with one interviewed project representative noting,

"Voluntary carbon markets have always been an important source for financing mitigation activities in forest and land use sectors across the world. Imposing limitations (in various forms) would put already achieved impacts for forests and people at risk" (interview #5, August 2022).

However, while international trade is now legally permitted under ministerial approval, there must also be clarity on how it may take place. This is an important aspect to ensure the smooth operation of a business, as stressed by one of the interviewees,

"It must be clear whether REDD+ projects in Indonesia can trade individually with foreign buyers and decide independently who to trade with, or whether (foreign) trade is conducted solely by governments on behalf of projects, in which case maybe only the government decides who to trade with" (interview #3, June 2022).

In line with the trend depicted in Table 2 and the 2022 World Bank report, another interviewee stressed that demand for carbon offsets has been increasing, as their company has secured several potential international buyers even before the project in Indonesia is operational.

"From our experience (having multiple REDD+ projects abroad), we are always short on (carbon credit) supply. Even now we have secured a number of foreign companies that are interested in buying carbon credits from us as we are setting up shop in Indonesia" (interview #4, June 2022).

Another respondent further highlighted that around 90 forestry business holders are submitting proposals to switch their current licenses to multi-forestry business permits, allowing them to engage and transact in voluntary carbon markets and the upcoming domestic carbon market in

4 See the recent circular letter from MoEF No. SE.5/MENLHK/SETJEN/PPI.3/2023 for steps on how regional governments (provinces and regencies) can engage with and benefit from result-based payment from jurisdictional REDD+.

5 Article 4 of Minister of Environment and Forestry Regulation No. 21/2022

6 Article 24 of Minister of Environment and Forestry Regulation No. 21/2022

7 Article 7 of Minister of Environment and Forestry Regulation No. 21/2022

Box 1. Key highlights of selected pieces of legislation

1. Government Regulation (PP) No. 46/2017 on Economic Instruments for the Environment (amended by PP No. 22/2021 on the Implementation of Environmental Protection and Management)
   - Acknowledges the potential use of economic instruments (e.g., payments for environmental services, tax/subsidies, labelling) for natural resources and environmental protection and management
2. Law (UU) No. 11/2020 on Job Creation (amended by Regulation In Lieu of Law (*Perppu*) No. 2/2021 on Job Creation)
   - Establishes a 'multi-forestry business permit', allowing land-based businesses to diversify and combine different types of licenses (e.g., combining plantation and ecosystem restoration businesses) under one permit
3. Law (UU) No. 7/2021 on Tax Regulation Harmonization
   - Introduces a carbon price/tax at a rate of USD 2 tCO_2e^{-1}
4. Presidential Regulation (*Perpres*) No. 98/2021 on Carbon Economic Value
   - Lists three potential financial mechanisms for the transition to a low-carbon economy: carbon trading/ETS, RBPs and a carbon tax/levy
5. Minister of Environment and Forestry Regulation (*Permen LHK*) No. 21/2022 on Procedures for Carbon Economic Value Implementation
   - Provides technical guidance for implementing *Perpres* No. 98/2021, and further describes rules for the implementation of carbon trading/ETS, RBPs and a carbon tax/levy.

Indonesia (interview #5, August 2022). However, there are questions over whether other land-based businesses, such as mining companies, can also engage in the upcoming domestic carbon market as carbon offset providers, given that their concessions may also be located in large forested areas. One respondent offered a caveat for avoiding greenwashing, saying,

> *"We [envision] forest and land-based sectors serving as carbon credit suppliers in the upcoming domestic carbon market. But [the government] must thoroughly consider the ethical implications of allowing all land-based businesses to be carbon credit suppliers"* (interview #2, June 2022).

Mitigating greenhouse gas emissions by protecting and regenerating forests has started to become a mainstream concept in Indonesian business and industry. New startups are emerging to provide services for establishing, managing, accounting and monitoring forest carbon projects (such as Jejakin, Roxi and LindungiHutan), while existing businesses are trying to make use of the multi-forestry business permit (introduced under the Job Creation Law) to diversify their businesses, as such permits allow both traditional and carbon-based forest activities. On one side, new laws related to carbon pricing and job creation have created opportunities for private sector operators to seize financial opportunities from forest carbon. On the other side, the government needs to act swiftly to take advantage of these opportunities, while ensuring that forest carbon credits are of high quality, are ethically sourced, and are unburdened with greenwashing problems.

Safeguarding REDD+ projects and benefiting from their experience and emissions reduction potential

Prior to the issuance of carbon economy-related regulations in 2021–2022, REDD+ project proponents traded their carbon credits without specific rules or limits imposed by the government. Naturally, the trade was concentrated in voluntary markets with demand for carbon credits from diverse sources (World Bank 2022). However, their operation was not entirely beyond government oversight. In 2013, two privately funded REDD+ projects in Central Kalimantan (Sills et al. 2014) and one in South Sumatra operated under ecosystem restoration concession licenses (IUPHHK-RE) now known as multi-forestry business permits, all of which are still operational to this day.[8] The ecosystem restoration concession (ERC) concept itself can be recognized as a manifestation of transformational change in forestry sector governance. As the timber boom ceased in the 1990s, foresters were bound to find alternative ways to signify forestry sector contributions to the economy. However, making an ERC operational (and profitable) is difficult, as one respondent noted, saying,

> *"For those who were born in the 70s, they had seen forests being cut every day since their childhood. [Us] coming to villages and [bringing the idea of ecosystem restoration] was something incomprehensible to them, as the only options they were familiar with (when forest was cleared) were either oil palm or timber concessions. People wondered, 'What is our product? Does this mean our land is going to be a national park?' There was much confusion when we entered the site."* (Interview #2, June 2022).

8 IUPHHK-RE ecosystem restoration concessions were recognized through Minister of Forestry Decree (SK Menhut) No. 159/Menhut-II/2004 and Minister of Forestry Regulation (Permenhut) No. P.18/Menhut-II/2004. ERCs gained more traction when they were finally recognized in higher-tier legislation in the form of Government Regulation (PP) No. 6/2007. Now, under Law (UU) No. 11/2020 on Job Creation, IUPHHK-REs are known as multi-forestry business permits that allow forest concession holders to diversify their forestry businesses under a single license (e.g., a company can combine logging and ecosystem restoration activities under a single permit). The first ecosystem restoration concession in Indonesia was formally established in the mid-2000s on the border of Jambi and South Sumatra provinces (BirdLife International 2013).

Table 3. Carbon credit generation realization and potential from ongoing REDD+ projects in Indonesia, 2020

Project location Total area / crediting area	Start year	Crediting period	Expected annual carbon credits (tCO_2e)	Total expected carbon credits (tCO_2e)	Total Q of credits retired (tCO_2e) by September 2020 (1)	Retired by 31 October 2021 (2)	Carbon standard
Seruyan, Central Kalimantan 64,977 ha / 47,237 ha	2008	2009–2038	3,500,000	104,886,254	5,363,500	33,625,616	CCB, VCS
Katingan, Central Kalimantan 149,000 ha / 118,917.36 ha	2013	2010–2070	7,451,846	447,110,780	2,355,955	30,055,254	CCB, VCS
Bungo, Jambi* 7,291 ha / 5,331 ha	2013	2014–2023	13,832	379,101	65,199	65,128	Plan Vivo
Merangin, Jambi 3,616 ha / 3,616 ha	2013	2013–2042	25,697	770,911	1,541	1,541	Plan Vivo
Musi Banyuasin, South Sumatra 22,922 ha / 22,922 ha	2016	2016–2062	1,338,569	62,912,755	817,710	1,581,705	VCS, CCB
Multiple regencies, Aceh** 5,000 ha | n/a	2011	2011–2031	124,706	2,494,121	144,063	397,071	VCS, CCB

* The REDD+ project in Jambi's Bungo Regency does not offer carbon offsets for sale, instead the project developer raises revenue from donations where rates are proportionate to carbon price and quantity – no carbon credits are transferred to the buyer

** Aceh Besar, Pidie, East Aceh and North Aceh regencies

Sources: (1) International Database on REDD+ Projects and Programs (Simonet et al. 2020); (2) authors' own calculations based on the VCS registry (https://registry.verra.org/, accessed 29 September 2022) and Plan Vivo registry (https://mer.markit.com/br-reg/public/index.jsp, accessed 29 September 2022)

> *"People kept mistaking [the project] for the establishment of a national park, which would be fully protected 100 percent in their area and block their access to the forest. This is the hardest thing to change. We had to visit all villages and carefully and repeatedly explain [what we are and what are we are going to do] until they finally understood what we do is different, namely restore ecosystems. This process took a very long time"* (interview #2, June 2022).

The emerging domestic carbon market, even though it has yet to expand to the forest and land-use sector, will be a potential source of funding that will make ecosystem restoration attractive and profitable at scale. On paper, the carbon benefit potential from five local REDD+ projects in Indonesia is promising, but sales have remained suboptimal (Table 3). To illustrate, the REDD+ project in Merangin Regency in Jambi had sold only 1,541 tCO_2e by 2020, or only around six percent of its expected annual carbon credit generation.

Two other interviewed REDD+ project developers also voiced similar difficulties when they first went to their respective sites. Their approach and attitude were similar: change is gradual and will require long-term engagement, perseverance and sufficient resources before the first sale could be made. To illustrate, the project proponent in Bungo (Jambi) started working at their current site in 2000 under a five-year Integrated Conservation and Development Project (ICDP) with activities of communities' choosing – mostly involving electricity provision. From 2005–2008, the site was home to another project called Rewarding Upland Poor Environmental Services (RUPES) supported by the World Agroforestry Centre (ICRAF). The project took the form of payment for environmental services (PES) to reward locals for maintaining their biodiversity-rich rubber agroforests. With the end of the RUPES project in 2008, the REDD+ project commenced under a Village Forest (*Hutan Desa*) social forestry permit that was granted in 2009. In 2013, they registered their carbon services with Plan Vivo, and in 2017 they sold their first carbon credits in a voluntary market. However, while such long-term assistance has proved workable, it may not be feasible for other REDD+ project developers with different business models and financial structures. For example, one interviewed private REDD+ project developer emphasized their focus on building cooperation with existing and credible social forestry permit holders to ensure a smooth and cost-effective project kickstart and operation.

The REDD+ projects in Katingan and Seruyan regencies in Central Kalimantan also operate with the same strategy as the project in Jambi to ensure buy-in from local communities. The projects in Katingan and Seruyan offer regular calls for proposals to fund various community activities in their respective sites.

"[The project] can bring various forest-based interventions, but we strongly encourage communities to have their own initiatives. Many of them use the money for essential village infrastructure or alternative livelihood opportunities" (interview #2, June 2022).

*"[The project] has always assisted the community in one vision: to help them transform and become independent. We scoured various alternative livelihood and infrastructure development activities that could feasibly be conducted by communities that we could help with. … the only constraint is there may be certain activities [proposed by communities] that we prohibit on peatlands or in forest estate to ensure the integrity of ER" (*interview #5, August 2022).

"By helping poorer people to make ends meet, and helping to prevent disasters (e.g., forest fires), they finally understand that protecting their forests will provide them with direct and sustainable benefits" (interview #1, June 2022).

It is equally important to have support and buy-in from local governments.

"Early on, we coordinated with local governments from the village, subdistrict and regency levels to relay our business intention and align our activities with those of the government and what they think constituents need. It was not easy as we had to compete with business-as-usual interests (e.g., oil palm) that can promise revenues up front, which is not the case with sales from ER activities" (interview #5, August 2022).

In one case, local community buy-in was possible as they already had first-hand experience of the impacts of a changing climate.

"We conducted regular visits to villages, much like consultation processes, to obtain free, prior and informed consent (FPIC) about what we do and our proposed activities. I remember one of the factors influencing a change of attitude in communities [becoming more receptive to the project] was a massive flood on an unprecedented scale" (interview #5, August 2022).

Practical recommendations for the upcoming domestic carbon market: A supply side perspective

To assist in the design of Indonesia's upcoming domestic carbon market, we have synthesized some recommendations from interviews. These are as follows:

a. Diverse forest mitigation actions

It is desirable for the upcoming ministerial regulation to list forest mitigation actions explicitly and comprehensively. These should at least consist of actions to avoid deforestation and forest degradation, prevent forest fires, and enhance forest carbon stock (e.g., rewetting, restoration, rehabilitation) for various classes of land use. Such activities are basically the core operations of REDD+ projects today.

b. A common set of rules, agreed by all

There must be a common set of rules that apply across the board, and include:

1. New and clear allocation of baselines/forest reference emission levels (FRELs) to subnational jurisdictions and projects;
2. A nationwide MRV system and ER accounting standard that works at all scales and modes to integrate projects' data into the national registry and/or MRV system in real time;
3. A uniform safeguards system and clear benefit-sharing rules that work across scales.

Arguably, all of these, particularly points 1 and 2, are challenging as multiple baselines, ER accounting standards and MRV systems are used by the government and different REDD+ projects.

d. Clear attribution between domestic and international trading

A 'nested' system will harmonize carbon accounting of ER activities at multiple levels (i.e., RBPs and local REDD+ projects). Such a system will require consistent rules and methodologies that work for tracking and accounting ER across scales. This is certainly a difficult task, but must be performed nonetheless so that Indonesia can benefit from both domestic and international carbon markets. A transition to a nested system in Indonesia can be illustrated by following the case of the REDD+ regulation in Cambodia (RTS Cambodia 2020):

1. Stage I (pre-nesting): REDD+ projects established prior to the enactment of the carbon market-related regulation are subject to a grandfather clause – allowing them to continue working with current methodologies and baselines for a period of time before shifting to a common set of rules once they are ready. However, new REDD+ projects must start by preparing their business with a new common set of rules in mind. This is also the period where all REDD+ projects must register with the National Registry System (SRN). The SRN will be the backbone of a functional carbon market. Thus, it is reasonable to expect its capacity to be strengthened along the way to allow for optimal monitoring of all climate change-related projects (interview #3, June 2022).
2. Stage II (early nesting): A transition period whereby REDD+ projects start shifting and using the new common set of rules. Progress may differ from one area to the other as some jurisdictions were exposed to large-scale REDD+ earlier (i.e., East Kalimantan and Jambi). Much like the 'learning by doing' phases traversed by REDD+ project developers, this stage also involves trial and error, which means there should be sufficient flexibility and support in adopting the common set of rules without running the risk of undermining a particular project or the whole system.
3. Stage III (full nesting): A fully nested system can be achieved when, for example, a fully integrated MRV mechanism, registry system and safeguard information system, and relatively equal human resources and institutional capacities across places and scales are in place.

Conclusion

Smaller-scale REDD+ projects have been an integral part of global and national REDD+ development. They have now become commercial heavyweights in global voluntary carbon markets despite only a few of them operating in such markets. Overall, the insights provided by interviewees representing REDD+ projects highlight the potential opportunities and challenges they face in the upcoming domestic carbon market in Indonesia. As the country works towards a low-carbon economy, it is crucial to ensure that the market is designed in a way that maximizes benefits for all stakeholders, including smaller-scale REDD+ projects, as the future forest carbon suppliers in the domestic carbon market. With the right policies and support, these projects can continue to play a key role in mitigating climate change whilst contributing to rural development and the transition to a low-carbon economy.

Acknowledgments

We would like to thank researchers at the Agency for Standardization of Environment and Forestry Instruments (BSI-KLHK) for their helpful comments on an earlier version of this brief. This research is part of CIFOR's Global Comparative Study on REDD+ (www.cifor.org/gcs). Funding partners that have supported this research include the Norwegian Agency for Development Cooperation (Norad, Grant No. QZA-21/0124), International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU, Grant No. 20_III_108), and the CGIAR Research Program on Forests, Trees and Agroforestry (CRP-FTA) with financial support from CGIAR Fund donors.

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Norad
NICFI Norway's International Climate and Forest Initiative
Supported by:
Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection
based on a decision of the German Bundestag
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