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Summary

In Indonesia, an integrated Forest Landscape Restoration (FLR) approach has been proposed as one of the solutions to address degraded lands, including 14 million ha of critical and very critical lands (Ministry of Environment and Forestry (2019)). However, the land use competition has been quite high and intensive, particularly between sectors. This situation has provided serious challenges for the implementation of FLR on the ground. In the absence of integrated policy and regulatory frameworks for the landscape approach and FLR at the national level, various organisations have initiated a range of programmes and strategic approaches in moving forward to implement these approaches. Per our review, there are opportunities and challenges for the application of a landscape-based approach, FLR and a combination of the two.

To ensure its effectiveness, an integrated FLR approach should be implemented as part of the overall landscape-based regional development at all administrative levels. In particular, the approach needs to be mainstreamed into regional development planning at all levels (national to village). The FLR approach should also complement the various programmes set by different government agencies. This paper highlights the importance of facilitating the development of inter-ministerial and inter-sector policy frameworks to advance the integrated FLR approach, which considers various sectors' development objectives, while at the same time attempting to restore ecosystem functions and enhance the livelihoods of local communities.

The Indonesian Government has various restoration-related programmes that, in our calculation, amount to a restoration target covering approximately 22.6 million ha. The overarching regulatory framework and management approaches that potentially support the FLR approach and practices include: (1) Forest Management Unit Model–FMU (*Kesatuan Pengelolaan Hutan–KPH*); (2) Integrated Watershed Management Approach (IWMA); (3) One-Map Policy (*Kebijakan Satu Peta–KSP*) and (4) Policy frameworks supporting community participation.

Based on the lessons learnt discussed in this paper, we identified five scenarios to foster inter-sectoral coordination for promoting complementary management options and FLR initiatives. Firstly, an overarching clear policy framework is required, whereby the Grand Strategy document on FLR at all government levels is designed based on a participatory approach. This can then be used as a referral document for inter-ministerial and inter-sectoral coordination. Secondly, community participation and enhanced partnership to foster sustainable FLR should be encouraged. Thirdly, a clearly defined landscape-based unit of management based on certain ecosystem functions, including watershed and forest landscape, should be set up. Fourthly, a financing system should be included in a grand strategy document supporting integrated FLR. Lastly, in response to the issuance of the Law No. 11/2020, i.e., the Job Creation Law, the adaptive strategies need to be further explored to maintain the roles and responsibilities of FMUs in forest management, including the implementation of forest rehabilitation and restoration programmes. Using local government regulations as a safeguard, provincial level government needs to formulate the necessary policy and regulatory frameworks to protect the local communities' interests during the transition period until the 'new' Job Creation Law is fully operationalized.

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Since we started drafting this working paper in 2019, legal and policy frameworks on forest and land-use issues in Indonesia have changed considerably, particularly with the enactment of the Job Creation Law in 2020. Additional analyses and adjustments to the working paper were thus needed.

We hope that the collated information on policy and regulatory frameworks in this paper is useful for fostering an integrated Forest Landscape Restoration (FLR) approach as one of the solutions to restore degraded lands in Indonesia.

1 Introduction: background, identified problems and working towards similar terminology

Globally, the Forest Landscape Restoration (FLR) approach has been intensively promoted to restore degraded forests and land by addressing the multi-faceted direct and indirect socioeconomic and ecological problems. As indicated on the “Landscape Opportunity Map”, progress towards FLR has been urgently required to respond to the needs for restoration actions on more than two billion hectares of degraded lands (Laestadius et al. 2015, 8; GPFLR 2020). Specifically, the degraded lands cover about half a billion hectares (ha) that need conventional wide-scale forest restoration and more than one and a half billion hectares need mosaic-type restoration, which is more challenging (Laestadius et al. 2015; GPFLR 2020). There is a range of definitions on FLR provided by various organizations. According to the Global Partnership on Forest and Landscape Restoration (GPFLR), they define FLR as “...an active process that brings people together to identify, negotiate and implement practices that restore an agreed optimal balance of the ecological, social and economic benefits of forests and trees within a broader pattern of land uses...” (GPFLR 2020; RECOFTC 2020, 8). The FLR is considered the overarching strategy for specific site-based strategies, namely restoration, rehabilitation and reclamation.

Nevertheless, more effort and attention are needed to move towards operationalizing the FLR approach into practice. Such operationalization encompasses integrating aspects of policy framework, institutional arrangements and management approaches. This is primarily because the direct and underlying causes of degraded lands are quite complex and often relate to the problems beyond the boundaries of identified/ designated restoration areas (Nawir and Rumboko 2007; Nawir et al. 2014). Further, there have also been significant cases of forest conversion or deforestation for other purposes, such as significant development of oil palm plantations in Indonesia. Therefore, operationalizing FLR strategies should be designed as an integral part of the landscape management, which addresses various causes of deforestation and degradation (Nawir et al. 2007).

It is important to understand the terminology of ‘landscape’. It has been defined as: *...a complex social-ecological system, usually made up of a mosaic of different land uses. The boundaries of the landscape can either be discrete, for example, administrative boundaries, or fuzzy, for example, based on ecological units and/or the extent of community activities resulting in a lack of a clear delineated boundary* (Freeman et al. 2015, 3). Another definition is given by Conservation International (CI), “...a jurisdictional planning area which includes areas of essential natural capital and key production systems. These must be large enough to capture both production and conservation goals, yet small enough to make implementation feasible...” (Conservation International (CI) 2018, 1). Further, according to CI, examples include a watershed and its surrounding communities or a whole country in the case of small island states. However, in practice, the ‘landscape’ definition depends on the perspective of the relevant stakeholders based on the social constructed processes (Maginnis et al. 2004). Further, these authors explain landscape as a social platform for interactions of various elements of: nature and people with various characteristics; a record of the past and present natural and cultural histories and a shared identity of tangible and intangible values that are important to a particular society (Maginnis et al. 2004).

In Indonesia, moving towards an integrated FLR approach has been proposed as a key solution to address degraded lands in Indonesia, including 14 million ha of critical and very critical lands (Ministry of Environment and Forestry 2019). With a population totalling over 250 million, the land use competition has been quite high and intensive, particularly the competition between sectors. For example, oil palm smallholder plantations have been developed at least on 9 million ha, while the Ministry of Environment and Forestry (MoEF) has implemented a social forestry programme, with the aim to provide rural villagers access to utilize 12.7 million ha of state forest (*PSE* 2017; Ministry of Environment and Forestry 2021b). In addition, there are other community-owned lands managed for food crops, farm forest and rubber plantations. In the past, most of these programmes have been developed in isolation and supported by overlapping and conflicting policy frameworks prioritizing each programme individually. In many cases, these programmes are targeting the same deforested and degraded lands. We thus argue that an integrated FLR approach should be implemented as part of the overall landscape-based regional development at all administrative levels. For example, this approach can be explicitly highlighted and included as the strategic approach and programme in the documents of regional development planning at all levels (national to village). Specifically, the FLR approach should complement the various programmes set by different government agencies. Such a strategy is also aligned with recent ‘corrective actions’ in the forestry and land-use sector committed and led by the Ministry of Environment and Forestry. The actions led to the significant decline of deforestation rates and forest fires incidences, suggesting that a successful FLR is highly possible when challenges are tackled effectively.

Overall, there is a much bigger challenge for an effective implementation of the FLR approach in Indonesia because of the silos among government agencies when it comes to planning, implementation, and monitoring programmes. This working paper highlights the importance of facilitating the development of inter-ministerial and inter-sector policy frameworks to advance the integrated FLR approach, which considers various sectors’ development objectives, while at the same time attempting to restore ecosystem functions and enhance the livelihoods of local communities. However, another layer of challenges may come from the dynamic changes of policy and regulatory frameworks at the national level. Indonesia has changed its national governance system nine times since 1945. The latest one was based on the new Law Number 11/2020 on the Job Creation Act (*Undang-Undang Cipta Kerja-UUCK*) or well known also as the Omnibus Law (The President of Republic of Indonesia 2020). This law was passed on 5 October 2020 by Indonesia’s People’s Representative Council (*Dewan Perwakilan Rakyat-DPR*), with the aim of creating jobs and raising foreign and domestic investment by reducing regulatory requirements for business permits and land acquisition processes. It will take two years of transition for this law to be fully implemented. The Government of Indonesia Regulation (Government Regulation-GR/*Peraturan Pemerintah-PP*) followed by ministerial level regulations (*Peraturan Menteri-Permen*) have been formulated as detailed guidelines to implement the Omnibus Law.

The organisation of this working paper is structured as follows: the paper first discusses how Indonesia has translated the global political commitment on FLR to national strategies, before discussing existing programmes and policy frameworks, which provide both opportunities and challenges for FLR activities at the landscape level. This latter section also highlights several existing initiatives by various organizations, specifically a landscape-based approach and on-the-ground FLR initiatives. This paper also outlines the related description of changes that have resulted from the application of the Omnibus Law under the Government Regulation No. 23/2021 and related ministerial level regulations, with regards to its impacts, for example, on Forest Management Units (FMUs) and Social Forestry (SF) (The Government of Indonesia 2021a; The Minister of Environment and Forestry 2021b; The Minister of Environment and Forestry 2021a; The Minister of Environment and Forestry 2021c).

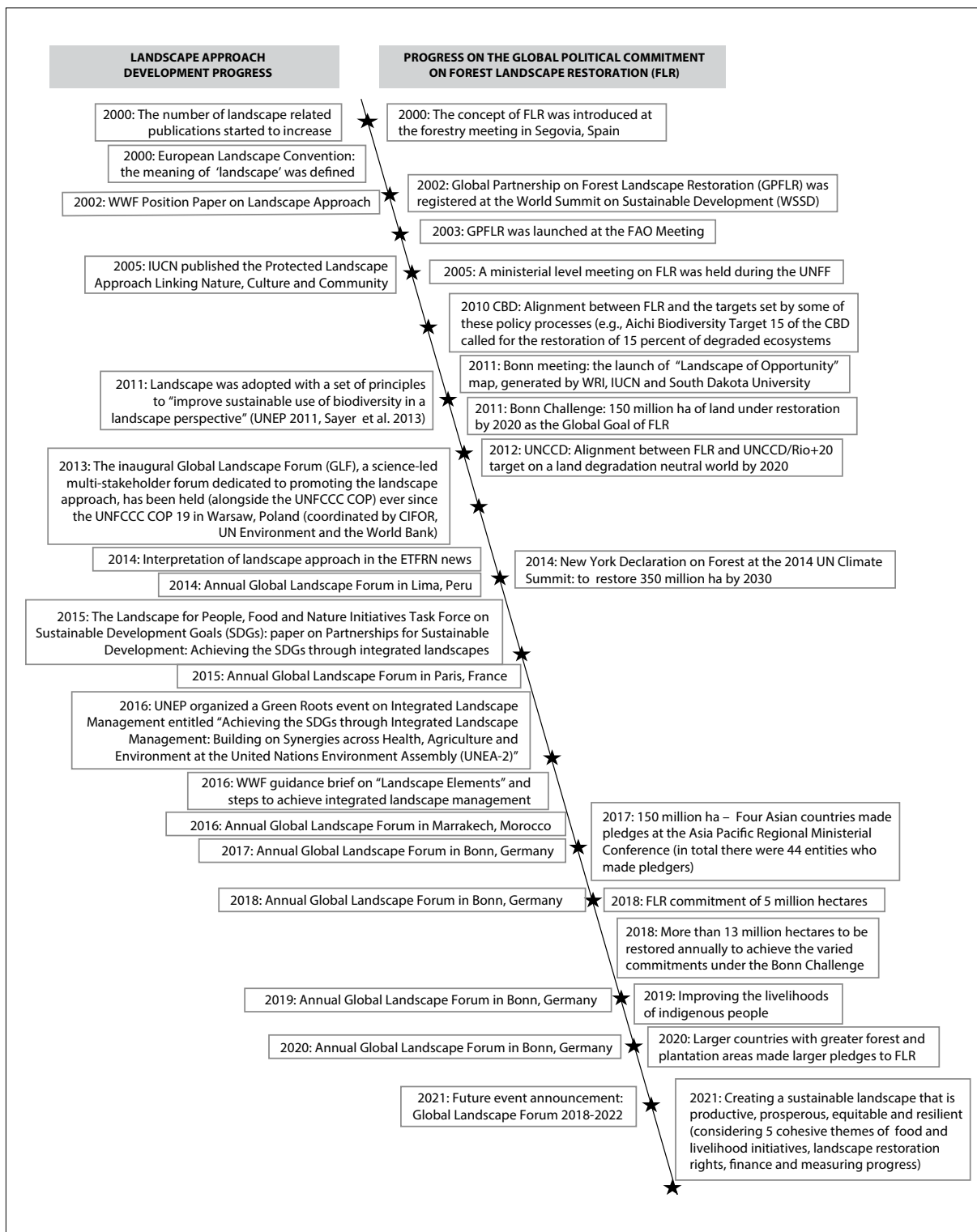
2 Translating the global political commitment to national strategies in Indonesia

There has been an increasing global commitment towards FLR, in line with the development of conceptual and analytical thinking about the landscape approach. The latter helps develop and strengthen the landscape ‘component’ as an integral part of FLR. The development progress in both the landscape approach and FLR global political commitment (2000-2021) is summarized in Figure 1. Our analysis suggests that the landscape approach, which has been described in various papers such as the World Wildlife Fund (WWF) Position Paper, the International Union for Conservation of Nature (IUCN) and World Resources Institute (WRI) has been adopted in the restoration-oriented and conservation-oriented initiatives (WWF 2002; IUCN and WRI 2014). This section further discusses how such development at the global level has been translated into national strategies and commitments in Indonesia. The associated opportunities and challenges are also discussed (Figure 1).

The concept of FLR was first introduced in 2000 at a forestry meeting in Segovia, Spain as a response to the failure of site-based approaches to reforestation in tackling forest and land degradation problems (Chazdon et al. 2016). In the 1990s, reforestation activities in many countries often focused only on planting a few non-native tree species for timber production in plantation or woodlot settings, without addressing the root causes of forest loss and degradation (Cossalter and Pye-Smith 2003; Chazdon et al. 2016). From the outset, FLR was envisioned to emphasize the importance of a broader land management beyond a set of site-level technical interventions, hence the use of the word ‘landscape’ (Laestadius et al. 2015). In FLR there is a matrix of landscape options across forestry and agriculture, with a wide range of different types and configurations for returning multiple forest and tree-related goods and services (Laestadius et al. 2011) (Sayer et al. 2003). Forest Landscape Restoration can be established in different zones of the landscape, according to environmental suitability, stakeholder needs, management goals and available funding (Chazdon 2008).

The discussions on the definition of FLR have continued up to the present day. The idea and interest in FLR have continued to increase, garnering plenty of support from major institutions and countries. The Global Partnership on Forest Landscape Restoration (GPFLR), which aimed to support and influence global policy and national action on restoration, was registered at the World Summit on Sustainable Development (WSSD) in 2002 and launched at an FAO meeting in 2003 (GPFLR 2020). In 2005, a ministerial-level meeting on FLR was held during the United Nations Forum on Forest (UNFF) session and the connections between FLR and other global initiatives were explicitly discussed. Various international and regional policy processes included the UN Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the Millennium Development Goals (MDGs) (Laestadius et al. 2011). Later, proponents of FLR pointed out the evident alignment between FLR and the targets set by some of these policy processes, such as the Aichi Biodiversity Target 15 of the CBD, which calls for the restoration of 15 percent of degraded ecosystems (Convention on Biological Diversity 2010) and the UNCCD /Rio+20 target on a land degradation neutral world by 2020 (UNCCD 2017).

The first specific global goal on FLR was set in 2011, when the German Government and IUCN invited GPFLR stakeholders and world leaders to Bonn to demonstrate support for FLR and to commit to the Bonn Challenge. An ambitious global FLR target was set to have 150 million ha of land under restoration by 2020 (GPFLR 2020). Governments, private associations, and companies made pledges



Note: ETFRN - the European Tropical Forest Research Network (ETFRN)

Sources: WWF (2002), GPFLR (2009), GPFLR (2013), CIFOR (2017), IUCN (2017), GLF (2018), GLF (2019b), GLF (2019a), GLF (2020), GPFLR (2020), National Working Group on Landscape Restoration in Indonesia (2009) and WWF (2002)

Figure 1. Progress in the development of the landscape approach and the global political commitment to Forest Landscape Restoration (FLR)

to support the Bonn Challenge (in terms of hectares). At the Bonn meeting, the GPFLR also launched the “Landscapes of Opportunity” map, generated by WRI, IUCN and South Dakota State University (Laestadius et al. 2011; Laestadius et al. 2015). The map indicates more than 2 billion ha of restoration opportunities globally, with more than 1.5 billion ha best suited for mosaic-type restoration and another 0.5 billion for conventional wide-scale forest restoration (Laestadius et al. 2011; Laestadius et al. 2015). Hence, the 150 million ha goal represents only a small fraction of the areas suitable for restoration globally (Laestadius et al. 2011; Laestadius et al. 2015).

Over the years, more countries have joined the Bonn Challenge. Many of them made the commitments either during one of the high-level Bonn Challenge meetings or the annual Conference of Parties (COP) to the UNFCCC. The initial Bonn Challenge target mark (150 million ha) was passed in May 2017 when four Asian countries, including Indonesia, made pledges at the Asia Pacific Regional Ministerial Meeting in Palembang, bringing the total pledgers to 44 entities (Abdullah 2017; Asmani 2017; IUCN 2017; Restore Plus 2017). However, this initial Bonn Challenge target was also previously expanded and extended to restoring 350 million ha by 2030 during the New York Declaration on Forests at the 2014 UN Climate Summit (Abdullah 2017; Asmani 2017; IUCN 2017; Restore Plus 2017). Although non-binding and non-mandatory, the Bonn Challenge has become a vehicle for many countries to help implement the national priorities, such as water and food security, while at the same time contributing to the achievement of international commitments. By joining the initiative, the committing entities show political leadership and a profile that can be capitalized on in the global policy arena, which might provide opportunities in terms of technical and financial support to implement programmes. In 2018, the Annual GLF (Global Landscape Forum) pledged to restore more than 13 million ha annually to achieve the varied commitments under the Bonn Challenge. In the following year, the main goals of the Annual GLF Forum of 2019-2021 were to improve the lives of indigenous people and create a productive, prosperous, equitable, resilient and sustainable landscape. Over the years, the Bonn Challenge has also been supported by the presence of regional collaboration platforms, such as WRI-led AFR100 in Africa and 20x20 in Latin America and international initiatives, such as FAO FLR Mechanism and CBD Forest Ecosystem Restoration.

2.1 Landscape approach

The landscape component in the FLR refers to a much wider area under the landscape approach, since it covers not just restoration, but also other land-use based activities under various sectors for subsistent and commercial purposes, as well as for conservation and protected areas. Ideally, under the ‘Integrated Sustainable Landscape-based Approach’, synergy for a more coherent intervention at the landscape level could be promoted and implemented for improving productivity in conducting restoration. It is expected that restoration will be complemented with other programmes producing products and services on a scale beyond individual lands and other types of forest management units (Policy Working Group (PWG) in Sumbawa District 2016; Policy Working Group (PWG) in Timor Tengah Selatan District 2016; Kanoppi Project 2017). Further justification, applying a landscape approach to prevent large-scale deforestation is ultimately about encouraging land-use choices that retain forests for multiple purposes and optimize the productive capacity of the surrounding landscape (WWF 2002). This can combine protection of critical sites, locally controlled economic activities tailored to meet community aspirations, voluntary efforts to supply deforestation-free commodities, responsible forest management within production forests and REDD+ and other measures to secure payments for environmental services (WWF 2002).

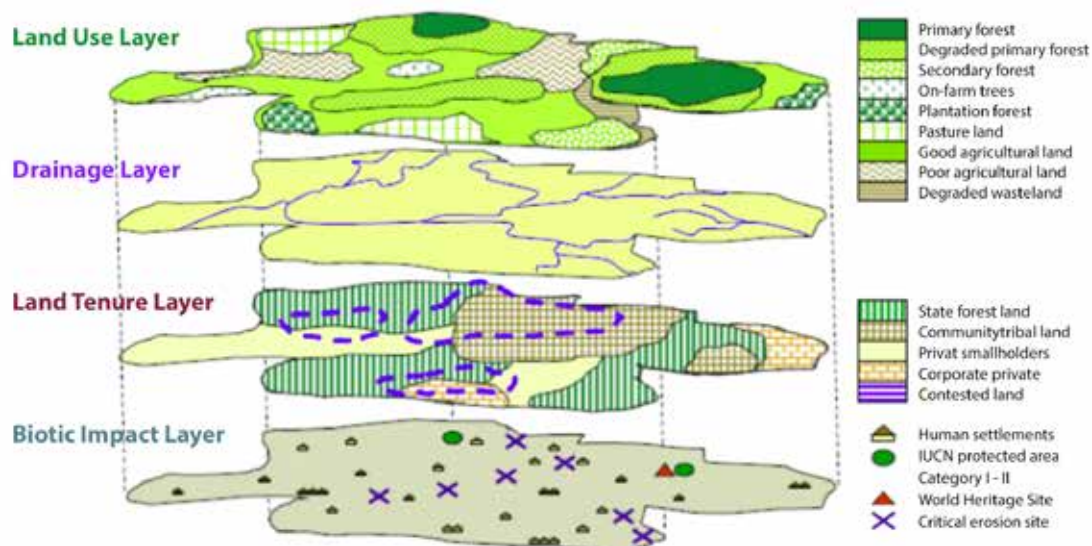
The landscape focus also allows FLR to look beyond returning to past visions and patterns of land use. The stakeholders at the landscape level will need to determine and prioritize the multiple objectives that can be achieved by restoration in their particular landscape, taking into account the uncertainties of climatic, economic and social changes (Laestadius et al. 2011). However, as with the ‘restoration’ terminology, a ‘landscape approach’ can be interpreted in various ways, which can cause problems making the implementation of FLR, on the ground, more complicated (see Table 1). Landscapes

are often seen as large-scale physical areas comprising overlapping ecological, social and economic activities and values (see Figure 2) (Chokkalingam et al. 2005). Landscapes are constantly changing mosaics and different, wherever they are, as they have different layers of land use, drainage, tenure and biotic impact. They generally have multiple functions, as they provide a variety of services to society such as biodiversity, food, water, shelter, livelihoods, economic growth and human well-being. All these services are interlinked; so, if the agricultural area in a landscape expands, it will have repercussions for the area covered by forests (National Working Group on Landscape Restoration in Indonesia 2009). This makes landscapes an ideal unit for planning and decision making, as it allows for the integration of various sector plans and programmes into one single spatial context and for a better understanding of trade-offs, options and scenarios around proposed decisions and desired outcomes (National Working Group on Landscape Restoration in Indonesia 2009).

Table 1. The interpretation of a ‘landscape approach’ by different scholars

Ten principles for the landscape approach (Sayer et al. 2013)	
With the main objectives to reconcile agriculture, conservation and other competing land uses, the ten principles are:	
1. Continual learning and adaptive management	6. Negotiated and transparent change logic
2. Common concern entry point	7. Clarification of rights and responsibilities
3. Multiple scales	8. Participatory and user-friendly monitoring
4. Multi-functionality	9. Resilience
5. Multiple stakeholders	10. Strengthened stakeholder capacity
The landscape approach aiming for conservation targets (WWF 2002):	
The basis on which to make landscape-level conservation decisions, stages and principles in the landscape approach includes:	
1. Our conservation targets: conservationists agree on a vision and approach	5. Reconciliation of options: stakeholders negotiate to agree a mosaic of land-uses, approaches, targets and indicators
2. Other expectations: stakeholder analysis to find out different parties’ expectations for the landscape-based conservation targets	6. Implementation: stakeholders implement agreed management actions
3. Landscapes: identify our ‘conservation landscape’ and other peoples’ ‘landscapes’ in the area	7. Monitoring and evaluation: targets and vision are monitored and evaluated and adapted as needed
4. Performance and potential: work with stakeholders to assess opportunities, potential and scenarios on how to identify the landscape functions	
Using the landscape approach for disaster risk reduction, stages and principles include (CARE Nederland and Wetlands International 2017):	
1. Carry out an initial assessment of the landscape at risk	4. Conduct a collaborative, in-depth problem and solution analysis
2. Conduct an in-depth stakeholder analysis and power mapping	5. Carry out collaborative (action) planning
3. Stimulate multi-stakeholder processes and create coalitions of the willing	6. Organize collaborative implementation
	7. Promote adaptive management
Important principles in FLR (IUCN and WRI 2014):	
1. Focus on landscapes	6. Tailor to local conditions
2. Restore functionality	7. Avoid further reduction of natural forest cover—reasons for better synergy at the broader landscape level management
3. Allow for multiple benefits	
4. Leverage a suite of strategies	8. Adaptively manage
5. Involve stakeholders	

Sources: WWF (2002); CARE Nederland and Wetlands International (2017); Sayer et al. (2013); and IUCN and WRI (2014).



Sources: Lamb (2015) in Chokkalingam (2016)

Figure 2. Landscapes are constantly changing mosaics and layers of land-uses, drainage, tenure, and biotic impacts

Linking the landscape approach with FLR, the landscape-scale approach should enhance the contribution of site-based restoration for larger-scale processes and functional synergies (Schulz and Schröder 2017). A fundamental challenge for FLR is therefore to identify restoration areas within the landscape where multiple functions, operating on different scales, can be enhanced (Schulz and Schröder 2017).

2.2 Indonesia's commitment to Forest Landscape Restoration (FLR) and a landscape approach

Indonesia's first Nationally Determined Contribution (NDC), published in November 2016, contains several lines related to FLR. This document, which was submitted to UNFCCC, outlines Indonesia's post-2020 climate actions under the Paris Agreement. Based on the country's most recent level of emissions assessment, Indonesia has set an unconditional carbon emission reduction target of 29% and conditional reduction target of up to 41 % of the Business-As-Usual (BAU) scenario by 2030 (The Republic of Indonesia 2016)¹. To achieve these targets, Indonesia is employing a suite of strategies, including those in the forests and land use sector. The strategies include restoring ecosystem functions and sustainable forest management, which include social forestry through active participation of the private sector, small and medium enterprises, civil society organizations, local communities and the most vulnerable groups (The Republic of Indonesia 2016). Social forestry has often been viewed as compatible with FLR given its goal to improve people's livelihoods while at the same time protecting the environment². Further, the document also acknowledges that a landscape-scale and ecosystem management approach is critical to achieve the national targets, suggesting that the principles of FLR are inherently contained in the document (The Republic of Indonesia 2016). Note that FLR is also very much compatible with the Sustainable Development Goals related to climate change, e.g., Goal 13 on Climate Action and Goal 15 on Life on Land.

¹ In 2021, the Government of Indonesia (GoI) released the new document on Long-Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR 2050) that sets the goal of adaptation pathways to reduce the impact of climate change on national GDP loss by 3.45% in 2050 (The Government of Indonesia 2021b).

² See more: <https://www.recoftc.org/press-releases/asean-working-group-social-forestry-calls-strengthening-livelihoods-and-commercial>

The NDC's scenarios for carbon emission reduction also contain some specific assumptions regarding FLR activities in Indonesia. For example, one of the assumptions made for the most ambitious targets is that by using the 90% of the survival planting rates, the targets are to reach two million hectares under peatland restoration and 12 million ha of rehabilitated unproductive lands by 2030 (The Republic of Indonesia 2016). This indicates the importance of the expected contribution of FLR to Indonesia's NDC, which have already been included in the National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional–RPJMN*). The real challenge lies in translating the NDC into real action programmes on the ground. There have been some presidential and ministerial regulations that would support Indonesia's FLR efforts, but they need to be strengthened with derivative regulations (e.g., technical guidelines), sufficient funding and capable human resources. The restoration commitments in Indonesia's NDC also need to be detailed in both the National and Local Mitigation Action Plan on the reduction of greenhouse gas emissions.

Indonesia is a member of the United Nations Convention to Combat Desertification (UNCCD). Initially, the Convention emphasized the need to coordinate action programmes for combating desertification and to promote a new approach to managing dry-land ecosystems. However, in the past few years, the Convention has shifted its focus to efforts to achieve land degradation neutrality, which promotes a dual-pronged approach of avoiding or reducing land degradation and reversing past degradation. The country's National Action Program for Combating Land Degradation in Indonesia was published in 2002, four years after Indonesia ratified the convention. The focus of the action plan is directed at solving land degradation in the driest provinces in Indonesia, namely East Nusa Tenggara, West Nusa Tenggara and Central Sulawesi. Unsurprisingly, the document outlines various FLR approaches suitable for those provinces, ranging from agroforestry to rehabilitation through agropastoral and silvopasture development (The Republic of Indonesia 2002). Given the shift in the UNCCD focus, the Directorate General of Watershed and Protected Forest Management within the Ministry of Environment and Forestry (as the country's UNCCD National Focal Point) has also broadened the focus of the discourse related to UNCCD. While the country has not submitted an updated version of the National Action Program, the Directorate General has linked its efforts to rehabilitate 'critical' land with efforts to achieve land degradation neutrality (Public Relations Bureau 2017; UNCCD 2017).

Indonesia has been an active participant in the United Nations Convention on the Biological Diversity (UNCBD) process, including making contributions to biodiversity targets set by the UNCBD. In 2010, the UNCBD initiated a strategic plan consisting of 20 new biodiversity targets for 2020, termed the 'Aichi Biodiversity Targets' (Convention on Biological Diversity 2010). Several of the targets are directly related to FLR, such as Target 14 ("restoring and safeguarding essential ecosystem services benefiting the poor and vulnerable") and Target 15 ("enhancing ecosystem resilience and contributing to climate change mitigation and adaptation by conserving & restoring forests") (Convention on Biological Diversity 2010, 2). The two documents that were submitted by the Government of Indonesia to the UNCBD specifically describe how Indonesia could achieve these two targets. In the fifth national report to the CBD, the Ministry of Environment and Forestry listed its restoration-related achievements, such as the acceleration of the Ecosystem Restoration Concession (ERC) policy and the extent (in terms of hectares) of tropical forest, mangroves, peatland and swamp rehabilitated or reforested (Ministry of Forestry 2014). The report also provides examples of restoration-related projects such as *Hutan Harapan* (Harapan Rainforest, an ERC managed by PT *Restorasi Ekosistem Indonesia–REKI*) in Jambi and a mangrove green belt development initiated by a local community in *Brebes*, Central Java (Harapan 2021). The Indonesian Biodiversity Strategy and Action Plan 2015-2020 also reaffirms the government's commitment to restoration (The Ministry of the National Development Planning 2016). In addition to strategies related to planting and strengthening the ERC policy, this document also mentions the importance of Indonesia's botanical gardens in providing the genetic biodiversity that could support the restoration of ecosystem functions.

The Bonn Challenge, which aims to restore 150 million ha of the world's deforested and degraded lands by 2020 and 350 million ha by 2030, is intended as an implementation platform of the UNFCCC carbon emission reduction goal, the UNCCD land degradation neutral goal and the UNCBD Aichi Target 15.

Box 1. Bonn Challenge Case in Indonesia: lessons learnt in translating the global to national commitment

As stated by the Directorate General of Social Forestry and Environmental Partnership on behalf of the Minister of Environment and Forestry during the opening of the Asia Bonn Challenge High Level Roundtable Meeting in Palembang, South Sumatra (in May 2017), the Indonesian Government remains engaged in the Bonn Challenge process, although no official Bonn Challenge pledge has been announced yet by the Government of Indonesia. “Indonesia is keen to collaborate with the Bonn Challenge because the programme is in line with our programme in terms of conservation, rehabilitation and ecosystem restoration in degraded forests or primary forests and peatlands. We are hosting this event to encourage countries in Asia to share their experiences with restoration and learn from each other,” said Dr. Hadi Daryanto, Director General of Social Forestry and Environmental Partnership (IUCN 2017).

For the Bonn Challenge event in Palembang, which was co-hosted by the Ministry of Environment and Forestry and the Government of South Sumatra in coordination with IUCN; the Government of South Sumatra acted as a primary driver. The Governor of South Sumatra, Alex Noerdin, views restoration as integral to his ‘Green South Sumatra’ vision, which emphasizes the multi-stakeholder Public-Private-People-Partnerships (the four P concept) of landscape management in South Sumatra. Governor Noerdin presented this vision at a Bonn Challenge Roundtable Meeting in Bonn in 2015. A year later, he was also invited to the 2016 Bonn Challenge Latin America Meeting in Panama (Asmani 2017). During this meeting, it was announced that South Sumatra would host the first Bonn Challenge Meeting for the Asia region the following year. At the Palembang Bonn Challenge, Governor Noerdin reaffirmed South Sumatra’s commitment to restore 400,000 ha of degraded land by 2020 as its contribution to the Bonn Challenge (Saragih 2017). However, this commitment was not counted as an official Bonn Challenge pledge.

Also in attendance at the Asia Bonn Challenge High-Level Roundtable Meeting were International Institute for Applied Systems Analysis (IIASA), ICRAF (World Agroforestry) and WRI to represent the RESTORE+ Consortium. This initiative encouraged national commitment and pledges to bring concrete restoration implementation to the group to a national priority level and to formulate strategies for ecosystem restoration activities in Sumatra. These activities contribute to the Bonn Challenge by enhancing land use planning capacity for effective FLR planning to achieve multiple goals for environmental and social benefits. The tree planting activity on a restoration site in *Sepucuk* Village, South Sumatra preceded (Restore Plus 2017).

The only official Bonn Challenge pledge from Indonesia came from Asia Pulp and Paper (APP). In December 2015, APP’s commitment to restore 1 million ha of degraded land was officially registered as the first Bonn Challenge commitment. However, given APP’s chequered history and reputation in terms of environmental issues, many national and local CSOs (Civil Society Organizations) viewed APP’s commitment with scepticism. Some consider the commitment a form of green washing (Abdullah 2017). Indeed, during the Bonn Challenge event in Palembang, several South Sumatran CSOs protested the involvement of APP in the event (Hicks 2017).

Several Indonesian CSOs have also encouraged the Indonesian Government to make an official pledge to the Bonn Challenge as one of the implementation platforms for the many environment-related international commitments it has previously made, in the hope that a pledge could lead to greater technical and funding support for FLR implementation in Indonesia. In 2015, the Indonesian Conservation Communication Forum (*Forum Komunikasi Konservasi Indonesia–FKKI*) hosted a meeting in Jakarta to discuss the potential for a Bonn Challenge pledge from Indonesia at the 2015 UNFCCC COP in Paris (Kosasih 2015). Representatives from some of the CSOs, who are members of FKKI, also attended meetings organized by the Ministry of Environment and Forestry held to discuss Indonesia’s position on the Bonn Challenge ahead of the Palembang Bonn Challenge event (Ministerial meeting at the Ministry of Environment and Forestry, 29 November 2016). After several consultation meetings, the Ministry came up with a draft roadmap for FLR as a contribution to the Bonn Challenge, which contains figures (in terms of hectares) that could potentially be announced as a pledge (Director General Forestry Planning and Environmental Management, personal communication, 5 January 2017). However, this draft roadmap was not finalised, and no official pledge has been made yet.

Sources: Kosasih (2015); Abdullah (2017); Asmani (2017); Hicks (2017); IUCN (2017); Saragih (2017); and Restore+ (2017)

While the Indonesian Government has been engaging with the Bonn Challenge process (see Box 1), the government has not formally made a Bonn Challenge pledge yet. However, as previously discussed, the Indonesian Government has outlined its FLR-related commitments in its reports or documents to UNCBD, UNCCD and UNFCCC. These FLR-related commitments are linked to the existing goals and policies of the Ministry of Environment and Forestry. If the Government of Indonesia were to make a pledge to the Bonn Challenge, all these measures related to FLR can be capitalized on to make a bold pledge.

In addition to the Bonn Challenge, which is global in nature, a regional initiative on FLR also exists. In 2007, APEC countries set a target of increasing forest cover in the Asia-Pacific by 20 million ha by 2020. A progress review conducted by FAO in 2015 concluded that this target would almost surely be met (Asia Pacific Forestry Commission 2007). In the last regional meeting in 2017 to discuss the progress and follow-up of this regional initiative, which was also attended by representatives from the Government of Indonesia, countries were encouraged to link existing and planned restoration activities to the Regional Strategy and Action Plan for Forest and Landscape Restoration in the Asia-Pacific developed by FAO in collaboration with the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet), IUCN and WRI.

3 Existing programs and policy frameworks: challenges towards synergy and complementary activities at the landscape level

3.1 Government related programmes for forest recovery and their characteristics³

The Indonesian Government plans to meet its commitment to restore 22.6 million ha through various programmes. These include: (1) Social Forestry Programme (12.7 million ha); (2) Forest and Land Rehabilitation (5.5 million ha); (3) Partnerships (1.6 million ha); (4) Ecosystem Restoration (2.8 million ha) and CSR (Corporate Social Responsibilities) Programmes with no clear targeted areas as yet (Ministry of Forestry 2014; Ministry of Environment and Forestry 2019; Ministry of Environment and Forestry 2021b). Specifically, the main government forest recovery programmes are to include forest restoration, ecosystem restoration, FLR, rehabilitation (of forest and land), reclamation of forest and mining. An overview is presented in Table 2.

As discussed at the beginning of this paper, most of the government programmes have been developed in isolation and with a minimum of inter-sectoral coordination. We have conducted a policy analysis to review the existing regulations and programmes as tools to support forest recovery strategies through FLR under an integrated approach. In the review, we discuss the overarching regulatory framework that could potentially support the FLR approach and practices with greater public participation. For example, this could be through the Social Forestry (SF) programme and partnership schemes under policy frameworks that support community participation.

Discussed below are the relevant overarching policy frameworks, which could help to mainstream the landscape approach as an important component to ensure effective implementation of FLR. We identified at least four management approaches that are important in leading to landscape-based oriented approaches in the forestry-related sectors in Indonesia. These include:

1. Forest Management Unit Model–FMU (*Kesatuan Pengelolaan Hutan–KPH*)
2. Integrated Watershed Management Approach (IWMA)
3. One-Map Policy (*Kebijakan Satu Peta*)
4. Policy frameworks supporting community participation.

3.1.1 Forest Management Unit–FMU (*Kesatuan Pengelolaan Hutan–KPH*)

This section discusses three stages of the Forest Management Unit (FMU/*Kesatuan Pengelolaan Hutan–KPH*) development: firstly, as a concept introduced in the late 1990s; secondly, as the forefront management model in Indonesia after the enactment of Law No. 23/2014 and thirdly, in the recent transition period following the implementation of the Omnibus Law in 2020, which includes the forestry sector.

Forestry Law No. 41/1999 introduced the concept of managing the state forest through a national system of a locally based FMU model, to achieve the objective of sustainable forest management made

3 See Chapter 2 for more detailed regulatory framework

Table 2. Main government forest recovery programmes

Forest recovery programmes and targeted areas	Recovery indicators	Utilization of the products and time frame	Main approaches and objectives	Coordinating agencies	Arrangement for implementation
1. Restoration					
a. Ecosystem Restoration Concession (ERC) Targeted areas: Degraded areas in Production Forest (<i>Hutan Produksi</i>)	Achieved forest balance in ecosystem and biodiversity: function, productivity, structure and composition	Utilization of the products: no harvesting is allowed Time frame: long-term	Restoring degraded production forest to restore the ecosystem balance	The Directorate General of Sustainable Production Forest Management	Coordination with the Directorate General of Planology is important to prevent the overlapping of granted permits
b. Peatland Restoration Targeted areas: In all forest categories	Burned peatlands restored (in 2015)		Restoration of burned peatlands, especially in 2015	Peatland Restoration Agency (<i>Badan Restorasi Gambut</i>)	Local Peatland Restoration Team (<i>Tim Restorasi Gambut Daerah</i>)
c. Mangrove ecosystems Targeted areas: Mostly protected forest	Prevented coastal abrasion and erosion and the mitigation of tsunami hazards		Prevent coastal abrasion and erosion and mitigate tsunami hazards	The Directorate General of Watershed Management and Protected Forests through the field-based implementing units (36), and two of Forest Plant Seed Centres	In coordination with the Ministry of Marine Affairs and the Indonesian Institute of Sciences
d. Restoration of conservation areas Targeted areas: Protected forest, conservation forest and nature reserves	Well maintained biodiversity		Ensure biodiversity is well maintained	The Directorate General of Natural Resources and Ecosystem Conservation	Field-based implementing management units implementing reforestation: Natural Resources Conservation Agency, National Parks, Wildlife Reserves, Nature Reserves, Grand Forest Parks and other field-based units

Table 2. Continued

Forest recovery programmes and targeted areas	Recovery indicators	Utilization of the products and time frame	Main approaches and objectives	Coordinating agencies	Arrangement for implementation
2. Rehabilitation					
a. Reforestation Targeted areas: In all forest categories	Improved function and productivity	Utilization of the products: Harvesting is allowed Time frame: Short to medium-term	Rehabilitation of degraded areas	The Directorate General of Watershed Management and Protected Forests, through field-based implementing units	In coordination with the Directorate General of Social Forestry and Environmental Partnership for reforestation in production forests, customary forests and village forests
b. Afforestation Targeted areas: Community-owned land (outside state forest)	Planted and improved productivity		Rehabilitation of degraded areas	Community manages the areas (individually or in a group), with or without partnerships	In coordination with the Directorate General of Watershed Management and Protected Forests (DASHL) through the field-based implementing units In coordination with local government at all levels
3. Mining reclamation					
Targeted areas: Production forest, limited production forest and areas for other uses	Improved productivity by restoring, and improving the quality of the environment and ecosystem	Utilization of the products: Harvesting is allowed Time frame: Long-term	Organize, restore, and improve the quality of the environment and ecosystem to regain full and natural function	Ministry of Energy and Mineral Resources	In coordination with the Ministry of Environment and Forestry in cooperation with local government according to their respective authority under the supervision of the Ministry of Energy and Mineral Resources

explicit in this law. The process of transforming forest management had initially been introduced in Government Regulation No. 44/2004 on forest management planning. A new system was then stipulated in Government Regulation 6/2007 and its amendment, Government Regulation No. 3/2008 on the development of management planning and its utilization (The Government of Indonesia 2004; The Government of Indonesia 2007). The 120 model FMUs were then supported during the period 2010-2014. The transformation has continued and was included in the National Medium Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional–RPJMN*) for 2014-2019, with the development of FMUs and a total target of 600 FMUs across the country. One FMU would manage a forest area within one district boundary under the authority of the District Forestry Agency. If managing areas across two different district boundaries, the FMU was under the authority of the Provincial Forestry Agency.

According to Government Regulation No. 6/2007, there are three major categories of FMUs following the forest classification system (*Tata Guna Hutan Kesepakatan-TGHK*) that have been the basis for land use permits under the Ministry of Forestry since 1981 (The Government of Indonesia 2007). Under the *TGHK* system, state forests have been divided into: (1) permanent production forest; (2) protection forest and conservation forest and (3) forest that can be administratively converted to non-forest uses. According to the latest official data, there are 678 FMUs responsible for forest management in production, protection and conservation forests (Ministry of Environment and Forestry 2021a). As the basis for potential landscape-based forest restoration, one FMU could manage two different forest categories, such as production and protection forests with complementarity management. The legitimization of forest access granted to FMUs must be implemented through a system of permits. As part of implementing the forest recovery programme, a permit is granted through the Forest Products Utilization Business Permit (*Izin Usaha Pemanfaatan Hasil Hutan Kayu–IUPHHK*), which is a permit granted to utilize timber forest products in natural forests or in plantation forests inside production forests. This could be part of the forest restoration programme⁴.

After the enactment of Law No. 23/2014, FMUs were given more significant roles in managing forests on the ground, under the direct supervision of the Provincial Environment and Forestry Agency (Putro and Nawir 2016). The FMUs were no longer under the coordination of the district government due to the recentralisation of forest management. The authority was moved to the provincial government. The FMUs have a lot of responsibility in coordinating and implementing various restoration and other activities on the ground (Kartodihardjo et al. 2011; Takwim and Syafii 2018; Ichsan 2021).

Moving towards the operationalization of FLR, the FMU can loosely be interpreted as a landscape platform with a certain ecological function. The aim of this landscape platform is conservation, rehabilitation and economic stability where sociocultural activities can be complementary in addressing ecological problems. Through an integrated management approach, the landscape platform encourages interaction between key stakeholders, including local communities, where resources can be managed, and conflicts resolved in a collaborative and participative manner. However, there have been identified challenges to the optimization of FMU-based forest landscape management. For example, the results of the KANOPPI Study (2019) in reviewing the FMU performance, in Sumbawa, highlights three main factors that still hamper the FMU forest management: low organizational capacity, regional stability is not optimal and information systems and cooperation have not been effective or efficient (Takwim and Syafii 2018). This has implications for forest restoration that has been carried out so far, which has not been optimal and has tended to be less integrated with other similar programmes at the district and village levels. There are success stories as well, for example, the case of the Yogyakarta FMU implementing reforestation in protection forest in partnership with a local cooperative, while contributing to the provincial government's revenues.

4 This system had been reviewed as a part of the DANIDA-ESP Project (Davie, James, and Muhammad Ridwansyah 2016 *op cit.*)

With these mixed results in the implementation and many challenges that must be addressed, Law 11/2020 on Job Creation has unexpectedly been implemented (The President of Republic of Indonesia 2020). As declared by MoEF, the new law is a guide to the shifting paradigm in forest management, from product-based to landscape-based sustainable forest management, driven by an integrated socio-ecological system as the framework (Hendroyono 2021).

The main aim of the Job Creation Law, also known as the Omnibus Law, is to accelerate economic transformation through business investment. There are many regulations that are due to be deregulated. The indication was that these regulations were a source of high transaction costs and obstacles preventing businesses from investing in Indonesia. In the forestry sector, there were at least 80 regulations revoked⁵ with the new released Government Regulation No 23/2021 (The Government of Indonesia 2021a), and the associated ministerial level regulations No. 7/2021 and No. 8/2021 (The Minister of Environment and Forestry 2021b; The Minister of Environment and Forestry 2021a). As a consequence, the roles and responsibilities of the FMUs have been reviewed and redefined under these new regulations, from the manager of the Technical Implementation Units (*Unit Pelaksana Teknis*) to the facilitators and administrators in forest management (Article No. 123 of Government Regulation No. 23/2021) (Ichsan 2021; Kartodihardjo 2021). Table 3 below, summarises and explains the statutory mandate of the inter-related Forestry Law No. 41/1999 and the Omnibus Law as the basis for regulating the roles and responsibilities of FMUs, including implementing forest rehabilitation and forest restoration. Under the enactment of the Omnibus Law currently there are at least 20 FMU-related regulations at all levels being eliminated.

As shown in Figure 3, (Government Regulation No. 23/2021) FMUs are responsible for the implementation of forest management, including management planning, organization, management implementation, research and development, education and training, forestry extension, and control and supervision (Article No. 40). As facilitators, the FMUs are no longer an entity that can directly utilize the forest resources. All forms of forest utilization can only be implemented through the holders of Business Permits for Forest Utilization (*Perizinan Berusaha Pemanfaatan Hutan-PBPH*), and the holders of management rights under Social Forestry Schemes. Under Law No. 23/2014, the FMUs are also responsible for: forest inventories (Article No. 10), improving national and provincial forest management systems (Article No. 39), aligning business interests in timber utilization with Long-Term Forest Management Planning (*Rencana Pengelolaan Hutan Jangka Panjang*) (Article No. 145), verification of survey results on forest potential conducted by business permit holders (Article No. 128), monitoring and implementing forest fire suppression (Article No. 256) and carrying out forest rehabilitation (Article No. 259) (Ichsan 2021; Kartodihardjo 2021).

However, since the FMU is the Regional Technical Implementation Unit (*Unit Pelaksana Teknis Daerah-UPTD*) the provincial government must fund most of the FMU activities. This is particularly difficult for the provincial government with a limited allocated budget from the national government. On the other hand, there are limited options for FMUs to generate revenues for the provincial government. As regulated in Government Regulation No. 23/2021, one opportunity comes from the non-taxable government revenues from the holders of Business Permits for Forest Utilization, or other holders of forest management rights, after the governor grants the permits. It is expected that the forest rehabilitation, restoration and reclamation could be implemented effectively by third parties under the coordination of FMUs. This is particularly difficult to understand when we take into consideration the FMUs' current roles and responsibilities as facilitators, not as forest managers, in the designated forest areas under FMU responsibility.

5 M. Riadhussyah - Faculty of Law, Mataram State Islamic University (personal communication, 12 January 2022)

Table 3. Current and relevant regulations on Forest Management Units (FMUs/ *Kesatuan Pengelolaan Hutan–KPH*)

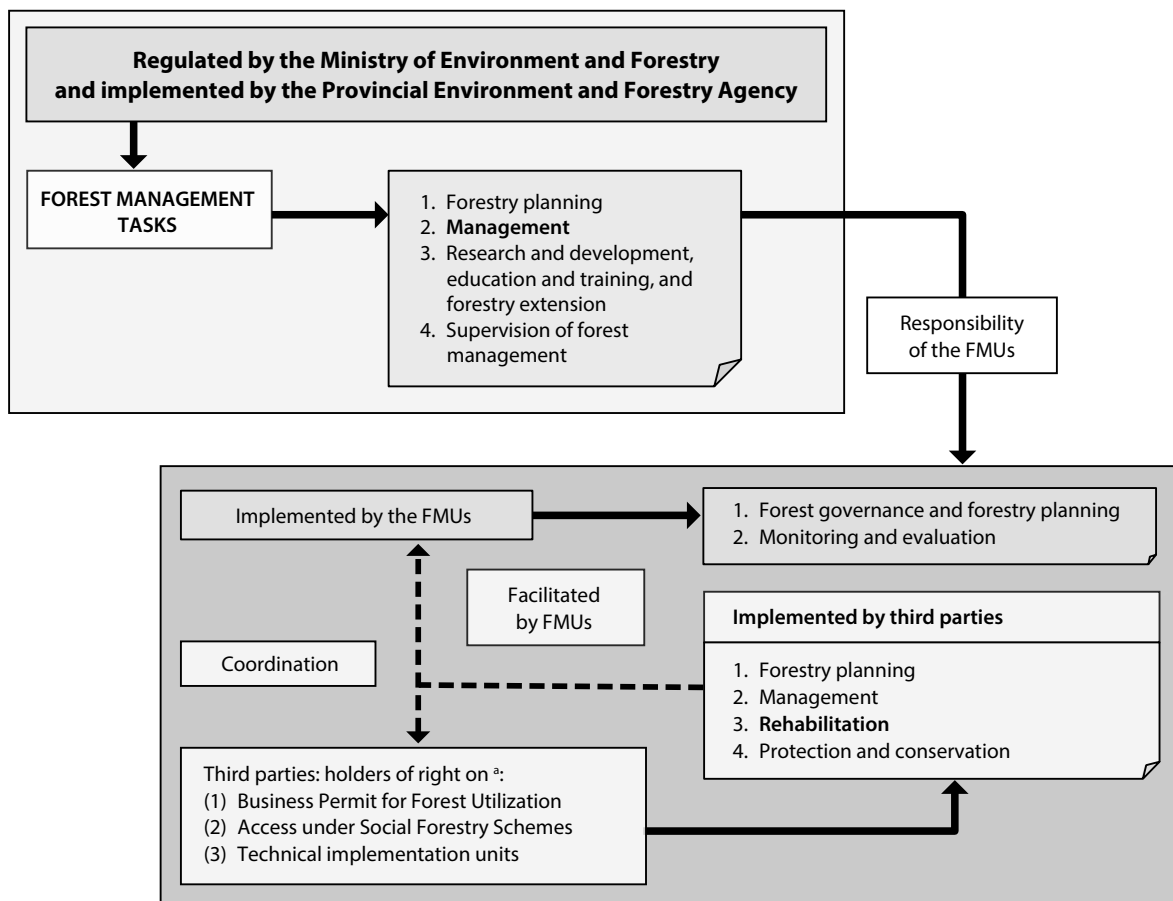
Statutory mandate	Contents and aims
The Forestry Law No. 41/1999	Basic law underlying the formulation of existing regulations on forest management were still being applied at the time this document was written
The Law No. 23/2014	Law on recentralised governance of forestry authority passed to the provincial government
The Job Creation Act No. 11/2020	Aims to invite business investment, to create new jobs and stimulate the country's economy
Regulations	Contents
1. New regulations after the enactment of the Omnibus Bill on Job Creation (Law No. 11/ 2020)	
Government Regulation No. 23/2021 ^a	Forestry management
The Minister of Environment and Forestry Regulation No. 7/2021	Forestry planning, alteration and function changes of forest areas and the use of forest areas
The Minister of Environment and Forestry Regulation No. 8/2021	Forest management and development of a forest management plan and forest utilization in protected forests and production forests
2. Regulations are still being applied if they are not in conflict with Government Regulation No. 23/2021	
The Minister of Forestry Regulation No. 41/2011	Facilitation standards of facilities and infrastructure for Protection and Production Forest Management Unit (FMU) Models
The Minister of Forestry Regulation No. 42/2011	Competency standards for the Forestry Technical Sector in Protection and Production FMUs
The Minister of Forestry Regulation No. 46/2013	Procedures for long-term forest management plan ratification for Protection and Production FMUs
The Directorate General of Forestry Planology Regulation No. P.5/VII-WP3H/2012	Technical procedures for forest management and forest management planning document development in the Protection and Production FMUs
The Minister of Environment and Forestry Regulation No. 33/2015	Guidelines for nursery development in FMUs

Notes:

a. Replacing:

- (1) The Government Regulation No. 6/2007 Jo. Government Regulation No. 3/2008 on the Development of Management Planning and its Forest Utilization.
- (2) The Government Regulation No. 44/2004 on Forest Management Planning.

Sources: The President of Republic of Indonesia (1999); The Minister of Forestry (2011a); The Minister of Forestry (2011b); DG Forestry Planology (2012); The Minister of Forestry (2013c); The President of Republic of Indonesia (2014b); The Minister of Environment and Forestry (2015); The President of Republic of Indonesia (2020); The Government of Indonesia (2021a); The Minister of Environment and Forestry (2021b); The Minister of Environment and Forestry (2021a)



^a Notes:

- (1) Business Permit on Forest Utilization or *Perizinan Berusaha Pemanfaatan Hutan (PBPH)*
- (2) Access under Social Forestry Schemes or *Pengelolaan Perhutanan Sosial (PPS)*
- (3) Technical implementation unit or *Unit Pelaksana Teknis (UPT)*

Sources: Adapted from Ichsan (2021)

Figure 3. Government Regulation No. 23/2021: Forest Management Units (FMUs) in transition under the Law on Job Creation

3.1.2 Integrated Watershed Management Approach (IWMA)

The IWMA is another overarching policy framework that we would assume has the potential to stimulate the landscape approach. This has been promoted as a key to effective natural resource management, particularly in developing countries where millions of people rely on natural resources for their livelihoods (FAO 1986; Poudel 2003; Pravongviengkham et al. 2003; Baloch and Tanik 2008; Darghouth et al. 2008a; Pratiwi et al. 2013). The FAO (1986, 107) defines watershed management as: “*The process of formulating and carrying out a course of action involving manipulation of natural, agricultural and human resources on a watershed to provide resources that are desired by and suitable to society, but under the condition that soil and water resources are not adversely affected. Watershed management must consider the social, economic and institutional factors operating inside and outside the watershed*”. In the 1970s, IWMA emphasized technologies such as managing soil and water resources (Tennyson 2003; Darghouth et al. 2008a) (Tennyson 2006; Darghouth et al. 2008b). Challenges in the protected water source areas and its impacts indicate the value generated for the community both in the surroundings and environment (Watson et al. 2014; Cumming 2016). Since the late 1990s, the approach

has been more inclusive and includes multiple environmental, economic, social, institutional and policy aspects and participatory approaches (Achouri 2003; Achouri 2006). While technical solutions may be replicable, participatory approaches must be tailored to local conditions (Tennyson 2006).

In Indonesia, IWMA was identified as important for rural development in the 1970s, but it was not successfully adopted. The Government of Indonesia (GoI) singled out IWMA as a priority strategy as included in Government Regulation PP No. 37/2012. The Ministry of Forestry (MoF) adopted this approach to manage 2.5 million ha of degraded forest lands in 108 watersheds (Pratiwi et al. 2013). Despite GoI's commitment, successful examples of implementation are few; ineffective implementation of the guidelines have had limited success (Pratiwi et al. 2013). The IWMA requires inter-sectoral coordination supported by clear institutional arrangements; watersheds fall under the authority of various agencies and natural borders span boundaries of different districts. Technically, the Agency for Watershed Management (*Balai Pengelolaan Daerah Aliran Sungai-BPDAS*) is responsible for providing regional coordination. However, this agency needs to strengthen capacity beyond technical knowledge and to proactively steer inter-sectoral coordination (Stern 2012).

Based on Presidential Regulation No. 16/2015, this has become the Directorate General of Watershed Control and Protected Forest (*Direktorat Jenderal Pengendalian DAS dan Hutan Lindung*) under the combined Ministry of Environment and Forestry. This represented a streamlining of the issue, as they were under the Directorate of Land and Forest Rehabilitation and Social Forestry (DG Forest and Land Rehabilitation and Social Forestry 2003; The Forest Planology Agency 2004). According to this presidential regulation, the directorate focusing on watershed has the task of organizing the formulation and implementation of policies in increasing the carrying capacity of watersheds and protected forests. As shown in Table 4, recent watershed management approaches have been mainly regulated under at least four major categories: management, baseline development, forum and community empowerment and institutional arrangements. The least regulated aspects were on forum and community empowerment.

The lack of a synchronized policy and legislation framework at the landscape level has been identified as major obstacles to IWMA. Watersheds comprise a variety of landscapes and functions from nature reserves to commercial agriculture overseen by various agencies. Community access and rights also vary from upstream (e.g., protected forests) to downstream (privately owned). The main challenge is to design policies and regulations for integrated management and incentives to compensate communities downstream.

Table 4. Recent regulations with regards to watershed management

Regulations	Contents
1. Streamlining the Integrated Watershed Management Approach (IWMA)	
Government Regulation No. 37/2012 ^a	Integrated Watershed Management Approach (IWMA)
Presidential Regulation No. 16/2015	Ministry of Environment and Forestry on the formation of a specific Directorate General of Watershed Control and Protected Forests (<i>Direktorat Jenderal Pengendalian DAS dan Hutan Lindung</i>)
2. Watershed management plans, technical guidelines, monitoring and evaluation	
The Minister of Forestry Regulation No. 60/2013	Procedures for developing and determining the plans for watershed management
The Minister of Forestry Regulation No.61/2014	Monitoring and evaluation of watershed management
The Minister of Environment and Forestry Regulation No. 89/2016	Planting guidelines for permit holders for temporarily utilizing state forests for implementing watershed rehabilitation
The Minister of Environment and Forestry Regulation No. 59/2019	Planting for Watershed Rehabilitation
2. Baselines: watershed classification, boundaries, spatial data on critical lands	
The Minister of Forestry Regulation No. 59/2013	Procedures for determining watershed boundaries
Directorate General of Management of Watershed Area and Social Forestry No. 3/2013	Guidelines for identifying the characteristics of watersheds
Directorate General of Management of Watershed Area and Social Forestry No. 4/2013	Technical guidelines for preparing the spatial data on critical lands
Directorate General of Management of Watershed Area and Social Forestry No. 5/2013	Technical guidelines for the electronic system of watersheds
The Minister of Forestry Regulation No. 60/2014	Criteria for determining the classification of watersheds
The Minister of Environment and Forestry Regulation No. 67/2014	Information system of watershed management
3. Forum and community empowerment	
The Minister of Forestry Regulation No. 61/2013	Coordination forum in watershed management
The Minister of Forestry Regulation No. 17/2014	Procedures for community empowerment in the activities of watershed management
4. Institutional arrangements: watershed management and research agency on technical aspects	
Minister of Environment and Forestry Regulation No. 10/2016	Organisation and working procedures of the agency responsible for Watershed Management and Protected Forests
Minister of Environment and Forestry Regulation No. 23/2016	Organisation and working procedures of the Research and Development Agency for Forestry Technology in Watershed Management (<i>Balai Penelitian dan Pengembangan Teknologi Kehutanan Pengelolaan Daerah Aliran Sungai</i>)
Minister of Environment and Forestry Regulation No. 79/2016	Amendment to the Minister of Environment and Forestry Regulation No. P.10/Menlhk/Setjen/Otl.0/1/2016 on organisation and working procedures of the agency responsible for Watershed Management and Protected Forests

Sources:

DG Management of Watershed Area and Social Forestry (2013a); (DG Management of Watershed Area and Social Forestry (2013c); DG Management of Watershed Area and Social Forestry (2013b); The Government of Indonesia (2012); The Minister of Forestry (2013b); The Minister of Forestry (2013a); The Minister of Forestry (2013d); The Minister of Environment and Forestry (2014); The Minister of Forestry (2014a); The Minister of Forestry (2014b); The Minister of Forestry (2014c); The President of Republic of Indonesia (2015); The Minister of Environment and Forestry (2016a); The Minister of Environment and Forestry (2016b); The Minister of Environment and Forestry (2016); The Minister of Environment and Forestry (2019)

3.1.3 One-Map Policy

The One-Map Policy initiative has been one of the most important current policy frameworks in stimulating the operationalization of the landscape approach in Indonesia. Initially, the idea for developing the one-reference on geospatial information and database was to facilitate the implementation of the moratorium on granting new permits for natural primary forests and peatlands. This was based on the Presidential Instruction (*Instruksi Presiden–INPRES*) No. 10/2011 (Karsidi 2016). The specific indicative maps of the moratorium for new permits in these areas were attached to this INPRES, which has been extended multiple times and made permanent through another INPRES.

Referring to the Law No. 4/2011, the latest President of Indonesia Regulation No. 23/2021⁶ strengthens the One-Map Policy initiative by facilitating the production of multiple maps with detailed spatial information and high level of accuracy at a scale of 1: 50,000 (The President of Republic of Indonesia 2011; The Government of Indonesia 2021a). The main goal of the One-Map Policy is to synchronize the geospatial information development in the most integrated way, so that it can support national development, particularly the priority programmes in *Nawacita*⁷ (Karsidi 2016). The development of one-map has been led by the Geospatial Information Agency (*Badan Informasi Geospasial*)⁸, which released Regulation No. 15/2013 on the geospatial reference system for Indonesia and Regulation No. 15/2014 on the technical guidelines for developing thematic detailed and verified maps (Geospatial Information Agency 2013; The Head of the Geospatial Information Agency Regulation 2014). These maps should be based on one reference, one standard, one database and one set of geospatial data (Karsidi 2016).

A thematic map is a map that displays a specific theme and is intended for a specific interest (e.g. land status, population, transportation, etc.) using a simplified topography map as a basis for laying down the thematic information (Geospatial Information Agency 2013). The thematic maps will be used as layers in certain integrated thematic maps. There are 12 working groups leading the development of certain themes of maps. Each working group is led by a relevant ministerial agency (Karsidi 2016). These thematic groups and the coordinators consist of the following:

1. Water resources under the Ministry of Public Works
2. Coastal areas, seas and small islands under the Ministry of Marine Affairs and Fisheries
3. Resources for agriculture on peatland, under the Ministry of Agriculture
4. Monitoring the release of permits and changes in land cover and status, under the Geospatial Information Agency
5. Spatial mapping under the Geospatial Information Agency.
6. Ecoregion mapping under the Ministry of Environment and Forestry
7. Mapping of natural disasters under the National Disasters Mitigation Agency
8. Climate change under the Meteorology, Climatology, and Geophysical Agency
9. Transportation under the Ministry of Transportation
10. Socio-cultural aspects under the Geospatial Information Agency.
11. Natural resources accounting under the Ministry of Energy and Mineral Resources
12. Geospatial intelligence under the National Intelligence Agency

⁶ Replaced the previous President of Indonesia Regulation No. 9/2016.

⁷ *Nawacita* refers to a *Sanskrit* term for the nine priorities under the current government under President Jokowi and Vice President Jusuf Kalla: (1) returning the state to its task of protecting all citizens and providing a safe environment; (2) developing clean, effective, trusted and democratic governance; (3) developing Indonesia's rural areas; (4) reforming law enforcement agencies; (5) improving the quality of life; (6) increasing productivity and competitiveness; (7) promoting economic independence by developing domestic strategic sectors; (8) overhauling the character of the nation and (9) strengthening the spirit of 'unity in diversity' and social reform.

⁸ Formerly the *Badan Koordinasi Survei dan Pemetaan Nasional–Bakosurtanal* was an Indonesian non-ministerial government agency assigned to carry out government duties in the field of geospatial information.

The latest target aims to produce 158 thematic maps in 34 provinces by 2021, involving the coordination of 24 ministries and agencies based on the latest President of Indonesia Regulation No. 23/2021. Through this regulation and implementation, the One Map Policy seeks to encourage the use of geospatial information that leads to five action plans: (1) preparation and establishment of work mechanisms and procedures, (2) embodiment of Basic Geospatial Information-BGI (*Informasi Geospasial Dasar-IGD*) and Thematic Geospatial Information-TGI (*Informasi Geospasial Tematik-IGT*), (3) updating BGI and TGI, (4) optimization and synchronization of geospatial information data dissemination through the Geoportals Map Policy, and (5) synchronization by resolving cases of overlapping space utilization (Secretariat of the One Map Policy Acceleration Team 2021). From the list included in the agency website, up until early 2020, available thematic maps included geomorphology, land coverage, wetlands, conservation areas, potential protected areas, ecosystems, critical land, disaster risks, land resource accounting, water resource accounting, forest resource accounting, mineral source accounting, watershed and balance sheet integration. In 2021, maritime, disasters, land, economics, financial and licensing were added to the list of thematic maps.

A key process in developing the targeted maps has been the spatial-based analysis to identify potential conflicts between sectors. This occurred when one area became the subject of granted permits by at least two different sectors. Possible conflicts were identified between the following sectors: (1) forestry and mining; (2) forestry and the management rights given to plantations; (3) forestry and transmigration areas; (4) mining and plantations; (5) mining and transmigration areas; (6) plantations and transmigration areas; (7) forestry, mining and plantations; and (8) mining, plantations and transmigration areas. The One-Map Policy, with its integrated thematic maps as well as efforts to mitigate spatial-based potential conflicts between different critical sectors, is a promising initiative in moving the implementation of the landscape approach forward and advancing FLR in Indonesia.

3.1.4 Policy frameworks supporting community participation

Involving the surrounding communities in the management of production and conservation forests, through acknowledgement and management of community rights, serves as both a policy framework to support the landscape approach and regulatory tool for forest recovery strategies. Forest recovery strategies include rehabilitation, restoration and reclamation. Replacing Government Regulation No.6/2007, the latest legal frameworks, post Omnibus Law, facilitating community participation now refer to Government Regulation No. 23/2021 on Forest Management, and are further guided by the Minister of Environment and Forestry Regulation No. 9/2021 on Social Forestry Management.

In this section we discuss the policy framework under the National Social Forestry Programme (SF) with five schemes: (1) Community Forests (*Hutan Kemasyarakatan-HKm*), (2) Community Plantation Forests (*Hutan Tanaman Rakyat - HTR*), (3) Village Forests (*Hutan Desa*), (4) Customary Forests (*Hutan Adat*) and (5) Forest Partnerships (*Kemitraan*). We also discuss the collaborative management in protected areas through Community Conservation Partnerships (*Kemitraan Konservasi*) and partnerships between FMUs and local communities.

3.1.4.1 The National Social Forestry Programme (SF)

Communities have been minor players in the country's forestry sphere and manage less than five percent of the total forest concessions. Poverty levels in these communities remain some of the highest in Indonesia. The National Social Forestry Programme (Social Forestry-SF) aims to involve local communities in sustainable forest management both in state forests and private forests to increase their social welfare, while ensuring environmental balance and socio-cultural dynamics (The Minister of Environment and Forestry 2016c). The target is to provide legal management access inside state forests up to 12.7 million ha (10% of the total state forest area).

1. Community Forests (*Hutan Kemasyarakatan–HKm*)

To reduce illegal forest conversion, the government has given priority to increase civil society's access to forest areas, where forestry-based business permits were not previously granted. The primary policy objective of the community forests is poverty alleviation and the rehabilitation of unproductive forest areas. The new Government Regulation No. 23/2021 allows for conditional user rights, over designated areas of production forest and protection forest, for community-based groups for up to 35 years.

2. Community Plantation Forests (*Hutan Tanaman Rakyat–HTR*)

In the Scheme of Community Plantation Forests (*Hutan Tanaman Rakyat–HTR*), community groups are given access to land, within degraded portions of the production forest zone, for planting trees using silviculture to ensure the sustainability of the forest resources. The primary policy objective of the programme is economic development, job creation, and an increase in the supply of fibre for the pulp and paper industry through community participation in a forest enterprise. The HTR licence is 35 years and can be extended. It is given to a group of households with each household allowed to manage up to 15 ha. Government guidelines stipulate the species permitted in each location to support the pulp wood market. The MoEF has targeted 5.4 million ha of Community Plantation Forests and has identified broad areas where HTR licences may be granted. To strengthen community legal access to manage state forest, Indonesia government also has supported the establishment of Business Group of Social Forestry (FGSF). Until 2024, Indonesia has targeted 45,200 units of FGSF and 22,600 unit business licences. These aim to serve the 1,668,508 families to get legal access to manage state forest. Plantation forests are also developed through the partnership scheme with private companies, such as concession holders under the Industrial Plantation Forest (*Hutan Tanaman Industri–HTI*) Programme. More information is given under (5) Forest Partnerships in this section.

3. Village Forests (*Hutan Desa*)

This scheme grants the village-based community institutions (*lembaga kemasyarakatan*) the right to manage state forests. These village forest management rights (*Hak Pengelolaan Hutan Desa-HPHD*) are for areas inside protection and production forests. Examples of village-based community institutions include the Village Community Resilience Institution (*Lembaga Ketahanan Masyarakat Desa-LKMD*) and the Village Community Institution (*Lembaga Masyarakat Desa-LMD*). The Village Forest Scheme aims to provide access for local communities, through village institutions, to utilize forest resources sustainably to improve the welfare of local communities. Permit holders in protection forests may manage their area, environmental services and collect Non-Timber Forest Products (NTFPs). While in production forests they can harvest timber and NTFPs. The operationalisation of this management right is formalized under the Village Regulation (*Peraturan Desa-PERDES*), which stipulates that the village is not permitted to alter the function of the area from forest and the village must guarantee that the forest resources are managed sustainably. There were 1,731,536 ha of village forest areas in Indonesia (Ministry of Environment and Forestry 2021b).

4. Customary Forests (*Hutan Adat*)

Customary Forests (*Hutan Adat*) are managed by Customary Forest Communities (*Masyarakat Hutan Adat–MHA*) to improve local livelihoods, for a sustainable environment and socio-cultural dynamics. The effective designation of a customary forest is dependent on the recognition of the *adat* community that will hold the rights to manage it by local government decree. The MoEF has indicated support in principle, but the government fears conflict among *Adat* groups over designated forest functions, such as watershed protection and biodiversity conservation, which are an issue because of a lack of trust. Management restrictions imposed according to the functional status of forest areas might drastically curtail the scope for community-based management even where the customary rights of communities are recognized.

5. Forest Partnership

As stipulated by Government Regulation No. 23/2021 and the Minister of Environment and Forestry Regulation No. 9/2021, Forest Partnerships (*Kemitraan Kehutanan*) are a partnership, approved by the minister, and granted to the holders of Business Permits for Forest Utilization (*PBPH*) as discussed in Section 3.1.1. These permit holders may form a partnership with a community group to utilize the forest in protection or production forest areas. Forest partnerships are granted to local communities who have direct dependence on the applicant's work area/management area, in the form of forest farmer groups or a combination of forest farmer groups. With PBPH or forest area utilization holders, partnerships are given a maximum of five hectares for each household, except for local community partners who collect NTFPs and manage the forestry-based environmental services. According to the official statistics (MoEF 2021), there were two forest partnerships, i.e., Recognition and Protection of Forestry Partnership (*Pengakuan dan Perlindungan Kemitraan Kehutanan–KULIN KK*) of 441,209.75 ha and Social Forestry for Forest Utilization Licence (*Izin Pemanfaatan Hutan Perhutanan Sosial–IPHPS*) of 30,579.49 ha in Indonesia (Ministry of Environment and Forestry 2021b).

3.1.4.2 Collaborative Management in Protection Forest

In protection forest, there are two partnership schemes: (1) Conservation Partnerships (*Kemitraan Konservasi*), as regulated under the Directorate General of Natural Resources and Ecosystem Conservation Regulation, and (2) Partnerships between FMUs and local communities, as observed in a case study in Yogyakarta.

1. Conservation Partnerships (*Kemitraan Konservasi*)

Non-Government Organisations and donor-funded projects in many protected areas in Indonesia have experimented with approaches such as community conservation agreements, participatory boundary marking and traditional management zones. The Ministry of Forestry Regulation No. P19/2004 was the first to provide a formal framework for multi-stakeholder management (The Minister of Forestry 2004). Technical guidelines for community Conservation Partnerships (*Kemitraan Konservasi*) in protected areas (nature reserves and conservation areas) are also regulated in the Directorate General of Natural Resources and Ecosystem Conservation Regulation No. P.6/KSDAE/SET/Kum.1/6/2018. The regulation is important as it gives managers a legal basis to address problems involving local communities in and around protected areas (The Director General of Natural Resources and Ecosystem Conservation 2018).

An example of effective implementation of this conservation partnership is the community-based ecotourism in Tangkahan, Leuser National Park in North Sumatera, initiated in 2000⁹. By limiting co-management to routine activities such as patrolling, reforestation and boundary marking, this regulation creates new opportunities for benefit sharing from joint forest management. However, collaborative management still needs to identify sustainable business opportunities for local communities.

2. Partnerships between Forest Management Units (FMUs) and cooperatives

Partnerships between FMUs and local communities were encouraged following the enactment of Law No. 23/2014, which provided the provincial government and FMUs, as the forefront forestry agencies in the field, with roles that had greater authority (The President of Republic of Indonesia 2014a; Putro and Nawir 2016). This is also part of the implementation of the national SF Programme on the ground. Partnership strategy has been included in the FMUs' document on long-term forest management planning (*Rencana Pengelolaan Hutan Jangka Panjang–RPHJP*). This document guides the development of programmes and activities to be implemented on the ground.

⁹ Wiratno 2016. *Co-Management and livelihoods*. Paper presented during the IUFRO International and Multi-Disciplinary Scientific Conference, 5 October 2016, Bogor.

The partnership between Yogyakarta FMU and the *Notowono* Cooperative is a case study example that shows alternative arrangements for managing a protection forest, in this case in Mangunan, Yogyakarta¹⁰. This partnership has concentrated on initiating and managing community-based ecotourism, which has gained credence as a leading model for integrating conservation agendas, responsible tourism and social empowerment. The partnership, facilitated by the FMU Yogyakarta, has brought together different stakeholder groups, including provincial government and local communities.

This is an enabling condition for local economic development strategies implemented in collaboration with local communities and provincial government. The supported policy frameworks were initiated at the provincial level to support the partnership and revenue-sharing implementation on the ground (Pratama and Maryudi 2019). A significant contribution to provincial government revenues of USD 135,714 (IDR 1.9 billion) in 2017 and AUD 164,286 (IDR 2.3 billion) in 2018 (Maryudi et al. 2019). However, under Law No. 11/2020 on Job Creation, in which the roles of FMUs have been limited to facilitators, this type of partnership would not be possible either to initiate and/or to facilitate as discussed in Section 3.1.1. Scenarios for an adaptive strategy, following the enactment of the Omnibus Law No. 11/2020, are needed (See Section 4.5).

3.1.4.3 Challenges and opportunities in operationalization of the landscape approach as part of implementing forest recovery strategies

Institutional arrangements under different schemes help to facilitate community participation and involvement in the management of production and protection forests and other forest classifications (PATTIRO 2019; Nawir et al. 2007). At the landscape level, which consists of different forest function classifications, community-based forest management under different SF and other forest partnership schemes must be complementary. An integrated Grand Strategy of forest management at the landscape level is needed to ensure synergies are based on collaborative approaches¹¹. Potentially, the development of a Grand Strategy could be led by the Environment and Forestry Agency, in collaboration with the Regional Development Planning Agency at the provincial level.

The most significant of these permits for the potential recovery of forest are those for Community Forests and Community Plantations Forests. By June 2021, there were 823,113 ha of Community Forest areas in Indonesia and 350,812 ha designated for Community Forest Plantations. Moreover, some 1,063,420 rural forest dependent people had access to Community Forestry, Village Forests, Community Plantation Forests and Forest Partnerships (Ministry of Environment and Forestry 2021b).

Increasingly, strategies to facilitate community involvement have become a means to achieve goals covering multi-dimensional aspects that include: (1) resolving tenurial conflicts and reducing pressure on deforestation, preventing forest degradation and accelerating forest landscape restoration, (2) addressing the equity and equality of gender issues, (3) moving towards promoting good governance, democracy and social inclusion and (4) achieving goals under the climate change agenda and cross-landscape management.

There are at least four inter-related challenges to accelerating the achievements under the SF Programme. Firstly, accelerating the permit issuance challenged by verified baseline data, between the indicative and the actual data on the ground (progress so far is around 33% of the targeted area) (Ministry of Environment and Forestry 2019). Secondly, well-developed working and business plans once the permit has been issued are seriously lacking. Thirdly, strategies need to be integrated to establish a stronger collaboration and network of governance between the state and civil society, including local government (provincial, district and village level). And lastly, defined strategies to establish a stronger legal framework and law enforcement need to be developed.

10 Part of the collaborative research for the Kanoppi Project conducted by CIFOR and the Faculty of Forestry (Gadjah Mada University) on “Enhancing the effectiveness of governance forefront model in fostering Sustainable Forest Management: Case study of Kesatuan Pengelolaan Hutan (KPH) Yogyakarta”.

11 See lessons learnt from Kanoppi as discussed in Section 3.2.1.

3.2 Highlighting existing initiatives by various organizations

In the absence of integrated policy and regulatory frameworks for the landscape approach and FLR at the national level, various organisations have initiated a range of programmes and strategic approaches in moving forward to implement these approaches. Opportunities and challenges are discussed here in this section. Initiatives are categorized into three categories of the main approaches in the projects or programmes: landscape-based approach, FLR and cases that have implemented both the landscape approach and FLR. However, some overlaps do exist.

3.2.1 Landscape-based approach initiatives on the ground

The landscape-based approach has been translated into pilots on the ground by several international organisations these include: Conservation International Indonesia (CI Indonesia), The Nature Conservancy (TNC), Belantara Foundation and the Center for International Forestry Research (CIFOR). Table 1 presents a summary of the initiatives, which are discussed further in more detail below.

Under the project “Sustainable Landscape Partnerships” implemented by CI Indonesia, the main focal points were on good governance, best practices on natural capital, sustainable production and sustainable financing. The identified main challenges, during the five-year implementation of this pilot programme in North Sumatra, included: (1) limited capacity to implement strategic plans by local government and communities, (2) limited access to critical science to support decision making; (3) spatial-based planning conflicts between different government levels (local, district, province and national); (4) lack of landscape-based monitoring and enforcement and (5) lack of tools for landscape level performance management and decision making. The main recommendations based on the main findings are that: (1) a cross-sectoral landscape approach is required; (2) sustainable finance is a critical enabler and (3) an integrated approach is essential to sustainable development and partnership and collaboration are key.

In June 2009, in Berau District, East Kalimantan, TNC focused their Berau Forest Carbon Programme (BFCP) on addressing multiple objectives, which included: improved forest conservation, enhanced forest cover and forest management, protected biodiversity, improved capacity of the district and village administration and support for the local economy through the introduction of alternative livelihoods. Using the SIGAP¹² REDD+ framework, TNC supported the community in envisioning land use and village development planning, as well as implementing a performance-based natural resource management plan. The goal is to empower communities to find solutions to deal with their challenges so that they can improve their well-being and sustain the forests at the same time.

Previous work in Berau has equipped TNC with the social capital and knowledge to engage effectively with the communities. For example, TNC’s SIGAP approach, which rests on the premise of close engagement with the community, is now replicated in other areas beyond TNC’s intervention villages. The alignment of TNC’s strategy with government policies appears to be effective in making progress on the ground. For example, facilitating village forestry has enhanced tenure clarity over village forests, which, although not sufficient, is a prerequisite for effective implementation of REDD+. The formal designation of Berau District as a REDD+ Demonstration Activity and its alignment with higher-level policies, have helped advance REDD+ in BFCP. The programme has been endorsed and fully supported by the national government and is consistent with the green vision of East Kalimantan Province. This has helped the district and TNC attract funding from various sources to implement BFCP.

12 SIGAP is an approach to empower communities living in and around forests to manage natural resources sustainably and develop prosperous livelihoods. More detailed information at TNC website at

(1) <https://www.nature.or.id/blog/aplikasi-sigap.xml>;

(2) <http://www.nature.or.id/en/publication/forestry-reports-and-guidelines/poster-sigap-redd.pdf>;

(3) <https://www.cifor.org/redd-case-book/case-reports/indonesia/tncs-initiative-within-berau-forest-carbon-program-east-kalimantan-indonesia/>

The TNC has faced several major challenges in implementing BFCP, which aims to use a district-scale jurisdictional REDD+ approach. The vastness of the area, the multitude of actors and activities that may not necessarily be aligned with each other, and lingering tenure and boundary issues present a challenge for its implementation. The presence of TNC as a key actor in the national REDD+ arena and in BFCP, presents both a challenge and an opportunity. The vastness of BFCP means that TNC can only work in a limited number of specific target villages and expand, as resources become available. The TNC's experience and network has enabled it to contribute to national and district policies.

The Belantara Foundation¹³ has initiated a proposal for “a master plan for developing large-scale conservation at the landscape level in Sumatra and Kalimantan”. The master plan is based on the landscape approach, with multi-sectors, multi-stakeholders and multi-interests. Conservation area management must alter the pattern of single scale management into multi-scale management. Without a multi-stakeholder approach on the landscape scale, the conservation area will be a small spot in between a mosaic of cultivated land, an isolated ‘island’. That fact reinforces the argument for the need for landscape-scale conservation, protection and restoration efforts. This will ensure that ecological processes are continuous and mutually beneficial for conservation and cultivation.

Belantara stated that achieving these conditions require all parties to build mutual respect, trust and benefits to jointly manage the landscape. Further, it argues that the management of an area, using the landscape approach, will provide more workspace, rooms for coordination and negotiation for the stakeholders involved in the landscape. They will be able to formulate and implement best practices in their fields of business. Belantara attempted to incorporate this concept into a planned and measurable Master Plan that could serve as a guide or reference for stakeholders in planning, implementing and monitoring conservation programmes in general, and in restoration, protection, community development and regional development.

Such an idea begins with a programme for conditioning (i.e., developing an enabling condition) in the form of consensus building, institutional and supporting policies. The conditioning is directed at two major strategic programmes, namely protection and restoration in the target landscape. At the same time, the programme supports community empowerment and assistance monitoring on a landscape scale. The location of the work areas for protection, restoration, community empowerment and monitoring in each landscape is determined by the grouping of land status/function and land cover conditions as described above.

The main recommendation provided by the Belantara Foundation for moving forward is to focus on promoting multi-stakeholder landscape planning and management. The main challenge facing this large-scale project is how to increase community involvement in restoration and protection efforts while increasing their chances of being free of the structural causes of absolute poverty. Another challenge is how to raise awareness and knowledge for the community to be meaningfully involved in restoration and protection efforts. The Asia Pulp and Paper (APP¹⁴) Company's reputation often makes it difficult for Belantara to engage with the government (especially at the ministerial level) and various established NGOs. The Belantara efforts are often seen as nothing more than APP's attempt at greenwashing, even though the development of the master plan had been through a consultation process with different stakeholders, including NGOs.

13 The Indonesian grant-making institution supports initiatives of ecosystem protection and restoration, while improving the livelihoods of local communities. Their support areas are in Conservation Areas, Production Forest, Protection Forest and Social Forestry (Source: <http://belantara.or.id/>).

14 Asia Pulp and Paper (APP) Company Group is one of the supporting funding agencies in the formation of Belantara Foundation (for more information see: <https://www.asiapulppaper.com/>).

Table 5. Landscape-based approach initiatives on the ground

Aspects	Conservation International Indonesia (CI)	The Nature Conservancy Indonesia (TNC)	Belantara Foundation	CIFOR
Project/ programme name	Sustainable landscape partnership	Berau Forest Carbon Program (BFCP)	Conservation Initiative within priority landscapes in Sumatra and Kalimantan	Operationalizing the landscape approach (Kanoppi Project) and Integrated Watershed Management Approach (IWMA)
Time frame	5 years (initiated in 2011)	2008-2030	Proposed to be: ten years divided into two periods of five years: 2016 to 2020; 2021 to 2025.	Kanoppi Project ^b : 2013-2017 (first phase) and 2017-2021 (second phase). IWMA Project ^c : three years (2015-2018)
Location	South Tapanuli and Mandailing Natal (North Sumatra)	Villages in Berau District (East Kalimantan)	Ten landscapes ^a	Eastern Indonesia (in five project sites)
Coverage area	316,506 ha (forest area) and 118,145 ha (conservation area)	-	10,145,187.90 ha	Forest and watershed landscapes from upstream to downstream areas
Funding agencies	USAID and Walton Family Foundation	BFCP ^d	Asia Pulp and Paper (APP)	ACIAR (Australian Center for International Agricultural Research)
Collaborating partners	Conservation International	GIZ, ICRAF and World Education	Belantara, Deltares, and other NGOs (FKKM, Bakau, Yapeka, Yayasan Kanopi)	National and local NGOs, universities, Forest Management Units (FMUs), local governments (district and provincial levels), national park, grand forest park and private companies
Main beneficiaries	Community, government and private sector partners (rubber, coffee and oil palm)	Community, government	Community, government, national park, private sector partners	Stakeholders along the production and supply chains of timber and NTFPs, as well as in watershed management
Aspect focus	Climate stability, water, livelihoods and food	-	Ecological functionality and enhancing human well being	Strategic planning at the landscape level Integrated Watershed Management Approach (IWMA)

Notes:

- Ten landscapes: Senepis, Giam Siak Kecil-Bukit Batu (GSKBB), Semenanjung Kampar, Kerumutan, Bukit Tigapuluh, Berbak-Sembilang, Dangku-Meranti, Padang Sugihan, Kubu and Kutai.
- Kanoppi Project Phase 1 'Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia' (ACIAR - FST/2012/039, April 2013-Dec. 2016).
Kanoppi Project Phase 2: Developing and promoting market-based agroforestry options and integrated landscape management for smallholder forestry in Indonesia (ACIAR - FST/2016/141, April 2017-Dec. 2021)
- Integrated Watershed Management Approach (IWMA) Project is the process of formulating and implementing a course of actions involving natural and human resources in watersheds, considering social, political, economic, and institutional factors operating within a watershed and its surroundings to achieve certain socio-economic and ecological objectives (Dixon 2000).
- For more detailed information, please visit:
<https://www2.cifor.org/redd-case-book/case-reports/indonesia/tncs-initiative-within-berau-forest-carbon-program-east-kalimantan-indonesia/>

Sources: (Convention on Biological Diversity 2010; Laestadius et al. 2011; Laestadius et al. 2015; Sabogal et al. 2015; Chazdon et al. 2016; GPFLR 2020)

Using a Participatory Action Research (PAR) framework and with the aim to operationalize the landscape approach on the ground, CIFOR and project collaborators (WWF Indonesia, Mataram University and provincial and district level government), in different project locations, had facilitated the evidence-based processes in developing the landscape-based strategic planning document at the district level through a multi-stakeholder process (Kanoppi Project 2017). This document, the Grand Strategy, focuses on policy and regulatory frameworks to support the management of integrated timber and non-timber forest product production and market strategies at the landscape level. Watershed had been defined as the unit of analysis used at the landscape level in this Grand Strategy document. The Grand Strategy had been developed due to a lack of coordination and inter-connectivity between local government institutions, the business sector, and community groups in developing timber and NTFPs. It was intended that this document be used as a reference for strategic direction to improve coordination, synergy and inter-connectivity among multi-stakeholders along supply and value chains, primarily among relevant government agencies. It was based on national, provincial and district government strategic documents, including the regional spatial planning document (*Rencana Tata Ruang Wilayah–RTRW*).

The development of the Grand Strategy document had been conducted by working collaboratively between project teams and the policy-working group initiated in the beginning of the processes and formally appointed through the District Head Letter of Decree¹⁵ in two project sites in East and West Nusa Tenggara. The local stakeholders had been very enthusiastic and open to adopting new approaches and outputs. However, introducing these new approaches and outputs was not without challenges. Of the noted challenges the teams faced were the newly imposed act of a recentralization governance system at the national level. This affected the advocacy strategies planned initially; under the new act, the forest management authority shifted from the district level to provincial level. However, the Grand Strategy provided the district government with a negotiation tool to divide the management plans between the two government authorities. Cases in these two districts provided good lessons learned; that it had been possible to operationalize the landscape approaches yet challenges and problems must be resolved by involving multi-stakeholder negotiation for effective acceptable solutions. An integrated Grand Strategy, based on a sustainable business model, should consider the ecosystem characteristics, supported by a complementary policy framework. These have been crucial for facilitating sustainable integrated forest-landscape management.

Based on the cases presented here, the starting points to initiate projects appear to be somewhat similar. The governance of the landscape approach seems to be the primary focus of all initiatives. However, the operational scales range from a couple of villages to the whole district, while the timeframes range from a minimum of five years to a long-term implementation under different phases. Complementary activities have been conducted to add to pilot projects and sometimes as part of policy-based research to help operationalize the landscape approach. Initiatives were implemented by international organisations and the private sector, involving a range of local and national stakeholders, including government and NGOs. The valuable lessons learned are useful for the formulation or further adjustment of policy and regulatory frameworks supporting the implementation of a landscape-based approach on a wider scale.

3.2.2 Forest Landscape Restoration (FLR) initiatives on the ground

The implementation of FLR on the ground may come in different forms. Here we provide examples of FLR projects in Indonesia, which vary in terms of scale, timeframe, ecosystem type and approach (see Table 6). The first project that we describe is the Green Coast Project (GCP), a project coordinated by the Wetlands International Indonesia Programme (WIIP) in collaboration with WWF, whose primary activities include post-tsunami coastal area rehabilitation in Aceh and Nias (Wibisono and Sualia 2008).

15 The Head of Timor Tengah Selatan District Letter of Decree No. 123/KEP/HK/2016: The Grand Strategy Document on Integrated Non-Timber Forest Products (NTFPs) Management at the landscape level.
The Head of Sumbawa District Letter of Decree No. 144/2016: The Grand Strategy Document Integrated on Timber and Non-Timber Forest Products (NTFPs) Management at the landscape level. (2016-2020).

The GCP combined the rehabilitation of coastal ecosystems (especially mangrove) with efforts to improve people's livelihoods by providing small grants for eco-friendly economic activities. As outlined in Wibisono and Sualia (2008), specific approaches include: (1) science and community-based assessments to identify ecological damage and priority options for coastal restoration; (2) community-based restoration of coastal ecosystems and livelihoods through a 'bio-rights'¹⁶ approach and (3) policy guidance and targeted communications aimed at 'green reconstruction', to influence the coastal resource management policies of district and national governments and to increase general awareness of the value of coastal ecosystems.

The high survival rate (65- 85%) of the mangrove and beach plants, one year after they were planted, suggests that the GCP was quite successful. The project has also been considered successful in encouraging people to attempt new economic opportunities and shift their livelihood activities. The assessment team found that very thick mangrove forests that use to cover the coasts, but were converted into fishponds long before the areas were hit by the tsunami, which destroyed not only the ponds, but also many villages, are beneficial and do protect the coastal areas. The villagers did attempt to restore some ponds, but for most, the cost was prohibitive due to heavy degradation. After careful assessment, the GCP recommended rapid adoption of a greenbelt policy, i.e., restoring the coast to mangrove forest to mitigate the risk of potential disasters. They also recommended modifications to the usual methods used to reconstruct existing ponds, e.g., by planting mangroves in the middle and on the dikes of the ponds (i.e., silvofishery) as well as behind the coastline.

The WIIP emphasized that coastal ecosystem rehabilitation efforts were much more successful when the locals were actively included and there were efforts to improve their livelihoods. Some main challenges faced by the GCP included the lack of public awareness of the environment included a lack of long-term planning in economic activities, less optimal maintenance of rehabilitation plants and conflicts of interest. Another major challenge is the lack of technical skills in rehabilitation. As an example, most of the local NGOs receiving Small Grant Funds appeared to have a limited knowledge of seedling preparation and implementing rehabilitation techniques including species and site selection as well as post-planting maintenance. Therefore, many community groups, accompanied by such NGOs, often implemented rehabilitation without proper guidance. There was also insufficient support for monitoring and evaluation in the field from WIIP, which was very limited in terms of its frequency and coverage area. This was due to a very limited amount of funds allocated to do the monitoring and evaluation. Many project sites are remote and very costly to visit. They also had a limited number of people that could do the work.

As reported by Wibisono and Sualia (2008), the GCP has not been equipped with an effective raising awareness component. During the rehabilitation work, it was clear only a few of the local NGOs, including the local communities that they worked with, had sufficient knowledge about the importance of healthy coastal ecosystems. For example, in some villages, planted mangrove seedlings were removed after only two months and the sites were converted back into fishponds and settlement areas, suggesting that some locals still did not understand the function of rehabilitated mangroves for their livelihoods and safety.

16 "Bio-rights is an innovative financing mechanism targeted at reconciling poverty alleviation and environmental conservation. Through provision of micro-credits for sustainable development, the approach supports local communities to refrain from unsustainable practices and to be actively involved in conservation and rehabilitation of the environment" (Wibisono and Sualia 2008, 3).

Table 6. Forest Landscape Restoration' initiatives on the ground

Organisation	Wetlands International Indonesia Program (WIIP)	Peatland Restoration Agency (<i>Badan Restorasi Gambut–BRG</i>)	IDH, the Sustainable Trade Initiative
Project/ Programme name	Green Coast Project (GCP) ^a	Peatland restoration ^b	Community-Based Peatland Ecosystem Restoration ^c
Time frame	5 years (2005-2009): Phase 1: 2005-2007 Phase 2: 2007-2009	5 years (2016-2020)	2 years (2016 – 2018)
Location	Coastal areas in Aceh and Nias	Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan, South Kalimantan, and Papua	Grand Forest Park (<i>Tahura-Taman Hutan Raya</i>) in Sekitar Tanjung (Berkak Landscape), Jambi Province
Coverage area	Approximately 1,000 ha of coastal areas	2 million ha (targeted)	20,830 ha (18,660 ha degraded land)
Funding agencies	Novib/Oxfam Netherlands through Dutch public charity funds	State funding, various donors (e.g., Norwegian Ministry of Climate and Environment, UK Climate Change Unit)	APP and possibly other donors (information not available)
Collaborating partners	Wetlands International Indonesia Programme, WWF-Indonesia	BRG in coordination with KLHK, provincial governments, concession holders, NGOs	Belantara Foundation, APP
Beneficiaries	Community, government	Community, government and private sector partners	Community, government and private sector partners

Sources:

- a. Green Coast Project: Wibisono and Sualia (2008)
- b. Peatland Restoration Agency (Badan Restorasi Gambut): <https://brg.go.id/>
- c. Community-Based Peatland Ecosystem Restoration: <https://www.idhsustainabletrade.com/project/community-based-peatland-ecosystem-restoration/>

The second project is a restoration programme managed by the Peatland Restoration Agency (*Badan Restorasi Gambut–BRG*), an ad-hoc institution mandated to restore two million hectares of burned and degraded peatland in seven priority provinces by 2020. In each targeted province a Regional Peatland Restoration Team (*Tim Restorasi Gambut Daerah–TRGD*) has been formed. According to BRG's press release issued in December 2017¹⁷, BRG has provided support and facilitation for 75 villages in seven targeted provinces for peatland restoration. The villages are spread throughout Riau (11), Jambi (10), South Sumatra (15), West Kalimantan (16), Central Kalimantan (10), South Kalimantan (10) and Papua (3). In total, these villages cover 1,180,441 ha, with a total area of community-managed peatland of about 878,326 ha. Of this, 267,111 ha have been particularly targeted for peatland restoration. The BRG runs the Peatland Concern Village (*Desa Peduli Gambut*) initiative, in which communities are expected to be at the forefront of peatland ecosystem maintenance. Until 2017, BRG had provided training and support for 101 community groups to manage land without burning and develop alternative livelihoods. To this end, BRG conducted activities to help develop local and eco-friendly peatland commodities and provided support for freshwater fisheries, livestock farming and honeybee farming (apiculture/beekeeping). Throughout 2017, BRG also facilitated peatland rewetting, which included drilling wells and blocking and backfilling canals in six provinces (Jambi, Riau, South Sumatra, West Kalimantan, Central Kalimantan and South Kalimantan). The total area impacted by the rewetting programme is estimated to be 200,000 ha of which BRG was responsible for about 103,476 ha, while the partners were responsible for the remainder.

17 See: https://brg.go.id/wp-content/uploads/2017/12/281217_SIPRES-AKHIR-TAHUN-BRG.pdf

In 2017, BRG's list of achievements was roughly in line with the overall goal and approaches of BRG, as outlined in its strategic plan¹⁸ (BRG 2016). The specific methodology and approaches BRG used included: (1) controlling peatland degradation and conversion; (2) assessing the impacts of peatland degradation (costs/value); (3) Determining options for future sustainable land use; (4) Implementing sustainable peatland management and peatland restoration at the landscape level (Peatland Hydrological Unit–PHU) by carrying out the 3Rs (rewetting, revegetation and revitalization); (5) conserving the remaining peatland as well as the surrounding areas/PHU as essential ecosystems; (6) improving the social conditions and resolving social conflicts over resources and (6) enhancing good governance for forest and peatlands.

Based on personal communications with BRG and TRGD personnel, some of the main lessons learnt from the implementation of BRG's work thus far are related to planning. Many highlighted that accurate and detailed peatland mapping is essential so that planning can be well formulated and become the basis for improved stakeholder engagement processes. Further, it is important to identify ways and sources of innovative funding for restoration, as well as to identify the needs for active involvement of communities in adaptation and climate change mitigation programmes. The involvement of local communities can also be improved using the frameworks of existing programmes, such as the Prosperous and Fire-Free Village (*Desa Makmur Bebas Api*), Fire-Free Village (*Desa Bebas Api*) or Climate Village (*Kampung Iklim*). Noted challenges include the silo mentality intra-and-inter governmental agencies at all levels. For example, there have been significant cases of overlapping permits and authorities and limited field coordination, though such issues were being tackled through recent "corrective actions" under the leadership of the Ministry of Environment and Forestry, which emphasised the need for coordinated and measured efforts on the ground. There were also technical, hydrological challenges related to the biophysical conditions of peatland, such that more detailed surveys are needed before detailed engineering designs can be produced.

The third restoration initiative, discussed in Table 6, was initiated by the IDH –Sustainable Trade Initiative (2016), under the project name of Community-Based Peatland Ecosystem Restoration. The Asia Pulp and Paper Group (APP) and the implementing agency, Belantara Foundation, jointly funded the project. As summarized from the project website hosted by IDH, the project aims to restore the ecological value of the peatland and forest in the Sekitar Tanjung Grand Forest Park (*Taman Hutan Raya-Tahura Sekitar Tanjung*) through a community-based restoration approach, while at the same time attempting to decrease the impact of forest fires and improve local livelihoods. Tahura Sekitar Tanjung is in the Berbak Landscape and adjacent to Berbak National Park in Jambi Province. It covers an area of 20,830 ha, mostly degraded. The extent of degraded land is estimated to be around 18,660 ha, where 10,000 ha of the area are in critical condition with no trees and covered only in bush following forest fires in 1997, 2007, 2011 and 2015. Through the Decree (SK) of the Head of Forestry Agency Jambi Province No. 3111/BHKA-43/IV/2013, the Tahura has been designated as one of the Demonstration Activity (DA) areas for Reducing Emissions from Deforestation and Degradation (REDD+) initiative in Jambi. The Tahura is also located within one of APP's priority landscapes for the company's landscape restoration and protection commitment.

As outlined on the project's webpage, the project has four primary components:

- Component 1: Seek commitment from all stakeholders, including the villagers and UPTD (local agencies) to build capacity in protecting and restoring key areas of Tahura Sekitar Tanjung;
- Component 2: Hydrological rehabilitation to prevent drought and risk of fires;
- Component 3: Restoration of peatland and forest ecosystems by planting native species that produce NTFPs for the benefit of the local communities;
- Component 4: Support the development and application of sustainable agricultural practices in peatland areas.

18 See more on: [https://brg.go.id/files/RENSTRA%20BRG%202016-2020%20\(November%202016\).pdf](https://brg.go.id/files/RENSTRA%20BRG%202016-2020%20(November%202016).pdf)

The main challenge for the project so far is the lack of institutional capacity. The existing management of Tahura, i.e., the Local Technical Implementation Unit (*Unit Pelaksana Teknis Daerah/UPTD*), has not managed the area effectively. Specific local problems include existing land tenure conflicts between communities and the management unit, which have increased deforestation in the area. Local awareness and understanding of the need to protect and conserve the forest of Tahura Sekitar Tanjung and the environment is still relatively low.

The three initiatives discussed above display some variation across the restoration projects. For example, they have focused on different types of ecosystems (two on peatland and one on coastal areas/mangroves). There were, however, several common approaches. For example, for all the projects, the involvement of local communities and the improvement of their livelihoods are put at the forefront. Further, there were common challenges, such as the low level of awareness of the issues being addressed among key stakeholders, including local villagers, and a lack of spatial databases on the targeted areas that are required in designing tailored restoration activities in the areas. Technical issues, both during the planning and implementation phases, also appear to be a common problem. The BRG project was established to solve these challenges in a comprehensive manner, especially on peatland. While the success of BRG remains to be seen in the years to come, the agency appears to be on the right track. One of the key questions now is how Indonesia can expand the BRG model to encompass other types of ecosystems, so that Indonesia truly makes a concerted effort to accelerate FLR.

3.2.3 The forest landscape approach to implement Forest Landscape Restoration (FLR) on the ground

When designing their restoration activities on the ground, Tropenbos Indonesia (TBI) and World Resource Institute Indonesia (WRI Indonesia) used the landscape approach from the beginning (summarized in Table 7). Since 2017, TBI has implemented a Green Livelihoods Alliance (GLA) project in West Kalimantan using various approaches:

1. Participatory mapping, participatory conservation planning, village spatial planning (including reconciliation of village boundaries) conducive for ecological corridors and sustainable management of oil palm management units;
2. Identification of potential ecological corridors and an inventory of landowners in the selected corridors/conservation areas;
3. Facilitation of a mutual-partnership between the oil-palm management units and the village government to protect and manage the High Conservation Value (HCV) areas;
4. Development of community-based forest restoration strategies (on both non forest (APL) and state-owned forest land) and facilitation of its implementation;
5. Facilitation of the development of a Village Business Unit (*BUMDES*), agroforestry and environmental services (water and ecotourism) based sustainable livelihoods;
6. Facilitation of development and implementation of a Green Medium-Term Development Plan and village regulations for environmental protection.

The main challenges identified by TBI during the implementation included: (i) a funding/investment gap to transform the landscape; (ii) unsustainable practices (e.g., drying of peatland) carried out by neighbouring concession holders; (iii) limited capacity of the national park management units to implement, monitor and enforce strategic plans; (iv) forest fires; (v) encroachment and (vi) illegal mining. Preliminary recommendations at the beginning of the project implementation took into consideration that peatland is a source of livelihoods for local communities living within and close to the national park. Therefore, local communities need to be closely involved in rewetting, revegetation, other technical means to restore peatlands and supported by stronger national park management.

Table 7. The forest landscape approach to implement Forest Landscape Restoration

Organisation	Tropenbos Indonesia	World Resources Institute Indonesia
Project/Programme name	Green Livelihoods Alliance (GLA) ^a Working Landscape (WL)	Forest and Landscape Restoration Assessment
Programme period	GLA: 5 years (2016 – 2020) WL: 5 years (2019 – 2023)	4 years (2016-2020)
Location	GLA: Gunung Palung National Park, Gunung Tarak Protection Forest and Sungai Putri Peatland, Ketapang District, West Kalimantan. WL L Ketapang and North Kayong Districts, West Kalimantan.	Musi Watershed, South Sumatra (2016-2017), peatland ecosystems within the Musi Watershed (2017-2020)
Coverage area	GLA: 500,000 ha WL: 1,500,000 ha	1.1 million hectares (identified as having the potential to be restored)
Funding agencies	Directorate General of International Cooperation (DGIS), the Netherlands	Norwegian Ministry of Climate and Environment, German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
Collaborating partners	Government at local and national levels, private sector and CSOs	ICRAF, WRI Indonesia, Musi Watershed Forum, Wetlands International
Main beneficiaries	Local community, government and private sector	Local government, community, private sector partner
Aspect focus	Peatland restoration, livelihoods	Designing restoration planning documents, livelihoods, watershed-level restoration, peatland restoration

Notes:

a. Details are available at:

<https://www.tropenbos.org/projects/green+livelihoods+alliance+-+forested+landscapes+for+equity>

Sources:

Green Livelihoods Alliance: Annual Progress Report 2018 (Floors 2019)

Tropenbos Indonesia (2019)

WRI Indonesia (2017a); (WRI Indonesia 2017b)

The WRI Indonesia has been implementing the project on Forest and Landscape Restoration Assessment in South Sumatra since 2016 and continued up until 2020. It used the methodological approach of ROAM (Restoration Opportunities Assessment Methodology). ROAM is an inclusive and comprehensive framework, developed jointly by WRI and IUCN, it was translated into a technical work plan suitable for the South Sumatra context (IUCN and WRI 2014). There are six primary steps:

1. Establish a strong foundation of continuous multi-stakeholder dialogue
2. Determine the goals for restoration and criteria success
3. Conduct geospatial mapping analyses to map the restoration potential, priorities and options
4. At the landscape or provincial level and the district level, identify the drivers of degradation, measuring ex-ante impacts of restoration and design restoration strategies and a roadmap
5. At the site-level, measure the socio-economic benefits, analyse the institutional readiness, and value chain (market analyses) and assess the feasibility of the restoration work plan
6. Conduct validation workshops or public consultations along with financial dialogues.

Particularly in the Musi Watershed, where the project is located, ROAM has been adapted for peatland methodology. ROAM was adapted and used in South Sumatra at three different levels (macro, meso and micro) within a landscape to assess restoration potential in an inclusive, comprehensive manner and to increase the capacity of stakeholders in following up the results. The results at each level affect the ROAM results at the other levels; therefore, synchronization and iteration of restoration planning, at the three levels, are crucial.

More than one million hectares or 16% of Musi Watershed has been identified as having the potential for restoration given the degradation or deviation from its allocated function. These potential areas are located on peatlands (36%) and in conservation/protected areas (15%). Results from ROAM analyses contributed to the development of the South Sumatra Green Growth Plan, which has now been streamlined into South Sumatra Governor's Decree No. 21/2017¹⁹. The government of South Sumatra was committed to restore 400,000 ha of degraded land by 2020. To reach the restoration target or realize the restoration opportunity, the analysis suggests that enrichment planting, agroforestry and social forestry, could provide the greatest returns from restoration. Not only are large swaths of degraded lands well-suited for enrichment planting, the carbon and social benefits from this intervention also tend to be larger than other restoration options.

For peatlands, as part of WRI Indonesia's partnerships with the Peatland Restoration Agency (BRG), ROAM is used to create BRG-mandated restoration planning documents for South Sumatra, e.g., the Provincial Peatland Restoration Plan (RREG), a five-year restoration plan, and the Annual Restoration Action Plan (RTT) for several peatland hydrological units. Throughout the process of creating these documents, ICRAF, Wetlands International Indonesia Program and the Musi Watershed Forum have acted as WRI Indonesia's primary partners.

Over the course of the project, identified challenges included: (i) the disconnect between restoration strategies/planning employed at the national, provincial, district and site/Forest Management Unit level; (ii) limited internal funding and technical capacity within the Forest Management Units to implement restoration plans, (iii) no monitoring and evaluation plans yet, (iv) tenurial conflicts that hamper restoration efforts on the ground and (v) lack of reliable biophysical data, especially for peatlands.

Overall, there has been a range of lessons learned from the landscape approach for restoration, as exemplified by the initiatives listed above. In the two initiatives, there was sufficient complexity in the forest landscape approach to deal with the multiple aspects of the projects, ranging from governance issues to technical aspects for improving the ecosystem functions. However, the two initiatives also highlighted the usefulness of several tools or frameworks in planning, the importance for setting management options and the need to engage with a wide range of stakeholders at various levels to overcome challenges related to FLR. The lessons learned will be very useful in the efforts to promote the landscape approach for restoration moving forward.

19 Reference: <http://jdih.sumselprov.go.id/userfiles/PERGUB%20NO.21%20THN%202017.pdf>

4 Scenarios for integrated Forest Landscape Restoration (FLR): enhancing synergy and complementary activities at the landscape level

Without trying to describe a comprehensive set of important components for designing and implementing an integrated FLR programme, summarized here are key highlights on how scenarios for integrated FLR could be utilised. The scenarios are based on our analysis discussed in this paper, examining how to foster inter-sectoral coordination for promoting complementary management options as part of the FLR initiatives.

4.1 Landscape-based analysis in fostering the inter-sectoral coordination for promoting complementary management options

A framework of sustainable and integrated landscape approaches is used to guide landscape management. In general, the integrated landscape approach is characterized by five concepts: multi-functionality, transdisciplinary approach, participation, complexity and sustainability (Freeman et al. 2015). Although the process can be implemented in a range of ways, in a more integrated approach it will require explicitly defined objectives as well as a clear understanding of what is meant by multifunctionality and sustainability. It will also require collaborative participation, transdisciplinary/cross-sectoral approaches, managing for adaptive capacity and applying an iterative process to address the inherent complexity within the system (Freeman et al. 2015)

The main natural resources affected are soils, water, natural vegetation, cultural plants and wildlife. Perception of the damaging effects of these natural resource problems, however, vary greatly, between land users and other stakeholders, among these groups and with time (Hurni 2000). The landscape approach has increasingly become a driving paradigm in the global environmental and development agenda formulation processes, particularly those started in the late 1990s, even though the concept was introduced for the first time in the 1930s (Pfund et al. 2011; Boot 2014; Freeman et al. 2015; Pressey and McKinnon 2009). Three major driving forces include: the conservation and development debate; the international dialogues covering issues on indigenous rights of communities and minority groups and linking multi-stakeholder policy dialogues to practices (van Oosten 2017). However, compelling national policies are crucial for effective, complementarity, cross-sectoral, landscape-based management approaches.

It is important to take into consideration the multiple management objectives of different stakeholders and government agencies at the landscape level, e.g., the government's targets and priorities in forestry and agricultural sectors, companies' commercial interests in timber production, as well as the urgency of restoring ecosystem functions and enhancing the livelihoods of local communities. Also, integrated grand strategies based on sustainable business models, which take into consideration ecosystem characteristics and support by way of a complementary policy framework, are crucial for facilitating a sustainable integrated FLR in Indonesia.

Therefore, an overarching clear policy framework is required, which in most cases is still lacking. In practical terms, the Grand Strategy document, as part of medium-term development planning (*Rencana*

Pembangunan Jangka Menengah–RPJM), is needed as a referral document for inter-ministry and inter-sector coordination. To begin with, inter-ministerial agreements should be developed for common and acceptable working terminology on FLR, landscape-based regional development, etc.

At the landscape level, these different programmes could potentially be designed to complement and facilitate collaborative processes to develop grand designs and strategies for integrated management at the landscape level (Figure 4). This could be achieved, for example, by assessing the interplay between various national and local policy frameworks and regulations that would have affected the development of a grand design and strategy for sustainable integrated landscape management. For example, to improve the policy framework at the national level, e.g., in the context of FMUs and the Ecosystem Restoration Concession (ERC), revitalizing and translating these regulations into technical guidelines that are tailored to specific local conditions through multi-stakeholder engagement processes, are crucial.

Multi-stakeholder participatory and adaptive co-management approaches should be the underlying processes to ensure engagement with key stakeholders, capacity development and greater impact of project objectives. Adaptive co-management will also be integrated into the project design as an approach for governance of social-ecological systems. Key features of adaptive co-management include: (1) a focus on learning-by-doing; (2) synthesis of different knowledge systems, (3) collaboration and power sharing at the community, regional and national levels; and (4) management flexibility (Colfer 2005; Lawrence et al. 2006; McDougall et al. 2008). Participatory Action Research (PAR) may be used as an approach to ensure scientifically justified project intervention. PAR will also allow continuous engagement with key stakeholders and greater impact of project goals in multi-sites. The current forest rehabilitation and reclamation is based on Government Regulation No. 26/2020 (The President of Republic of Indonesia 2021). However, with the latest Government Regulation No. 23/2021 under the Omnibus Law, adaptive strategies need to be explored due to the changes in the roles and responsibilities of FMUs and other key actors in forest rehabilitation programmes.

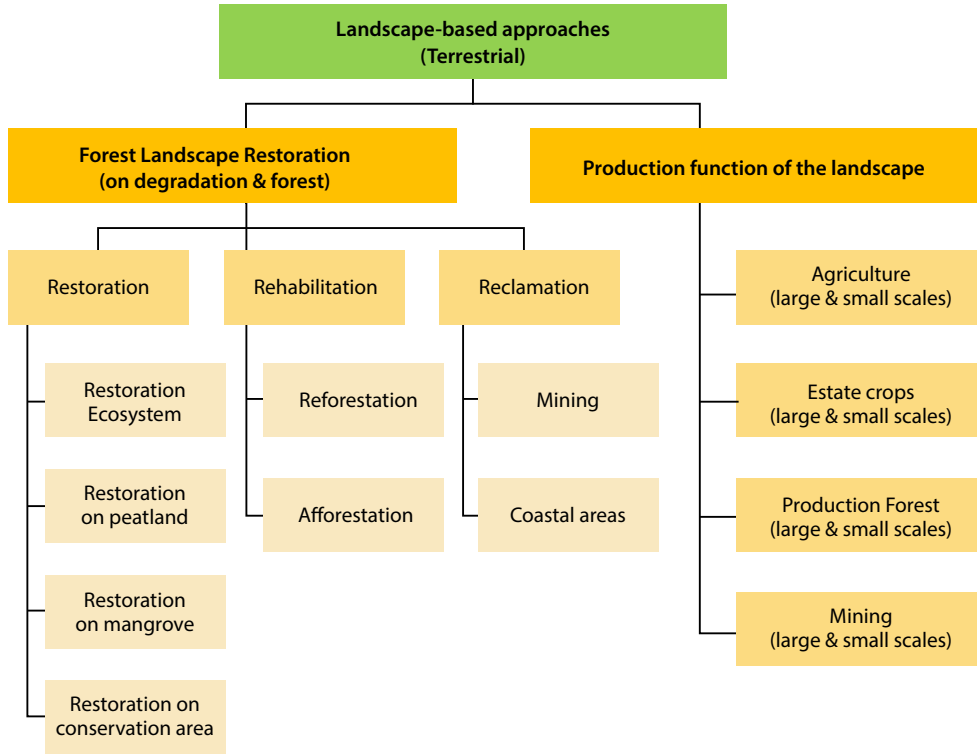


Figure 4. Position of the restoration and other forest recovery programmes in the context of a landscape approach in Indonesia

4.2 Community participation: Permit or Partnership?

The challenge of forest recovery at the landscape level is not only large but also very complex. Every situation needs to be evaluated and actions planned. The reality is that expert understanding of how people can facilitate and accelerate natural processes of ecosystem recovery through secondary succession is limited. If Indonesia is to effectively implement its targets and commitments, it is essential that all available expertise is accessible. This argument—over and above the question of its administration—requires that there be a mechanism that is inclusive, flexible, and easily and equitably implemented.

Permits such as the Restoration Ecosystem Concession, the Community Plantation Forest, Community Forestry and Village Forestry allow access for single entities or groups, few of whom can bring all the professional and financial resources together to effectively deliver their objectives. This situation is potentially problematic if the jurisdiction of the state forest area in question is not yet clear. Sometimes, this might be addressed by clarifying the role of the MoEF prior to legal gazettement of the land, whether directive and prescriptive or as a source of facilitation and professional advice.

Changes to government responsibilities through Regional Autonomy provide provinces with considerable power aimed to strengthen the role of the FMUs. They do not have the mandate of permitting or licensing but have a role in planning and implementation. This puts them in the best position to supervise and control the activities of the concessionaires and local communities in the state forest areas. However, there is often limited capacity and resources for them to do much on the ground.

All this suggests that a mechanism for long term and committed facilitation, by neutral partners from civil society, will prove an invaluable option for local communities to strengthen their institutions and capacity to engage in forest recovery through planning, execution and monitoring. From the perspective of equity, the government cannot expect civil society and industry to seek and to execute permits for forest ecosystem recovery unless there are immediate short-term livelihood rewards. The disincentive of licence fees and land and forest product taxes, which have plagued the ERC system, should be removed, and should not be applied to the Community Plantation Forest Scheme or other permits villages and local communities hold for non-commercial products.

Co-management of forestland is an established option for conservation areas and is now also being applied more broadly in relation to Village Forests. Current policy to support access rights for rural poor and landless requires that plantation forest concessions allocate 20% of their concession for the use of local people through co-management agreements. While the retention of a permit system may be appropriate for community-based use of forest resources for commercial purposes, the Restoration Ecosystem Concession may continue to have a role in certain circumstances. Where private investment is likely to yield profitable forest products (non-timber or ecosystem services), co-management partnerships are more likely to lead to equitable and effective mobilization of expertise and effort in forest landscape restoration. One approach for implementing a sustainable business model is through promoting and facilitating a Public-Private-People-Partnership (4 P Concept). At the landscape level, each of these stakeholder groups would have different roles, rights and responsibilities, which would ideally be complementary. The FLR as part of an integrated landscape approach could not be conducted alone.

4.3 Clearly defined landscape-based unit of management

In the design and development of an FLR, the programme needs to be clearly defined from the outset. It should be based on certain ecosystem functions, including watershed and forest landscape (at the farm-forestry interface as part of a forest landscape mosaic) and peatlands. An integrated landscape management approach should be supported by integrative planning approaches combining historical and functional perspectives on a landscape scale (Schulz and Schröder 2017). The assessment of current,

past and reference landscape states is relevant to the design of tailored FLR strategies, particularly when a mosaic-type of FLR is needed. All these should be translated into strategic direction at the national level for a landscape approach supported by a clear policy framework.

Common similarities in the landscape approach have been discussed; they are generally in line with the characterization of the landscape approach overarched by the five concepts of multi-functionality, transdisciplinary, participation, complexity and sustainability (Freeman et al. 2015). The main difference is the level of in-depthness (the intensity) of a particular stage, which often depends on the objectives in implementing the landscape approach. For example, carrying out an initial assessment of landscapes at risk is crucial for disaster risk reduction (CARE Nederland and Wetlands International 2017). Restoring the functionality for multiple benefits, while preventing further reduction of natural forest cover are the most important principles in applying a landscape approach in Forest Landscape Restoration (FLR) and can be considered long-term goals (IUCN and WRI 2014). However, necessary policy frameworks and regulations to support effective implementation are still considered external factors.

4.4 Potential financing mechanism

A financing system based-on, and supporting, integrated planning should be part of the scenarios for integrated FLR to enhance synergy and complementary activities at the landscape level and to be included in the Grand Strategy document. We have identified at least five avenues to obtain finance for forest landscape recovery. These could yield considerable financial support; however, they will require careful policy development:

1. Continue to work with multi-lateral and bilateral International Development Partners linked to climate change mitigation and biodiversity conservation, noting especially the need for a new and specific focus on tropical forest ecosystem recovery.
2. Consider private sector contributions as a component of CSR including, for example, potential collaboration with the Indonesian Business Council on Sustainable Development (IBCSO) and the National Chamber of Commerce (*Kamar Dagang dan Industri Indonesia– KADIN*).
3. Consider private sector research and development. For example, the Indonesian Tropical Landscapes Finance Facility (TLFF)²⁰, which has been established with the support of the Government of Indonesia and facilitated by UNEP, ICRAF, BNP Paribas, ADM Capital and other financial institutions to establish the first purely private sector landscape financing facility at scale. The TLFF has agreed to support the targeted green investments that are crucial to Indonesia meeting its international commitments under the UNFCCC and Sustainable Development Goals (SDGs). It provides long-term concessional loans, largely for rural smallholders active in the agricultural sector and renewable energy projects and for marginalized communities, thereby bridging the gap between the government, private sector, and communities. The TLFF's main aim is to coordinate cross-functionally, to bring about large-scale positive change.
4. The Indonesian Climate Change Trust Fund (ICCTF)²¹:
 - a. An international network under the auspices of the Bonn Challenge. Note the example of the Latin American Vision 2020 Initiative, which targeted USD 830 million through political-technical and financial support (see Table 8)²².
 - b. Implementation of the concept of *Green Bonds* through international development banks.

20 Detailed information: <https://www.tlffindonesia.org/>

21 <http://icctf.or.id/icctf-dan-brg-bekerja-sama-meningkatkan-pengelolaan-lahan-gambut-di-indonesia/>

22 Dr Satrio Wicaksono *op cit*.

5. A further concept which has recently evolved within Indonesia and has enormous merit is related to the idea of **Land Use Amnesty**²³, which extends the principle of **legalizing the illegality and formalizing informality**, espoused by President Joko Widodo and is the basis for the current tax amnesty. In Riau Province alone oil palm has been illegally planted on 1.2 million ha. If this conversion were to be legalized at a cost to the perpetrators in exchange for official legal designation and extended nationally, there is a potential to raise very large amounts of money that could be reallocated to conserving high value forest and engaging in forest ecosystem recovery.

Table 8. Potential financing mechanism

Climate Finance
<p>Green Climate Funds: Through accreditation, Indonesia has access to funding through the GCF <i>Readiness Programme</i>; the Principle of <i>Country Ownership</i> requires the National Designated Authority (NDA) to have the capacity to assess a proposal, which should then be submitted to GCF (http://iesr.or.id/2016/03/green-climate-fund-perkembangan-dan-peluang-bagi-indonesia/).</p> <p>Special Climate Change Fund (Trust Fund): This fund supports adaptation and technology transfer in all developing country parties with the UNFCCC, supporting both long-term and short-term adaptation activities in water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems and integrated coastal zone management (http://www.thegef.org/about/funding).</p> <p>Global Environment Facility (GEF) (Trust Fund): GEF was established on the eve of the 1992 Rio Earth Summit; it is available to developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements (http://www.thegef.org/about/funding).</p> <p>Adaptation Fund (Trust Fund): The AF was approved for Indonesia on 11 May 2015 for Improved Food Security in West Nusa Tenggara Province (Nusa Tenggara Barat–NTB) (USD 5,995,666) (http://www.adaptation-fund.org/wp-content/uploads/2015/06/AFB-Decision-B_25-26_4_Indonesia.pdf)</p>
Private Sector
<p>PT Bumi Mekar Hijau: This firm needs to support land restoration due to its location (75% located in deep peat/gambut dalam) (http://kbr.id/06-2016/109_perusahaan_hti_diminta_merestorasi_lahan_gambut/82050.html).</p> <p>Wilmar, Golden Agri Resources (GAR), Cargill, Asian Agri, Musim Mas: Still being negotiated with BRG (http://www.republika.co.id/berita/ekonomi/korporasi/16/03/10/o3tgoi383-perusahaan-pemegang-konsesi-tanggung-50-persen-biaya-restorasi-gambut).</p>
Development Cooperation
<p>The Newton Fund - Bilateral Development Cooperation (UK): The fund provided GBP 75 million each year from 2014 for five years; one of the priority themes is Improving Environmental Resilience and Energy Security (https://www.britishcouncil.id/sites/default/files/newtonfund_booklet_indonesia.pdf).</p> <p>Agence Française de Développement (AFD) - Bilateral Development Cooperation (France): A financial institution and the main implementing agency for France’s official development assistance for developing countries and overseas territories; one of its focuses is Biodiversity (http://www.afd.fr/lang/en/home/projets_afd).</p>

23 The concept of a Land Use Amnesty was raised by Mr. Hardjono Arisman on 3 October 2016 at a meeting of professional foresters and further elaborated by Mr. Poedji Churniawan at the IUFRO Side Event in Bogor, 5 October 2016. It represents a thoughtful and realistic approach to the long delays and complexity of raising finance through trade in Carbon within the UNFCCC framework. It also has the strong advantage of directly meeting the high opportunity costs of oil palm, which will not be easy to do under a REDD Carbon Emissions option.

Table 8. Continued

Non-Governmental Funding International NGOs

Foundation (Hewlett Foundation; IKEA Foundation and Fields Pond Foundation):
“The primary mission of Fields Pond Foundation is to provide financial assistance to nature and land conservation organisations that are community-based and that serve to increase environmental awareness by involving local residents in conservation issues.” Based in Massachusetts, USA (<http://fieldspond.org/>).

WWF Reforestation Grants:
Focuses on supporting communities in regaining ecological integrity and enhancing human wellbeing in deforested and **degraded landscapes** through forest restoration; looking for organisations that will use this workshop opportunity to connect corridors, create buffer zones, improve degraded lands, restore watersheds and expand forest cover while also allowing local stakeholders to connect with nature and become a vested part of a larger conservation programme (<http://www.worldwildlife.org/projects/reforestation-grants>).

Michael Succow Foundation:
In collaboration with Greifswald Mire Centre; Peatland and Climate Protection (<http://www.succow-stiftung.de/peatland-and-climate-protection-162.html>).

World Land Trust:
WLT empowers local NGOs by providing finance and technical support to create and protect nature reserves, restore degraded habitats and ensure they are permanently protected (<http://www.worldlandtrust.org/about/how-we-work>).

Environmental Funds (international)

The Ramsar Convention:
Mission: the conservation and wise use of all wetlands (including peatland) through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world (<http://www.ramsar.org/about/the-ramsar-convention-and-its-mission>).

Non-Traditional Funding

George Soros - Individual Investor (<http://news.detik.com/berita/d-3304386/george-soros-dkk-tertarik-bantu-restorasi-lahan-gambut-di-hutan-indonesia>); Kitabisa.com; and Crowdfunding.

4.5 Scenarios of the adaptive strategy following the enactment of the Job Creation Law No. 11 of Year 2020

Taking the documented experiences during the enactment of the Law No. 23/2014, the processes took two years, from initially being declared by the government until effectively being implemented and for the institutional arrangements to be well in place and functioning to operationalize the implementation of a new law on the ground (Putro and Nawir 2016). Following the enactment of Omnibus Law No. 11/2020, proposed adaptive strategies are discussed here. Emphasis is provided to anticipate how best to take advantage of the transition period to minimize any counter-productive impacts and the associated transaction costs. Particularly, adaptive strategies are important, to maintain the roles and responsibilities of Forest Management Units (FMUs) in forest management including in implementing forest rehabilitation and restoration programmes.

Advocacies in repositioning the FMU functions, roles and responsibilities

The roles and functions of FMUs, as the forefront of forest management in Indonesia, have been the underlying philosophical context of both, the new regulation of the Omnibus Law and former regulations governing FMUs under Law No. 23/2014. As the frontline of forest management on the ground, FMUs should be able to accommodate the interests of different stakeholders by providing an integrated information system on the updated forest management and baselines for designated forest management areas (Kartodihardjo et al. 2011). However, Government Regulation No. 23/2021 and the associated derived ministerial level regulations (*Peraturan Menteri-Permen*) under the Omnibus Law, clearly

indicate limiting the roles and functions of FMUs as facilitators and mediators for third parties and to have them concentrate their efforts on different activity components of integrated forest management on the ground (Ichsan 2021; Kartodihardjo 2021). The FMUs are to function more as facilitators to accelerate the process of forestry development in the regions with less power; their duties are now centred on regional and forest management planning and monitoring. Under the existing regulations, the FMU status is Regional Technical Implementation Unit (*Unit Pelaksana Teknis Daerah-UPTD*), with an allocated national budget that has been significantly reduced. The provincial level government needs to formulate the necessary policy and regulatory frameworks to strategically support the operational budget for FMUs. With the high expectations from central government on greater provincial government roles and contributions, the provincial government has a strategic position in policy advocacies. This is particularly true in the repositioning of FMU functions, roles and responsibilities based on mutual collaboration between province and national governments in ensuring improved forest management practices. The collaborative principles are important for a broader goal of achievements of sustainable forest management with multiple objectives to maintain ecosystem services, improved local community livelihoods and community empowerment, ensuring gender and social inclusion.

Promoting partnerships between the business sector and FMUs

In this pro-business governance system, one of the adaptive strategies for maintaining effective roles and functions of FMUs would be to initiate partnerships with the business sector, particularly with companies who hold Forestry Business Licences. Under Article No. 163 of Government Regulation No. 23/2021, there are investment opportunities that could be facilitated by provincial government. This could create favourable conditions to cater for the investment interests of those who hold Forestry Business Licences for small and medium scale enterprises in timber and Non-Timber Forest Products (NTFPs). These could include processing logs, raw wood chip materials and/or wood biomass into processed wood products with an integrated production capacity of between 2,000 and 6,000 m³ per year and the processing of NTFPs for small or medium scale businesses.

Facilitating these forestry-based businesses in partnerships with private companies would facilitate employment opportunities and generate revenue for the provincial government. However, it is important for the FMUs, in representing the agency under the provincial government managing forest areas at the site level, to effectively function as equal partners in partnerships with the business sector. Therefore, the FMUs' institutional capacities should be enhanced and complemented by an effective system to develop strategic planning. On the other hand, synchronization with existing long-term forest management is needed. The FMUs operational budget is no longer supported by central government. Provincial government may now consider FMUs as a cost centre. During the transition of the two-year period until the Omnibus Law is fully operationalized, provincial level government needs to formulate the necessary policy and regulatory frameworks. However, at the national level, ministerial regulations on partnership arrangements are needed as a basis for provincial government to operationalize the approach on the ground supported by the relevant policy framework.

Promoting partnerships under social forestry schemes

The Minister of Environment and Forestry Regulation No. 9/2021 focuses on implementing the National Social Forestry Programme post the Omnibus Law. However, this has caused fundamental changes to the existing partnership arrangements implemented by FMUs on the ground, as part of the community empowerment activities under the National Social Forestry Programme. Particularly, since FMUs no longer have the authority to initiate partnership arrangements directly with communities. The Minister of Environment and Forestry now needs to directly approve partnership arrangements. The FMUs' roles and responsibilities have shifted from being the implementer to the facilitator. The FMUs are now responsible for the preparation of instruments to accommodate the interests of both the business licence holders and the community groups with the aim of ensuring that the partnership process that is built continues to meet the principles of equality, transparency and fairness of both parties.

Protecting the local communities' interests: safeguarding through local government regulations

There are expected implications for the communities who have been involved in different forestry programmes, including social forestry and partnership arrangements with FMUs. Provincial level government needs to formulate the necessary policy and regulatory frameworks to minimize any counter-productive impacts on local communities during the two-year transition period until the Omnibus Law is fully operationalized. Three possible adaptive strategies are highlighted below.

Firstly, by developing Standard Operating Procedures (SOP) to regulate the working relationship under the new arrangements between FMUs and the third-party implementing the forest management at the site level. SOP should include a coordination function, implementation and monitoring and evaluation. Clear SOP would support the FMUs' position to effectively implement forest management according to the existing long-term forest management plans.

The second strategy focuses on exploring the leading agency to prepare the necessary policy and regulatory frameworks using alternative strategic themes besides the forestry sector, such-as commodity-based NTFPs. Community-based development strategies could be led by different leading agency, such as the regional planning agency. This approach would maintain the overall end-goal of government development strategies prioritizing the welfare of local communities, regardless of the dynamics of national policy changes.

The third adaptive strategy is to respond to the points included in Ministerial Regulation No. 9/2021, particularly on governor approval for the submission of management rights under Social Forestry Schemes. As noted in this ministerial regulation, approval of two schemes, Village Forests and Community Forests, is in the hands of the governor, while other schemes are directly approved by the Minister of Environment and Forestry. However, the provincial government needs to produce supporting regulatory frameworks, such as a provincial level regulation on forest management. Further, social forestry should be highlighted in the document on Regional Medium Term Development Planning (*RPJMD*) as a priority programme in forest management and at least 35 percent of the budget should be allocated to support the implementation on the ground. Therefore, the Special Allocation Fund (*Dana Alokasi Khusus*) could be directly allocated to the provinces to meet these requirements.

5 Concluding remarks

An integrated Forest Landscape Restoration (FLR) approach is crucial to address degraded lands in Indonesia, particularly 14 million ha of critical and very critical lands (Ministry of Environment and Forestry 2019). However, the land use competition has been quite high and intensive, particularly between sectors. This situation has provided serious challenges for the implementation of FLR on the ground.

The Indonesian Government has outlined its FLR-related commitments at the international level in its reports or documents to UNCBD, UNCCD and UNFCCC. These FLR-related commitments are linked to the existing goals and policies of the Ministry of Environment and Forestry. Moreover, the Indonesian Government has been engaging with the Bonn Challenge process, even though Indonesia and many other countries have not formally made a Bonn Challenge pledge yet. At the regional level in the Asia-Pacific, the Indonesian Government has also committed to achieve a set target by linking the existing and planned restoration activities to the Regional Strategy and Action Plan for Forest and Landscape Restoration in the Asia-Pacific. Translating all these international and regional-level commitments have been quite challenging. An integrated policy framework and operationalization of this framework into national strategies should be formulated and developed. This paper highlights the importance of facilitating the development of inter-ministerial and inter-sectoral policy frameworks to advance the integrated FLR approach, which considers various sectors' development objectives, while at the same time attempting to restore ecosystem functions and enhance the livelihoods of local communities.

The Indonesian Government plans to restore approximately 22.6 million ha through various programmes. These include: (1) Social Forestry Programme (12.7 million ha); (2) Forest and Land Rehabilitation (5.5 million ha); (3) Partnerships (1.6 million ha); (4) Ecosystem Restoration (2.8 million ha) and CSR (Corporate Social Responsibilities). The overarching regulatory framework and management approaches that could potentially support the FLR approach and practices include: (1) Forest Management Unit Model–FMU (*Kesatuan Pengelolaan Hutan–KPH*); (2) Integrated Watershed Management Approach (IWMA); (3) One-Map Policy (*Kebijakan Satu Peta*) and (4) Policy frameworks supporting community participation. Altogether, these are important for landscape-based oriented approaches in the forestry sectors in Indonesia.

Based on these overarching regulatory framework and management approaches, institutional arrangements under different schemes facilitate community participation and involvement in the management of production and protection forests and other forest classes. At the landscape level, which consists of different forest function classes, complementarity of community-based forest management under different social forestry and forest partnership schemes is important. An integrated Grand Strategy of forest management, at the landscape level, is needed to ensure synergies based on collaborative approaches. An integrated FLR approach should be implemented as part of the overall landscape-based regional development at all administrative levels. In particular, the approach needs to be streamlined into regional development planning at all levels (national to village).

In the absence of integrated policy and regulatory frameworks for the landscape approach and FLR at the national level, various organisations have initiated a range of programmes and strategic approaches in moving forward to implement these approaches. We have identified various opportunities and challenges from the applications of the landscape-based approach, FLR and a combination of the two.

The starting points to initiate the projects using the landscape-based approach appear to be somewhat similar. The governance of the landscape approach seems to be the primary focus of all initiatives. However, the operational scale ranges from a couple of villages to the whole district, while the timeframes range from a minimum of five years to long-term implementation under different phases. Complementary activities have been conducted to add to pilot projects and sometimes as part of policy-based research to help operationalize the landscape approach. Initiatives were implemented by international organisations and private sectors, involving a range of local and national stakeholders, including government and NGOs. The valuable lessons learned are useful for the formulation or further adjustment of policy and regulatory frameworks supporting the implementation of a landscape-based approach on a wider scale.

The three initiatives discussed in the FLR approach, display some variation across the restoration projects. These FLR initiatives focused on different types of ecosystems (two on peatland and one on coastal areas/mangroves). A couple of common approaches, i.e., the involvement of local communities and the improvement of their livelihoods, are at the forefront. Further, there were common challenges, such as the low level of awareness of the issues being addressed among key stakeholders, including local villagers, and a lack of spatial databases on the targeted areas, that are required in designing tailored restoration activities in the areas. Technical issues, both during the planning and implementation phases, also appear to be a common problem.

Based on the forest landscape approach to implement FLR on the ground there are a range of lessons learned. There was sufficient complexity in the forest landscape approach to deal with the multiple aspects of the projects, ranging from governance issues to technical aspects for improving the ecosystem functions. However, the case studies also highlighted the usefulness of several tools or frameworks in planning, the importance for setting management options and the need to engage with a wide range of stakeholders, at various levels, to overcome challenges related to FLR. These lessons learned will be useful in the efforts moving forward to promote the landscape approach for restoration.

Taking all the lessons learned, discussed in this paper, we have identified five scenarios to foster intersectoral coordination for promoting complementary management options as part of the FLR initiatives. Firstly, an overarching clear policy framework is required, whereby the Grand Strategy document at all levels should be designed based on a participatory approach, as part of the medium term development plan. This document may serve as a referral document for inter-ministerial and intersectoral coordination. To begin with, inter-ministerial agreements should be developed for common and acceptable working terminology on FLR, landscape-based regional development, etc. At the landscape level, different existing programmes could potentially be designed to complement and facilitate collaborative processes to develop grand designs and strategies for integrated management at the landscape level. It is important to take into consideration the multiple management objectives of different stakeholders and government agencies at the landscape level, e.g., the government's targets and priorities in forestry and agricultural sectors, companies' commercial interests in timber and oil palm production, as well as the urgency of restoring ecosystem functions and enhancing the livelihoods of local communities. Also, integrated grand strategies based on sustainable business models, which consider the ecosystem characteristics and the support of a complementary policy framework, is crucial for facilitating a sustainable integrated FLR in Indonesia. Multi-stakeholder participatory and adaptive co-management approaches should be the underlying processes to ensure engagement with key stakeholders, capacity development and greater impact of project objectives. Adaptive co-management must also be integrated into the project design as an approach for governance of social-ecological systems.

Secondly, community participation and enhanced partnership should be encouraged to foster sustainable FLR. Co-management of forestland is an established option for conservation areas and is now also being applied more broadly in relation to Village Forests. Where private investment is likely to yield profitable forest products (non-timber or ecosystem services), co-management partnerships are more likely to lead to equitable and effective mobilization of expertise and effort in forest landscape restoration. One approach for implementing a sustainable business model is through promoting and facilitating a Public-

Private-People-Partnership (4 P concept). At the landscape level, each of these stakeholder groups would have different roles, rights and responsibilities, which would ideally be complementary. The FLR as part of an integrated landscape approach could not be conducted alone.

Thirdly, a clearly defined landscape-based unit of management is needed. In the design and development of an FLR, the programme needs to be clearly defined and based on certain ecosystem functions, including watershed and forest landscape (at the farm-forestry interface as part of a forest landscape mosaic) and peatlands. The assessment of current, past and reference landscape states is relevant to designing tailored FLR strategies, particularly when a mosaic-type of FLR is needed. All these should be translated into a strategic direction at the national level for a landscape approach supported by a clear policy framework. Fourthly, a financing system based-on, and supporting, integrated planning should be part of the scenarios for integrated FLR to enhance synergy and complementary activities at the landscape level and to be included in the Grand Strategy document.

Lastly, in responding to the issuance of Law No. 11/2020, i.e., the Job Creation Law, the adaptive strategies need to be explored further to maintain the roles and responsibilities of Forest Management Units (FMUs) in forest management including in implementing forest rehabilitation and restoration programmes. There are expected implications for the communities who have been involved in different forestry programmes, including social forestry and partnership arrangements with FMUs. With the high expectations from central government on greater provincial government roles and contributions, the provincial government has a strategic position in policy advocacy. Particularly, repositioning the FMUs' functions, roles and responsibilities should be based on mutual collaboration between province and national governments to ensure improved forest management practices. Provincial level government needs policy and regulatory frameworks as safeguards to minimize any counter-productive impacts on local communities during the transition period until the 'new' Job Creation Law is fully operationalized.

References

- Abdullah Y. 2017. “Walhi Sumsel Kritisi APP Gelar Bonn Challenge (Walhi South Sumatra Criticizes APP on Convening Bonn Challenge).” <https://sumsel.antaranews.com/berita/315324/walhi-sumsel-kritisi-app-gelar-bonn-challenge/>.
- Achouri M. 2006. Chapter 1. Preparing the next generation of watershed management programmes. In Tennyson L and Zingari PC, eds. *Water resources for the future. Preparing for the next generation of watershed management programmes and projects. Proceedings of the International Conference organized in collaboration with the Italian Ministry for the Environment and Territory, Porto Cervo, Sassari, Sardinia, Italy, 22-24 October 2003*. Rome: Food and Agriculture Organisation of the United Nations.
- Achouri M. 2003. *Chapter 1. Preparing the next generation of watershed management programmes*. Conference on Preparing for the Next Generation of Watershed Management Programmes and Projects: Water Resources for the Future, 22-24 October 2003, Porto Cervo, Sassari, Sardinia, Italy: Food and Agriculture Organisation of the United Nations, Rome. <https://www.fao.org/3/a0438e/a0438e00.htm>
- Asia Pacific Forestry Commission. 2007. Regional Strategy and Action Plan for Forest and Landscape Restoration. (23-27 October 2017). <http://www.fao.org/3/bt712e/bt712e.pdf>
- Asmani N. 2017. *Pertemuan Bonn Challenge Asia Pasifik, Apa Manfaatnya Buat Kita? (Asia Pacific Bonn Challenge Meeting, What's in It for Us?)*. MONGABAY Situs Berita Lingkungan (Environmental News Site). Accessed 16 July 2019 <http://www.mongabay.co.id/2017/05/02/pertemuan-bonn-challenge-asia-pasifik-apa-manfaatnya-buat-kita/>.
- Baloch MA and Tanik A. 2008. Development of an integrated watershed management strategy for resource conservation in Balochistan Province of Pakistan. *Desalination* 226:38–46. doi: <https://doi.org/10.1016/j.desal.2007.02.098>.
- Boot R. 2014. *From 'landschap' to the landscape approach: original and definitions*. Unravelling the Landscape Approach-Are we on the right track? Wageningen, 17 September 2014. Tropenbos International.
- CARE Nederland and Wetlands International. 2017. *A Landscape Approach for Disaster Risk Reduction in 7 Steps*. Accessed 3 November 2017. <https://www.carenederland.org/careexpertise/7-steps-in-disaster-risk-reduction>
- Chazdon RL, Brancalion PHS, Laestadius L, Bennett-Curry A, Buckingham K, Kumar C, Moll-Rocek J, Vieira ICG and Wilson SJ. 2016. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio* 2016, 45:538-559. doi: DOI 10.1007/s13280-016-0772-y. Accessed 7 January 2018. <https://link.springer.com/article/10.1007/s13280-016-0772-y>
- Chazdon RL. 2008. Beyond Deforestation : Restoring Forests and Ecosystem Services on Degraded Lands. *Science* 320:1458–1460. doi: 10.1126/science.1155365.
- Chokkalingam U, Sabogal C, Almeida E, Carandang AP, Gumartini T, de Jong W, Júnior SB, Lopez AM, Murniati, Nawir AA, et al. 2005. Local participation, livelihood needs and institutional arrangements: Three keys to sustainable rehabilitation of degraded tropical forest lands. In Mansourian S, Vallauri D and Dudley N, eds. *Forest Restoration in Landscapes: Beyond Planting Trees*. Springer. 405-414. <https://rd.springer.com/book/10.1007/0-387-29112-1?page=3#toc>
- Chokkalingam U. 2016. The landscape approach to forest rehabilitation: Benefits challenges and opportunities. Presented at The Ninth Executive Forest Policy Course, Sustainable Development Goals, Climate Change and the Future of Forests in the Asia-Pacific (24 May-2 June 2016), Yogyakarta, Indonesia
- Colfer CJP. 2005. *The Complex Forest Communities, Uncertainty, and Adaptive Collaborative Management*. Bogor, Indonesia: CIFOR (Center for International Forestry Research).

- Conservation International (CI). 2018. *Sustainable Landscape Approach: Implementation guidebook*. Accessed 31 October 2017. <https://www.conservation.org/publications/documents/ci-science-to-policy-sustainable-landscape-approach.pdf>
- Convention on Biological Diversity. 2010. *Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its Tenth Meeting*. 3 July 2018. <https://www.cbd.int/decisions/cop/?m=cop-10>
- Cossalter C and Pye-Smith C. 2003. *Fast-Wood Forestry: Myths and Realities*. Forest Perspectives. Bogor, Indonesia: Center for International Forestry Research (CIFOR).
- Cumming GS. 2016. The relevance and resilience of protected areas in the Anthropocene. *Anthropocene* 13:46-56. doi: <https://doi.org/10.1016/j.ancene.2016.03.003>.
- Darghouth S, Ward C, Gambarelli G, Styger E and Roux J. 2008a. *Watershed Management Approaches, Policies, and Operations : Lessons for Scaling Up*. Water Sector Board Discussion Paper Series No. 11. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/17240?locale-attribute=fr>
- Darghouth S, Ward C, Gambarelli G, Styger E and Roux J. 2008b. *Watershed management approaches, policies, and operations: lessons for scaling up*. 44222 Water Sector Board Discussion Paper Series. Paper No. 11, May 2008. Washington, D.C.: The World Bank.
- DG Forest and Land Rehabilitation and Social Forestry. 2003. *Rehabilitasi lahan dan perhutanan sosial: Dari masa ke masa (Land rehabilitation and social forestry: From time-to-time*. Jakarta: Direktorat Jenderal Rehabilitasi Hutan dan Lahan dan Perhutanan Sosial-RLPS (Directorate General-DG Forest and Land Rehabilitation and Social Forestry), Ministry of Forestry.
- DG Forestry Planology. 2012. *Peraturan Direktur Jenderal Planologi Kehutanan Nomor P.5/VII-WP3H/2012 tentang Petunjuk Teknis Tata Hutan dan Penyusunan Rencana Pengelolaan Hutan Pada Kesatuan Pengelolaan (The Director General of Forestry Planology Regulation Number P.5/VII-WP3H/2012 on Technical Procedure for Forest Governance and the Development of Forest Management Planning Documents for Forest Management Units Operating in the Protection and Production Forests)*. Direktur Jenderal Planologi Kehutanan, Departemen Kehutanan (Director General-DG of Forestry Planology , Ministry of Forestry). http://kph.menlhk.go.id/sinpasdok/new/doc/1587393164lampiran_perdirjen_no_5_2012_tata_hutan.pdf
- DG Management of Watershed Area and Social Forestry. 2013a. *Peraturan Direktur Jenderal Bina Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial Nomor : P. 3/V-Set/2013 tentang Pedoman Identifikasikarakteristik Daerah Aliran Sungai (The Director of General of Management of Watershed Area and Social Forestry Regulation Number P. 3/V-SET/2013 on Guidelines for Identifying the Characteristic of Watersheds)*. Jakarta: Direktur Jenderal Bina Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial (Directorate General-DG of the Management of Watershed Area and Social Forestry), Ministry of Forestry. <https://www.scribd.com/doc/172381229/Pedoman-Identifikasi-Karakteristik-Das-Kementerian-Kehutanan-2013>
- DG Management of Watershed Area and Social Forestry. 2013b. *Peraturan Direktur Jenderal Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial Nomor Nomor P.5/V-SET/2013 Tahun 2013 tentang Petunjuk Teknis Sistem Informasi Elektronik Daerah Aliran Sungai (e-DAS) (The Director General of Management of Watershed Area and Social Forestry Regulation Number P.5/V-SET/2013 on Technical Guidelines on the Electronic System of Watersheds)*. Jakarta: Direktur Jenderal Bina Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial (Directorate General-DG of the Management of Watershed Area and Social Forestry), Ministry of Forestry. <https://www.hukumonline.com/pusatdata/detail/lt5264dbf45a8f1/peraturan-direktur-jenderal-bina-pengelolaan-daerah-aliran-sungai-dan-perhutanan-sosial-nomor-p5-v-set-2013-tahun-2013/document>
- DG Management of Watershed Area and Social Forestry. 2013c. *Peraturan Direktur Jenderal Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial Nomor P. 4/V-Set/2013 Tentang Petunjuk Teknis Penyusunan Data Spasial Lahan Kritis (The Director General of the Management of Watershed Area and Social Forestry Regulation Number P. 4/V-Set/2013 on Technical Guidelines on Developing Spatial Data on Critical Lands)*. Jakarta: Direktur Jenderal Bina Pengelolaan Daerah Aliran Sungai dan Perhutanan Sosial, Departemen Kehutanan (Directorate General-DG of the

- Management of Watershed Area and Social Forestry, Ministry of Forestry). https://www.academia.edu/28838368/PERDIRJEN_BINA_PENGELOLAAN_DAERAH_ALIRAN_SUNGAI_DAN_PERHUTANAN_SOSIAL_NOMOR_P_4_V_SET_2013_TENTANG_PETUNJUK_TEKNIS_PENYUSUNAN_DATA_SPASIAL_LAHAN_KRITIS
- Dixon JA. 2000. Analysis and Management of Watersheds. In Dasgupta P and Mäler K-G, eds. *The Environment and Emerging Development Issues: Volume 2*. Oxford: Published to Oxford Scholarship Online: September 2007. <https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199240708.001.0001/acprof-9780199240708>
- FAO. 1986. *Strategies, approaches and systems in integrated watershed management*. Conservation guide No. 14. Rome: Food and Agriculture of the United Nations (FAO). <https://www.fao.org/3/ad085e/AD085e00.htm>
- Floors C. 2019. *Green Livelihoods Alliance: Annual Progress Report 2018*. Forested Landscapes for Equity. Amsterdam: Milieudefensie, IUCN National Committee of The Netherlands, and Tropenbos International. <https://www.tropenbos.org/projects/green+livelihoods+alliance+-+forested+landscapes+for+equity>
- Freeman OE, Duguma LA and Minang PA. 2015. Operationalizing the integrated landscape approach in practice. *Ecology and Society* 20(1):24. doi: <http://dx.doi.org/10.5751/ES-07175-200124>.
- Geospatial Information Agency. 2013 *Peraturan Badan Informasi Geospasial Nomor 15 Tahun 2013 tentang Sistem Referensi Geospasial Nasional 2013 (The Geospatial Information Agency Regulation Number 15 Year 2013 on the National Geospatial Referencing System in 2013)*. Jakarta: Badan Informasi Geospasial (Geospatial Information Agency). <https://jdih.big.go.id/hukumjdih/3140>
- GLF. 2019a. *Global Landscape Forum (GLF) Bonn 2019 Outcome Statement*. Accessed: 27 November 2020 https://www.globallandscapesforum.org/wp-content/uploads/bonn-2019/Outcome_statement.pdf
- GLF. 2019b. *Global Landscape Forum (GLF), Rights in the landscape*. Donor and Partner Report. Maritim Hotel, Bonn, Germany, 22 - 23 June 2019. https://www.globallandscapesforum.org/wp-content/uploads/bonn-2019/Donor_&_partner_report.pdf
- GLF. 2020. *Global Landscape Forum (GLF) Bonn Digital Conference 2020 Outcome Statement*. Accessed: 27 November 2020 https://www.globallandscapesforum.org/wp-content/uploads/bonn-2020/GLF_Bonn_2020_Outcome_statement.pdf
- GLF. 2018. *Outcome statement of the 2018 Global Landscapes Forum (GLF): Connecting for impact: From commitment to action*. Accessed: 27 November 2020. <https://www.globallandscapesforum.org/wp-content/uploads/2019/01/GLF-Bonn-2018-Outcome-statement.pdf>
- GPFLR. *Restoration: a lifeline to the future we need (Previous title: The Bonn Challenge, 2013)*. The Global Partnership on Forest Landscape Restoration (GPFLR). Accessed 3 January 2022 (Previously 3 September 2018) <https://www.forestlandscaperestoration.org/7446/restoration-a-lifeline-to-the-future-we-need/> (previously was <http://www.forestlandscaperestoration.org/topic/bonn-challenge>)
- Harapan H. 2021. *History*. PT. Restorasi Ekosistem Indonesia (PT. REKI). Accessed <https://hutanharapan.id/en/history/>
- Hendroyono B. 2021. *Dari Timber Management ke Forest Landscape Management (From Timber Management to Forest Landscape Management)*. Presented at Presented at the Webinar #1 on Defining the future forestry management post-timber. Webinar Series Celebrating the 60th Years of President Joko Widodo Jakarta 28 June 2021
- Hicks R. 2017. *Indonesian protesters dismiss Bonn Challenge as mask for APP's "corporate crimes"*. Accessed 5 July 2018. <http://www.eco-business.com/news/indonesian-protesters-dismiss-bonn-challenge-as-mask-for-apps-corporate-crimes/>.
- Hurni H. 2000. 'Assessing sustainable land management (SLM)'. *Agriculture, Ecosystems and Environment*, 81, pp. 83–92.
- Ichsan AC. 2021. *Reposisi Pengelolaan Kesatuan Pengelola Kehutanan (KPH) Paska Peraturan Pemerintah (PP) No. 23 Tahun 2021 (Repositioning the Management of Forestry Management Units (FMU) during the Post Government Regulation Number 23 of 2021)*. Presented at the

- Expert Meeting-3 *Finalisasi Policy Brief Operasionalisasi KPH Era PP 23 dari perspektif hukum* (Finalisation of the Policy Brief on the Operationalisation of FMUs in the PP/23 Era from a Legal Perspective), Organised by the Bogor Agricultural Institute (Institut Pertanian Bogor), 24 November 2021. Unpublished: Forestry Study Program, Mataram University.
- IUCN. 2017. *Indonesia hosts first Asia regional high-level event on restoration and the Bonn Challenge*. The International Union for Conservation of Nature (IUCN). Accessed 7 January 2019 <https://www.iucn.org/news/asia/201705/indonesia-hosts-first-asia-regional-high-level-event-restoration-and-bonn-challenge>.
- IUCN and WRI. 2014. *A guide to the Restoration Opportunities Assessment Methodology (ROAM): Assessing forest landscape restoration opportunities at the national or sub-national level*. Working Paper (Road-test edition). Gland, Switzerland: IUCN: The International Union for Conservation of Nature (IUCN). <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam>
- Kanoppi Project. 2017. *Kanoppi Policy Research Component (Objective 3) for the Kanoppi Project: Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia*. Sub-Final Report. Bogor, Indonesia: CIFOR (Center for International Forestry Research), WWF Indonesia Coral Triangle Program, Farm Forestry Consortium, Gadjah Mada University, and Mataram University.
- Karsidi A. 2016. *Kebijakan satu peta: Roh pembangunan dan pemanfaatan geospasial di Indonesia (One Map Policy: The underlying spirit for the development and the utilization of geospatial in Indonesia)*. Jakarta: Geospatial Information Agency (Badan Informasi Geospasial).
- Kartodihardjo H, Nugroho B and Putro H. 2011. *Pembangunan Kesatuan Pengelolaan Hutan (KPH) (Forest Management Unit-FMU Development – Concept, Legislation and Implementation)*. Jakarta Direktorat Wilayah Pengelolaan dan Penyiapan Areal Pemanfaatan Kawasan Hutan, Direktorat Jenderal Planologi Kehutanan, Kementerian Kehutanan (Directorate of Area Management and Preparation of Forest Area Utilisation, Directorate General of Forestry Planning, Ministry of Forestry). https://www.forclime.org/documents/Books/Buku_Pembangunan_KPH_16_Des_2011.pdf
- Kartodihardjo H. 2021. *Surat dari Dramaga, 01 Maret 2021: Perubahan Substansial Manajemen Hutan di PP UU Cipta Kerja (Letter from Dramaga, 01 March 2021: Substantial Changes in Forest Management in the Government Regulation of the Job Creation Law*. Forest Digest. Accessed Accessed 7 July 2021 <https://www.forestdigest.com/detail/1026/perubahan-substansial-kehutanan-uu-cipta-kerja>
- Kosasih D. 2015. *Menanti Komitmen Restorasi Bentang Alam Skala Nasional (Waiting for the Commitment on Landscape Restoration at the National Scale)*. Accessed 29 October 2018 <http://www.greeners.co/berita/menanti-komitmen-restorasi-bentang-alam-skala-nasional/>.
- Laestadius L, Buckingham K, Maginnis S and Saint-Laurent C. 2015. Before Bonn and beyond: the history and future of forest landscape restoration. *Unasylva* No. 245 Vol. 66 (2015/3):11-18. Accessed 23 April 2018. <https://www.fao.org/publications/card/en/c/1783ee8f-5b5f-4645-8012-0edf214e0c7a/>
- Laestadius L, Maginnis, S., Minnemayer, S., Potapov, P., Saint-Laurent, C., and Sizer. 2011. Mapping opportunities for forest landscape restoration. *Unasylva* 238(62):47-48. Accessed 31 July 2019. <http://www.fao.org/docrep/015/i2560e/i2560e08.pdf>
- Lawrence A, Paudel K, Barnes R and Malla Y 2006. Adaptive value of participatory biodiversity monitoring in community forestry *Environmental Conservation* 33(4):325–334.
- Maginnis S, Jackson W and Dudley N. 2004. Conservation landscapes. Whose landscapes? Whose trade-offs? . In McShane T and Wells M, eds. *Getting Biodiversity Projects to Work. Towards More Effective Conservation and Development*. New York: Columbia University Press.
- Maryudi A, Nurjaman ASB and Nawir AA. 2019. *Booklet 1: KPH Yogyakarta: Membangun Model Pengelolaan Hutan yang Mandiri dan Profesional (Booklet 1: FMU Yogyakarta: Developing professional and independent model of forest management)*. Yogyakarta: Pemerintah Daerah Istimewa Yogyakarta (the Government of Yogyakarta), Center for International Forestry Research (CIFOR), Universitas Gadjah Mada (Gadjah Mada University), and SEBIJAK Institute

- Fakultas Kehutanan UGM (SEBIJAK Institute Forestry of Forestry UGM). For Kanoppi Project Phase 2: Developing and promoting market-based agroforestry options and integrated landscape management for smallholder forestry in Indonesia (ACIAR - FST/2016/141, April 2017-Dec. 2021). Available on <https://www.cifor.org/library/7379>
- McDougall C, Ojha H, Banjade MR, Bhattarai T, Maharjan MR and Rana S. 2008. *Forests of learning: Experiences from research on an adaptive collaborative approach to community forestry in Nepal, A synthesis of lessons from the adaptive collaborative management research project in Nepal, 1999–2002 and 2004–2007*. Bogor, Indonesia: CIFOR (Center for International Forestry Research). Available at: http://www.cifor.cgiar.org/publications/pdf_files/Books/BMcDougall0801.pdf.
- Ministry of Environment and Forestry. 2021a. *Data dan Informasi KPH-Kesatuan Pengelolaan Hutan (Data and Information of Forest Management Unit (FMU)). Sistem Informasi Spasial dan Dokumentasi Kesatuan Pengelolaan Hutan Plus (Sinpasdok KPH+)* (Spatial Information System and Documentation of Forest Management Unit Plus). Jakarta *Kementerian Lingkungan Hidup dan Kehutanan* (Ministry of Environment and Forestry). <http://kph.menlhk.go.id/sinpasdok/pages/pencariandata>
- Ministry of Environment and Forestry. 2019. *Statistik Kementerian Lingkungan Hidup dan Kehutanan 2019 (Ministry of Environment and Forestry Statistics of 2019)*. Jakarta: *Pusat Data dan Informasi, Kementerian Lingkungan Hidup dan Kehutanan* (Data and Information Centre, Ministry of Environment and Forestry). http://www.menlhk.go.id/site/single_post/3714/statistik-klhk-2019
- Ministry of Environment and Forestry. 2021b. *Peta Indikatif Areal Perhutanan Sosial (PIAPS) (Indicative Map of Social Forestry Areas)*. *Direktorat Persiapan Kawasan Kehutanan Sosial, Kementerian Lingkungan Hidup dan Kehutanan* (Directorate of Preparation for Social Forestry Area, Ministry of Environment and Forestry). <http://pkps.menlhk.go.id/>.
- Ministry of Forestry. 2014. *Peraturan Menteri Kehutanan No. P.64/Menhut-II/2014 mengenai Penerapan Silvikultur dalam Areal Izin Usaha Pemanfaatan Hasil Hutan Kayu Restorasi Ekosistem Pada Hutan Produksi (Forestry Ministerial Regulation Number P.64/Menhut-II/2014 on the Application of Silviculture Practices in Areas Managed by the Ecosystem Restoration Concession Holders in Production Forests under the Business Permits for Utilizing Timber Forest Products)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <https://adoc.pub/2014-tentang15165167383914.html>
- National Working Group on Landscape Restoration in Indonesia. 2009. *Panduan Restorasi Bentang Alam di Indonesia (Guidelines for Forest Landscape Restoration in Indonesia)*. Bogor: The Global Partnership on Forest Landscape Restoration (GPFLR), Tropenbos International, ITTO (International Tropical Timber Organization) and IUCN (The World Conservation Union). 17 April 2018. <https://www.tropenbos.org/resources/publications/guideline+on+forest+landscape+restoration+in+indonesia>
- Nawir AA, Gunarso P, Santoso H, Julmansyah and Hakim MR. 2014. *Country case study: Indonesia. Experiences, lessons and future directions for Landscape Restoration* Presented at Paper prepared for the Forest Landscape Restoration Workshop. Pre-session to APFC (Asia Pacific Forestry Commission) meeting, 3-8 November 2013, Rotorua, New Zealand,
- Nawir AA, Murniati and Rumboko L. 2007. Chapter 6. Reorientation of the rehabilitation programme in Indonesia: Where to after more than three decades? In Nawir AA, Murniati and Rumboko L, eds. *Forest rehabilitation in Indonesia: Where to after more than three decades?* Bogor, Indonesia: Center for International Forestry Research (CIFOR).
- Nawir AA and Rumboko L. 2007. Chapter 2. History and state of deforestation and land degradation. In Nawir AA, Murniati and Rumboko L, eds. *Forest rehabilitation in Indonesia: Where to after more than three decades?* Bogor, Indonesia: Center for International Forestry Research (CIFOR).
- PATTIRO. 2019. *Akselerasi Perhutanan Sosial dan Rehabilitasi Hutan dan Lahan dalam Perencanaan Pembangunan Kehutanan: Masukan untuk Draft RPJMN 2020-2024 (Acceleration of Social Forestry and Forest and Land Rehabilitation in Forestry Development Planning: Recommendation for the 2020-2024 RPJMN Draft)*. Policy Brief. Jakarta: *Koalisi Masyarakat Sipil untuk Optimalisasi DBH DR*. <https://pattiro.org/en/2019/06/policy-brief-akselerasi-perhutanan-sosial-rehabilitasi-hutan-lahan-dalam-perencanaan-pembangunan-kehutanan/>

- Pfund J-L, Watts JD, Boissiere M, Boucard A, Bullock RM, Ekadinata A, Dewi S, Feintrenie L, Levang P, Rantala S, et al. 2011. Understanding and Integrating Local Perceptions of Trees and Forests into Incentives for Sustainable Landscape Management. *Environmental Management* 48(2):334-349.
- Policy Working Group (PWG) in Sumbawa District. 2016. *Grand Strategy Integrasi Pengelolaan Kayu dan Hasil Hutan Bukan Kayu (HHBK) Berbasis Bentang Alam di Kabupaten Sumbawa (Grand strategy on integrated management of timber and Non-Timber Forest Products (NTFPs) at the landscape level in Sumbawa District*. For Kanoppi Project Phase 1 'Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia' (ACIAR - FST/2012/039, April 2013-Dec. 2016). Writer Team: Kusumawardani, W., Kautsari, N., Martadinata AP., and Syafii, S. Advisors: Nawir, AA, Abdurahman, M., and Hakim, MR. Mataram: WWF (World Wildlife Fund), CIFOR (Center for International Forestry Research), Mataram University, Pemerintah Kabupaten (the District Government) Sumbawa, and Universitas Samawa Sumbawa Besar.
- Policy Working Group (PWG) in Timor Tengah Selatan District. 2016. *Grand Strategy Pengelolaan HHBK Unggulan yang Terintegrasi Berbasis Bentang Alam di Kabupaten Timor Tengah Selatan (TTS) 2016-2020 (Grand Strategy of Integrated Management of Non-Timber Forest Products (NTFPs) at the Landscape Level in Timor Tengah Selatan District 2016-2020*. For Kanoppi Project Phase 1 'Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia' (ACIAR - FST/2012/039, April 2013-Dec. 2016). Advisors: Nawir, AA, Syafrudin Syafii, and Hakim, MR. Pemerintah Kabupaten Timor Tengah Selatan (The District Government of Timor Tengah Selatan), Center for International Forestry Research (CIFOR) and, World Wide Fund (WWF) Indonesia for Kanoppi Project.
- Poudel K. 2003. Chapter 11. Watershed management in Nepal: Challenges and constraints *In Achouri M, Tennyson L, Upadhyay K and White R, eds. In Proceedings of the Asian Regional Workshop on Watershed Management, Kathmandu, Nepal. 11-13 September 2003. . Food and Agriculture Organisation of the United Nations (FAO), Rome.*
- Pratama AA and Maryudi A. 2019. *Booklet 2: Meniti jalan terang: Hubungan kelembagaan Kesatuan Pengelolaan Hutan-KPH (Booklet 2: Walking to the right path: Institutional arrangements of Forest Management Unit-FMU*. Yogyakarta: Pemerintah Daerah Istimewa Yogyakarta (the Government of Yogyakarta), Center for International Forestry Research (CIFOR), Universitas Gadjah Mada (Gadjah Mada University), and SEBIJAK Institute Fakultas Kehutanan UGM (SEBIJAK Institute Forestry of Forestry UGM). For Kanoppi Project Phase 2: Developing and promoting market-based agroforestry options and integrated landscape management for smallholder forestry in Indonesia (ACIAR - FST/2016/141, April 2017-Dec. 2021). <https://www.cifor.org/library/7380>
- Pratiwi, Dharmawan IWS. and Heriansyah, I. 2013. *Prosiding seminar nasional hasil penelitian teknologi pengelolaan DAS (Proceedings of the national seminar on results from research on watershed management technology)*. Surakarta, Indonesia: Kementerian Kehutanan, Badan Penelitian dan Pengembangan Kehutanan, Pusat Penelitian dan Pengembangan Konservasi dan Rehabilitasi (Ministry of Forestry, Forestry Research and Development Agency, Research and Development Center for Conservation and Rehabilitation).
- Pravongviengkham P, Khambung A, Sysanhouth K and Qwist-Hoffmann P. 2003. Chapter 10. Integrated watershed management for sustainable upland development and poverty alleviation in Lao People's Democratic Republic. *In Achouri M, Tennyson L, Upadhyay K and White R, eds. Proceedings of the Asian Regional Workshop on Watershed Management, Kathmandu, Nepal. 11-13 September 2003*. Rome: Food and Agriculture Organisation of the United Nations. <https://www.fao.org/3/a0270e/A0270E08.pdf>
- Pressey RL and McKinnon MC. 2009. 'Approaches to landscape- and seascape-scale conservation planning: convergence, contrasts and challenges'. 43(4), pp. 464-475. doi: 10.1017/S0030605309990500.
- PSE. 2017. *Kelapa Sawit Indonesia Semakin Menjadi Andalan Ekonomi Nasional (Indonesian palm oil has Increasingly becoming the main source of revenues in the national economy)*. Pusat Sosial Ekonomi dan Kebijakan Pertanian-PSE (Center for Socio-Economic and Agricultural Policy). 17 January 2022 <https://pse.litbang.pertanian.go.id/ind/index.php/22-informasi-berita/228-kelapa-sawit-indonesia-semakin-menjadi-andalan-ekonomi-nasional>

- Public Relations Bureau. 2017. *Siaran Pers Indonesia Peringati Hari Penanggulangan Degradasi Lahan Dan Kekeringan Sedunia (Press Release Indonesia Commemorates World Day for Combating Land Degradation and Drought)*, 17 June 2017. The Ministry of Environment and Forestry. Accessed 7 January 2019 <http://ppid.menlhk.go.id/berita/siaran-pers/3620/indonesia-peringati-hari-penanggulangan-degradasi-lahan-dan-kekeringan-sedunia>
- Putro WD and Nawir AA. 2016. *Review on the impact of Act no. 23 (UU 23/2014) on community-based management regimes in facilitating the integrated management of timber and non-timber forest products at farm and landscape level (Published in Bahasa Indonesia, Language editor: Farid Tolomundu)*. Yogyakarta: CIFOR and Mataram University.
- RECOFTC. 2020. *Introduction to forest landscape restoration in Southeast Asia*. Bangkok: RECOFTC. <https://www.recoftc.org/publications/0000384>
- Restore Plus. 2017. *Restore+ participates in the 2017 Bonn Challenge Meeting*. Accessed 21 July 2021 <http://www.restoreplus.org/bonn-challenge-meeting.html>
- Sabogal C, Besacier C and McGuire D. 2015. Forest and landscape restoration: concepts, approaches and challenges for implementation. *Unasylva* 66(2015/3):3-10.
- Saragih S. 2017. "Restorasi Hutan: Sumsel Bidik 400.000 Ha (Forest Restoration: South Sumatra targets 400,000 Ha)." *Bisnis Indonesia*. <https://koran.bisnis.com/read/20170509/452/651871/restorasi-hutan-sumsel-bidik-400.000-ha>
- Sayer J, Sunderland, T., Ghazoul, J., Pfund, J., Sheil, D., Meijaard, E., Venter, M., Boedhihartono, AK., Day, M., Garcia C., van Oosten, C and Buck LE. 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences* 110(21), pp. 8349–8356. doi: 10.1073/pnas.1210595110.
- Sayer J, Elliot C and Maginnis S. 2003. *Protect, manage and restore. Conserving forests in multi-functional landscapes*. Proceedings of the XII World Forestry Congress, Quebec City, Canada. Accessed 5 June 2019. <https://www.fao.org/3/XII/0484-C3.htm>
- Schulz JJ and Schröder B. 2017. Identifying suitable multifunctional restoration areas for Forest Landscape Restoration in Central Chile. *Ecosphere* 8(1):e01644. doi: 10.1002/ecs2.1644.
- Secretariat of the One Map Policy Acceleration Team. 2021. *Sosialisasi Peraturan Presiden No. 23 Tahun 2021 tentang Kebijakan Satu Peta (Socialization of the President of Indonesia Regulation No. 23 of 2021 on One Map Policy)*. Dated 29 April 2021. Secretariat of the One Map Policy Acceleration Team (*Sekretariat Tim Percepatan Kebijakan Satu Peta*). <https://satupeta.go.id/news-detail/56>
- Stern J, ed. 2012. *Evaluation of UNDP Partnership with Global Funds and Philanthropic Foundations*. New York: Evaluation Office United Nations Development Programme (UNDP).
- Takwim A and Syafii S. 2018. *Laporan Akhir Analisis Kebijakan Pengelolaan Hutan Berbasis Bentang Lahan pada Balai Kesatuan Pengelolaan Hutan di Kabupaten Sumbawa (Final Report on the policy analysis on landscape-based forest management at Forest Management Unit (FMU) in Sumbawa District)*. Coordinated by CIFOR (Center for International Forestry Research) for implementing Policy Research Component for Kanoppi Project Phase 2: Developing and promoting market-based agroforestry options and integrated landscape management for smallholder forestry in Indonesia (ACIAR - FST/2016/141, April 2017-Dec. 2021). Mataram: WWF (World Wildlife Fund for Nature) Indonesia Nusa Tenggara Program.
- Tennyson L. 2003. *Chapter 2. Review and assessment of watershed management strategies and approaches*. Conference on Preparing for the Next Generation of Watershed Management Programmes and Projects: Water Resources for the Future, 22-24 October 2003, Porto Cervo, Sassari, Sardinia, Italy: Food and Agriculture Organisation of the United Nations, Rome. <https://www.fao.org/3/a0438e/a0438e00.htm>
- Tennyson L. 2006. Chapter 2. Review and assessment of watershed management strategies and approaches. In Tennyson L and Zingari PC, eds. *Water resources for the future. Preparing for the next generation of watershed management programmes and projects. Proceedings of the International Conference organized in collaboration with the Italian Ministry for the Environment and Territory, Porto Cervo, Sassari, Sardinia, Italy, 22-24 October 2003*. Rome: Food and Agriculture Organisation of the United Nations.

- The Director General of Natural Resources and Ecosystem Conservation. 2018 *Peraturan Direktur Jenderal Konservasi Sumber Daya Alam dan Ekosistem Nomor P.6/Ksdae/Set/Kum.1/6/2018 tentang Petunjuk. Teknis Kemitraan Konservasi Pada Kawasan Suaka Alam Dan. Kawasan Pelestarian Alam (The Director General of Natural Resources and Ecosystem Conservation Regulation Number P.6/KSDAE/SET/Kum.1/6/2018 on Technical Guidelines for Conservation Partnership in Nature Reserves and Nature Conservation Areas)*. Jakarta: Direktorat Jenderal Konservasi Sumber Daya Alam dan Ekosistem, Kementerian Lingkungan Hidup dan Kehutanan (The Directorate General of Natural Resources and Ecosystem Conservation, Ministry of Forestry). <http://ksdae.menlhk.go.id/assets/news/peraturan/Perdirjen%20No%206%20Tahun%202018%20tentang%20Juknis%20Kemitraan%20Konservasi.pdf>
- The Forest Planology Agency. 2004. *Kebijakan Pembangunan Perhutanan Sosial dan Rehabilitasi Hutan dan Lahan (Development Policy on Social Forestry and Forest and Land Rehabilitation)* Presented by the Director General of Planology at the Expose Event on Regional Master Plan of Forest and Land Rehabilitation (MP-RHL), 8-9 March 2004. Jakarta: Badan Planologi Kehutanan, Departemen Kehutanan (the Forest Planology Agency, Ministry of Forestry).
- The Government of Indonesia. 2021a. *Peraturan Pemerintah (PP) Nomor 23 Tahun 2021 tentang Penyelenggaraan Kehutanan (Government Regulation of the Republic of Indonesia Number 23 of 2021 on Forestry Management)* Jakarta: Pemerintah Republik Indonesia (The Government of Indonesia). <https://peraturan.bpk.go.id/Home/Details/161853/pp-no-23-tahun-2021>
- The Government of Indonesia. 2007 *Peraturan Pemerintah Republik Indonesia (PP) Nomor 6 Tahun 2007 tentang Tata Hutan Dan Penyusunan Rencana Pengelolaan Hutan, serta Pemanfaatan Hutan (Government Regulation of the Republic of Indonesia Number 6 of 2007 on Forest Management and Preparation of Forest Management Plans, and Forest Utilization)*. Jakarta: Pemerintah Republik Indonesia (the Government of Indonesia).
- The Government of Indonesia. 2004. *Peraturan Pemerintah Republik Indonesia (PP) No. 44 Tahun 2004 tentang Perencanaan Kehutanan (the Government Regulation No. 44 Year 2004 on Forest Management Planning)* Jakarta: Pemerintah Republik Indonesia (the Government of Indonesia). <https://peraturan.bpk.go.id/Home/Details/66191/pp-no-44-tahun-2004>
- The Government of Indonesia. 2021b. *INDONESIA Long-Term Strategy for Low Carbon and Climate Resilience 2050 (INDONESIA LTS-LCCR 2050)*. Accessed 22 July 2021. https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf
- The Head of the Geospatial Information Agency Regulation. 2014. *Peraturan Kepala Badan Informasi Geospasial Nomor 15 Tahun 2014 tentang Pedoman Teknis Ketelitian Peta Dasar (The Head of the Geospatial Information Agency Regulation Number 15 Year 2014 on Technuical Guidelines for Base Map Accuracy)*. Jakarta: Badan Informasi Geospasial (Geospatial Information Agency). <https://jdih.big.go.id/hukumjdih/4477>
- The Minister of Environment and Forestry. 2014. *Peraturan Menteri Lingkungan Hidup dan Kehutanan (PERMEN) Nomor P.67/Menhut-II/2014 tentang Sistem Informasi Pengelolaan Daerah Aliran Sungai (The Minister of Environment and Forestry Regulation Number P.67/Menhut-II/2014 t on Information System on Watershed Management)*. Jakarta: Kementerian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry). https://www.menlhk.go.id/site/single_post/752
- The Minister of Environment and Forestry. 2016a. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.10/MENLHK/SETJEN/OTL.0/1/2016 tentang Organisasi dan Tata Kerja Balai Pengelolaan Daerah Aliran Sungai dan Hutan Lindung (The Minister of Environment and Forestry Regulation Number. P.10/MENLHK/SETJEN/OTL.0/1/2016 on Organisation and Working Procedures of the Agency Responsible for Watershed and Protection Forest Management)*. Jakarta: Kementerian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry). <https://paralegal.id/peraturan/peraturan-menteri-lingkungan-hidup-dan-kehutanan-nomor-p-10-menlhk-setjen-otl-0-1-2016/>
- The Minister of Environment and Forestry. 2016b. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.79/Menlhk/Setjen/Otl.0/9/2016 tentang Perubahan Atas Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P. 10/Menlhk/Setjen/Otl.0/1/2016 tentang Organisasi dan Tata Kerja*

- Balai Pengelolaan Daerah Aliran Sungai dan Hutan Lindung (The Minister of Environment and Forestry Regulation Number P.79/Menlhk/Setjen/Otl.0/9/2016 on the Amendment to the Minister of Environment and Forestry Regulation No. P.10/Menlhk/Setjen/Otl.0/1/2016 on Organisation and Working Procedures of the Agency Responsible for Watershed Management and Protected Forest.* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* <http://jdih.menlhk.co.id/uploads/files/P.79.pdf>
- The Minister of Environment and Forestry. 2016 *Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.23/MENLHK/SETJEN/OTL.0/1/2016 tentang Organisasi dan Tata Kerja Balai Penelitian dan Pengembangan Teknologi Pengelolaan Daerah Aliran Sungai (The Minister of Environment and Forestry Regulation Number P.23/MENLHK/SETJEN/OTL.0/1/2016 on Organisation and Working Procedures of the Research and Development Agency for Forestry Technology in Watershed Management.* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* <https://paralegal.id/peraturan/peraturan-menteri-lingkungan-hidup-dan-kehutanan-nomor-p-23-menlhk-setjen-otl-0-1-2016/>
- The Minister of Environment and Forestry. 2019. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.59/Menlhk/Setjen/Kum.1/10/2019 tentang Penanaman dalam Rangka Rehabilitasi Daerah Aliran Sungai (The Minister of Environment and Forestry Regulation Number P.59/Menlhk/Setjen/Kum.1/10/2019 on Planting for Rehabilitation of the Watershed)* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* http://jdih.menlhk.co.id/uploads/files/P_59_2019_PENANAMAN_REHABILITASI_DAS_menlhk_11272019162448.pdf
- The Minister of Environment and Forestry. 2016c. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.83/MENLHK/SETJEN/KUM.1/10/2016 tentang Perhutanan Sosial (The Minister of Environment and Forestry Regulation Number P.83/MENLHK/SETJEN/KUM.1/10/2016 on Social Forestry).* <http://jdih.menlhk.co.id/uploads/files/P.83.pdf>
- The Minister of Environment and Forestry. 2021a. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor 8 Tahun 2021 tentang Tata Hutan dan Penyusunan Rencana Pengelolaan Hutan, serta Pemanfaatan Hutan di Hutan Lindung dan Hutan Produksi (The Minister of Environment and Forestry Regulation No.8/2021 on Forest Governance and the Development of Forest Management Plan, and Forest Utilization in Protection Forests and Production Forests).* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* <https://jdih.maritim.go.id/en/peraturan-menteri-lingkungan-hidup-dan-kehutanan-no-8-tahun-2021>
- The Minister of Environment and Forestry. 2021b. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor 7 Tahun 2021 tentang Perencanaan Kehutanan, Perubahan Peruntukan Kawasan Hutan dan Perubahan Fungsi Kawasan Hutan, serta Penggunaan Kawasan Hutan (The Minister of Environment and Forestry Regulation Number 7 of 2021 on Forestry Planning, the Alteration of Forest Areas Allocation, Function, and the Utilisation.* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* <https://jdih.maritim.go.id/id/peraturan-menteri-lingkungan-hidup-dan-kehutanan-no-7-tahun-2021>
- The Minister of Environment and Forestry. 2021c. *Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor 9 Tahun 2021 tentang Pengelolaan Perhutanan Sosial (The Minister of Environment and Forestry Regulation Number 9 of 2021 on Social Forestry Management).* http://jdih.menlhk.co.id/uploads/files/2021pmlhk009_menlhk_06102021150537.pdf
- The Minister of Environment and Forestry. 2015. *Peraturan Menteri Lingkungan Hidup dan Kehutanan (PERMEN) Nomor P.33/MENLHK-SETJEN/2015 Tahun 2015 tentang Pedoman Pembangunan Kebun Bibit Kesatuan Pengelolaan Hutan (The Minister of Environment and Forestry Number P.33/MenLHK-Setjen/2015 on Guidelines for Seedlings Nursery Development in the Forest Management Unit (FMU)).* Jakarta: *Kementrian Lingkungan Hidup dan Kehutanan (The Ministry of Environment and Forestry).* <https://www.regulasip.id/regulasi/5580>
- The Minister of Forestry. 2013a. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.59/Menhut-II/2013 tentang Tata Cara Penetapan Batas Daerah Aliran Sungai (The Minister of Forestry Regulation Nomor P.59/Menhut-II/2013 on Procedures for Determining Watersheds Boundaries).*

- Jakarta: *Departemen Kehutanan* (Ministry of Forestry). https://www.menlhk.go.id/site/single_post/646
- The Minister of Forestry. 2013b. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.60/Menhut-II/2013 tentang Tata Cara Penyusunan dan Penetapan Rencana Pengelolaan Daerah Aliran Sungai (The Minister of Forestry Regulation No. 60/2013 on Procedures for Developing and Stipulating Watershed Management Plans)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). https://www.menlhk.go.id/site/single_post/647
- The Minister of Forestry. 2014a. *Peraturan Menteri Kehutanan (PERMEN) P.61/MENHUT-II/2014 tentang Monitoring dan Evaluasi Pengelolaan Daerah Aliran Sungai (The Minister of Forestry Regulation Number P.61/MENHUT-II/2014 on Monitoring and Evaluation of Watershed Management)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <https://legalitas.org/peraturan-menteri-kementerian-kehutanan-no-p-61-menhut-ii-2014-tahun-2014-tentang-monitoring-dan-evaluasi-pengelolaan-daerah-aliran-sungai>
- The Minister of Forestry. 2004. *Peraturan Menteri Kehutanan (PERMEN) Nomor: P.19/Menhut-II/2004 tentang Kolaborasi Pengelolaan Kawasan Suaka Alam dan Kawasan Pelestarian Alam (The Minister of Forestry Regulation Number P.19/Menhut-II/2004 on Collaborative Management of Nature Reserve Areas and Nature Conservation Areas)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <https://peraturan.bpk.go.id/Home/Details/40518/uu-no-19-tahun-2004>
- The Minister of Forestry. 2011a. *Peraturan Menteri Kehutanan Nomor P.41/Menhut-II/2011 tentang Standar Fasilitas Sarana dan Prasarana Kesatuan Pengelolaan Hutan Lindung Model dan Kesatuan Pengelolaan Hutan Produksi Model (The Minister of Forestry Regulation Number P.41/Menhut-II/2011 on Standards for Facilities and Infrastructure of Model Protection Forest Management Units and Model Production Forest Management Units)*. *Departemen Kehutanan* (Ministry of Forestry). <http://jdih.menlhk.co.id/index.php/permenlhk/page/72/0>
- The Minister of Forestry. 2011b. *Peraturan Menteri Kehutanan Nomor P.42/Menhut-II/2011 tentang Standar Kompetensi Bidang Teknis Kehutanan pada Kesatuan Pengelolaan Hutan Lindung dan Kesatuan Pengelolaan Hutan Produksi (The Minister of Forestry Regulation Number P.42/Menhut-II/2011 concerning Competency Standards in the Technical Field of Forestry in Protection Forest Management Units and Production Forest Management Units)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <http://jdih.menlhk.co.id/index.php/permenlhk/page/72/0>
- The Minister of Forestry. 2013c. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.46/Menhut-II/2013 Tata Cara Pengesahan Rencana Pengelolaan Hutan Jangka Panjang Kesatuan Pengelolaan Hutan Lindung Dan Kesatuan Pengelolaan Hutan Produksi (The Minister of Forestry Regulation No. P.46/Menhut-II/2013 on Guidelines for ratification of the long-term forest management plan of the Protection and Production Forest Management Units)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). https://www.menlhk.go.id/site/single_post/638
- The Minister of Forestry. 2014b. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.60 /MENHUT-II/2014 tentang Kriteria Penetapan Klasifikasi Daerah Aliran Sungai (The Minister of Forestry Regulation Number P.60 /MENHUT-II/2014 on Criteria for Determining the Classification of Watersheds)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <https://legalitas.org/peraturan-menteri-kementerian-kehutanan-no-p-60-menhut-ii-2014-tahun-2014-tentang-kriteria-penetapan-klasifikasi-daerah-aliran-sungai>
- The Minister of Forestry. 2014c. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.17/Menhut-II/2014 tentang Tata Cara Pemberdayaan Masyarakat dalam Kegiatan Pengelolaan Daerah Aliran Sungai (The Minister of Forestry Regulation No. 17/2014 on Procedures for Community Empowerment in the Activities of Watershed Management)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <http://jdih.menlhk.co.id/index.php/permenlhk/page/44/0>
- The Minister of Forestry. 2013d. *Peraturan Menteri Kehutanan (PERMEN) Nomor P.61/MENHUT-II/2013 Tahun 2013 tentang Forum Koordinasi Pengelolaan Daerah Aliran Sungai (The Minister of Forestry Regulation Number P.61/MENHUT-II/2013 on Coordination Forum on Watershed Management)*. Jakarta: *Departemen Kehutanan* (Ministry of Forestry). <https://legalitas.org/peraturan-menteri-kementerian-kehutanan-no-p-61-menhut-ii-2013-tahun-2013-tentang-forum-koordinasi-pengelolaan-daerah-aliran-sungai>

- The Ministry of the National Development Planning. 2016. *Indonesian Biodiversity Strategy and Action Plan (IBSAP) 2015-2020*. Jakarta: The Ministry of the National Development Planning/Badan Perencanaan Pembangunan Nasional-Bappenas. <https://www.fao.org/faolex/results/details/es/c/LEX-FAOC176625/>
- The President of Republic of Indonesia. 2011 *Undang-undang Republik Indonesia Nomor 4 Tahun 2011 tentang Informasi Geospasial (The Law No. 4 Year 2011 on Geospatial Information)*. Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia). <https://peraturan.bpk.go.id/Home/Details/39136/uu-no-4-tahun-2011>
- The President of Republic of Indonesia. 2014a. *Undang-Undang Republik Indonesia Nomor 23 Tahun 2014 tentang Pemerintah Daerah (The Law of the Republic of Indonesia Number 23 of 2014 on Local Government)*. Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia).
- The President of Republic of Indonesia. 2015. *Peraturan Presiden (PERPRES) Nomor 16 Tahun 2015 tentang Kementerian Lingkungan Hidup dan Kehutanan (The Presidential Regulation Number 16 of 2015 on Ministry of Environment and Forestry)*. Regulating the formation of the Directorate General on Watersheds Management and Protection Forest (*Direktorat Jenderal Pengendalian DAS dan Hutan Lindung*). Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia).
- The President of Republic of Indonesia. 2014b. *Undang-Undang Republik Indonesia (UU) Nomor 23 Tahun 2014 tentang Pemerintahan Daerah (The Law of the Republic of Indonesia Number 23 of 2014 on Local Government)*. Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia). Accessed 28 October 2021. <https://peraturan.bpk.go.id/Home/Details/38685/uu-no-23-tahun-2014>
- The President of Republic of Indonesia. 2021. *Peraturan Pemerintah (PP) Nomor 26 Tahun 2020 tentang Rehabilitasi dan Reklamasi Hutan (Government Regulation of the Republic of Indonesia Number 26 of 2020 on Forest Rehabilitation and Reclamation)* Jakarta: Pemerintah Republik Indonesia (The Government of Indonesia). <https://peraturan.bpk.go.id/Home/Details/138323/pp-no-26-tahun-2020>
- The President of Republic of Indonesia. 1999. *Undang-Undang Republik Indonesia (UU) Nomor 41 Tahun 1999 tentang Kehutanan (The Law of the Republic of Indonesia Number: 41 of 1999 on Forestry)*. Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia). Accessed 28 October 2021. <https://jdih.esdm.go.id/storage/document/uu-41-1999.pdf>
- The President of Republic of Indonesia. 2020. *Undang-undang Republik Indonesia Nomor 11 Tahun 2020 tentang Cipta Kerja (The Law of the Republic of Indonesia Number. 11 of 2020 on Job Creation)* Jakarta: Pemerintah Republik Indonesia (Government of the Republic of Indonesia).
- The Republic of Indonesia. 2002. *National Action Program (NAP) for Combating Land Degradation in Indonesia (CLD)*. Jakarta: Ministry of Forestry. Available at: <https://knowledge.unccd.int/sites/default/files/naps/indonesia-eng2002.pdf>
- The Republic of Indonesia. 2016. *First Nasionally Determined Contribution Republic of Indonesia*. The Republic of Indonesia. Accessed 31 October 2018. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Indonesia%20First/First%20NDC%20Indonesia_submitted%20to%20UNFCCC%20Set_November%20%202016.pdf
- Tropenbos Indonesia. 2019. *Working Landscape Project: Promoting sustainable use of forests and trees for people and climate*. <https://www.tropenbos-indonesia.org/projects/working+landscape+project:+promoting+sustainable+use+of+forests+and+trees+for+people+and+climate>
- UNCCD. 2017. *Land Degradation Neutrality : Resilience Local National and Regional Level*. Bonn: The United Nations Convention to Combat Desertification (UNCCD),. Accessed 16 July 2019. https://www.unccd.int/sites/default/files/relevant-links/2017-08/v2_201309-unccd-bro_web_final.pdf
- van Oosten C. 2017. *Introduction to Landscape Approach: Context, evolution and principles*. Bonn: Centre for Development Innovation (CDI), Wageningen UR. 30/10/2017. <http://portals.wi.wur.nl/files/docs/File/MSDGhanaGuyana/Introduction%20to%20Landscape%20approach%20KUMASI.ppt>

- Watson J, Dudley N, Seaman DB and Hockings M. 2014. The Performance and Potential of Protected Areas. *Nature* 515:67-73. doi: 10.1038/nature13947. Accessed 4 April 2019. https://www.researchgate.net/publication/267933319_The_performance_and_potential_of_protected_areas
- Wibisono ITC and Sualia I. 2008. *Final Report: An assessment of lessons learnt from the "Green Coast Project"*. In Nanggroe Aceh Darussalam (NAD) Province and Nias Island, Indonesia, Period 2005-2008. Bogor, Indonesia: Wetlands International - Indonesia Programme. <https://www.wetlands.org/publications/an-assessment-of-lessons-learnt-from-the-green-coast-project/>
- WRI Indonesia. 2017a. *Forests and Landscapes in Indonesia. Data-driven analysis to support government and civil society actions for effective and equitable land-use in Indonesia*. World Resources Institute (WRI) Indonesia. 4 July 2019. <https://wri-indonesia.org/en/our-work/project/forests-and-landscapes-indonesia>
- WRI Indonesia. 2017b. *Support to Peat Restoration Agency to achieve its restoration targets/ Dukungan terhadap Badan Restorasi Gambut untuk mencapai target restorasi*. World Resources Institute (WRI) Indonesia. 4 July 2019. <https://wri-indonesia.org/en/our-work/project/support-peat-restoration-agency-badan-restorasi-gambutbrg>
- WWF. 2002. *The landscape approach*. Position Paper February 2002. Washington: WWF (World Wildlife Fund) International. <http://d2ouvy59p0dg6k.cloudfront.net/downloads/po11landscapeapproach.pdf>

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In Indonesia, an integrated Forest Landscape Restoration (FLR) approach has been proposed as one of the solutions to address degraded lands, including 14 million ha of critical and very critical lands (Ministry of Environment and Forestry (2019). However, the land use competition has been quite high and intensive, particularly between sectors. This situation has provided serious challenges for the implementation of FLR on the ground. In the absence of integrated policy and regulatory frameworks for the landscape approach and FLR at the national level, various organizations have initiated a range of programmes and strategic approaches in moving forward to implement these approaches. Per our review, there are opportunities and challenges for the application of a landscape-based approach, FLR and a combination of the two.

We identified five scenarios to foster inter-sectoral coordination for promoting complementary management options and FLR initiatives. Firstly, an overarching clear policy framework is required, whereby the Grand Strategy document on FLR at all government levels is designed based on a participatory approach. This can then be used as a referral document for inter-ministerial and inter-sectoral coordination. Secondly, community participation and enhanced partnership to foster sustainable FLR should be encouraged. Thirdly, a clearly defined landscape-based unit of management based on certain ecosystem functions, including watershed and forest landscape, should be set up. Fourthly, a financing system should be included in a grand strategy document supporting integrated FLR. Lastly, in response to the issuance of the Law No. 11/2020, i.e., the Job Creation Law, the adaptive strategies need to be further explored to maintain the roles and responsibilities of FMUs in forest management, including the implementation of forest rehabilitation and restoration programmes. Using local government regulations as a safeguard, provincial level government needs to formulate the necessary policy and regulatory frameworks to protect the local communities' interests during the transition period until the 'new' Job Creation Law is fully operationalized.



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