



ACHIEVING WATER, ENERGY AND FOOD SECURITY IN INDONESIA



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EXECUTIVE SUMMARY

Indonesia is committed to pursuing a sustainable development agenda that can meet growing food, water, and energy demands, and realise conservation and climate objectives. However, in doing so it faces a significant challenge in balancing competing demands on its natural resources, likely to be further exacerbated by climate change and climate extremes.

This report analyses policy coherence and trade-offs in Indonesia's development agenda and its emissions reduction targets using a water-energy-food (WEF) nexus framework.

KEY POINTS

- **Resource use trade-offs between different sectors could undermine water, energy, and food security targets.** Competition for finite land and water resources could undermine ambitious production targets and lead to further deforestation with impacts on emissions targets and the resilience of critical ecosystem services.
- **Opportunities exist to improve synergies between different sectors' targets through multilevel planning processes.** The policy coherence analysis identifies several strategies that could realise potential synergies between different sector targets, including the prioritization of degraded land for agricultural expansion, increases in agricultural productivity, and investment in forest conservation as 'natural' infrastructure for improving downstream water supply for agriculture and energy production, generating co-benefits such as emissions reductions, biodiversity and forest-based employment and livelihoods.
- **Indonesia's archipelago with its diverse social, economic, and natural resource realities requires differentiated sub-national development models.** Policy instruments that recognise local land use dynamics, bio-physical and socio-economic characteristics (e.g. infrastructure, access to technical assistance). Strengthening the role of bottom up inputs into development planning will be key to achieving this.
- **Indonesia's land use planning instruments provide a good framework that can be drawn upon to improve the coherence of development plans across sectors and scales.** However, the lack of reliable data hampers its effectiveness in managing resource trade-offs. Strategic environmental assessment (SEA) may guide the land use planning process and mitigate unexpected development impact to the environment, as well as integrate climate issues into development planning, but urgently requires a stronger evidence base and in-depth analysis of likely resource demands across sectors and resource capacity.

Upcoming provincial and district elections in 2017 and the subsequent process of formulating the 2020-2025 medium-development plan in 2018 both nationally and sub-nationally provide a window of opportunity for addressing resource trade-offs and building synergies across sectoral targets. It also offers a critical entry point for mainstreaming and operationalizing Indonesia's Nationally Determined Contribution (NDC) into sectoral development plans. In the more immediate future, the review and development of annual sector plans offers an opportunity to address key bottlenecks in the implementation of sector programs and activities.

RECOMMENDATIONS

- Accelerate efforts to implement the One Map Initiative nationally, expand its scope sub-nationally and support the Central Bureau of Statistics to become a source of reliable and consistent data across government ministries and agencies. Reliable datasets and standardised information flows will be paramount in elaborating coherent and evidence-based development objectives across different land based sectors that balance competing demands on resources.
- Prioritize the use of strategic environmental assessment (SEA) within spatial planning to support more robust analysis of land use trade-offs.
- Strengthen existing accountability mechanisms, including building the capacity of parliament to effectively review proposed development plans and budgets. Improved information flows should go hand in hand with efforts to address transparency and accountability which currently remain low among both public and private sector actors.
- Align fiscal incentives to support local governments to transition to more sustainable development models, for example through integrating provincial performance-based payments and environmental criteria in budget proposals and transfers.

1. IMPLEMENTING INDONESIA'S SUSTAINABLE DEVELOPMENT AGENDA

The Government of Indonesia (GoI) is aiming to maintain an average economic growth rate of at least 5% per year to achieve its development and poverty alleviation goals by 2025¹. However, to date the country's reliance on its abundant natural resources for economic growth has resulted in widespread environmental degradation. The Ministry of Forestry and Environment (MOEF) calculates that Indonesia lost 568,000 ha of forests in 2013-2014², largely linked to oil palm and industrial timber plantations, transmigration, mining and encroachment³.

Deforestation and forest degradation are eroding key ecosystem services that are essential for agricultural production, industry, energy generation and human wellbeing. The high rate of forest and peatland loss, both major carbon sinks, also made Indonesia the world's fifth largest emitter of greenhouse gas emissions in 2012⁴. Under a 'business-as-usual' development pathway economic gains are at risk of being undermined; the Ministry of Finance (MOF) has estimated that natural resource degradation and climate change are likely to reduce GDP growth from 7% to 3.5% by 2050⁵.

Importantly, the GoI has recognised the need to transition towards a more sustainable development model, where economic growth is decoupled from environmental degradation, to realise its socio-economic development objectives. This is a key pillar in the current medium-term development plan (RPJMN 2015-2019) and is also reflected in Indonesia's Nationally Determined Contribution (NDC) which acknowledges that development objectives, particularly water, energy and food security, are dependent on Indonesia's natural resources. There is also significant momentum in transitioning towards more sustainable development models at the subnational level. This includes the establishment of West Papua's 'conservation province' status, Central Kalimantan's green growth strategy, and the announcement of a moratorium for new mining and palm oil concessions in Aceh, all of which will play a large role in determining if and how Indonesia achieves its transition to more sustainable development.

However, key challenges remain in reconciling Indonesia's ambitious national development agenda, including its water, energy and food security targets, with its climate change and conservation commitments. Addressing these competing demands will require a better understanding of natural resource use trade-offs and more coherent policy frameworks across sectors and scales.

A WATER-ENERGY-FOOD NEXUS APPROACH

This policy brief draws on a series of studies, multi-stakeholder meetings and group discussions⁶ that explored the challenges facing the national and provincial governments in achieving both development and environmental goals. Its analysis is informed by a water-energy-food (WEF) nexus framework that has emerged as an important concept for addressing resource trade-offs (Box 1)⁷.

This report firstly highlights trade-offs and synergies in existing development plans that undermine efforts towards a holistic sustainable development agenda. Secondly, it identifies coordination gaps, priorities and entry points to improve resource use governance within three key policy frameworks: (a) spatial planning (b) development planning and (c) climate mitigation and adaptation planning.

These recommendations aim to inform ongoing policy development including the next mid-term development plan (RPJMN 2020-2025) and the implementation of the Paris Climate Agreement, which was recently ratified by the Indonesian Government through its NDC as well as its Sustainable Development Goal commitments.

BOX 1: THE IMPORTANT ROLE THAT FORESTS PLAY IN THE WATER-ENERGY-FOOD (WEF) NEXUS FRAMEWORK

By recognizing the complex interdependencies between water, energy and food systems, the water-energy-food (WEF) nexus has emerged as an important conceptual framework to support decision makers in evaluating and accounting for resource trade-offs across different economic sectors and actors.

Water is at the heart of this nexus, and is vital for food security (agricultural productivity and fisheries) and energy security (hydropower and biofuel generation). However, it is critical to recognize the role of forests in water security (and thus food and energy security) through their water regulation and purification services. Potential resource trade-offs include competition for water and land between the energy and food sectors. In addition, agricultural land conversions for energy (biofuels) and food security targets can impact emissions reductions and water security targets through associated deforestation and sedimentation.



2. WATER, ENERGY AND FOOD SECURITY TRADE-OFFS AND SYNERGIES IN INDONESIA'S CURRENT DEVELOPMENT PLANS

Indonesia's medium-term development plan (RPJMN 2015-2019) sets ambitious water, energy and food security targets (Table 1). Despite a comprehensive legal framework for development planning that requires coordination across

sectors and between levels of government, a review of the RPJMN and ministries' strategic plans in relation to water, energy and food security targets identified both potential trade-offs and synergies between sectors.

RPJMN TARGETS

TRADE-OFFS AND SYNERGIES



WATER SECURITY

- Improve access to drinking water and sanitation to 100% in 2019.
- Rehabilitate 5.5 million ha of critical land in forest management units and priority watersheds by 2019 (baseline 0.5 million ha in 2014).
- Restore 15 priority watersheds.
- Rehabilitate 3 million ha of damaged irrigation networks.
- Reduce flood frequency to less than 286 events (baseline 302 events in 2014)

Indonesia seeks to achieve water security through watershed restoration and conservation (natural infrastructure)⁸ and developing and restoring reservoir and irrigation networks (built infrastructure)⁹. The conservation of upstream forest areas under watershed restoration plans is coherent with energy and agriculture development plans which identify water supply as a key constraint for production targets, and supports climate mitigation and biodiversity targets. However, whilst energy and agriculture plans recognize the need to develop built infrastructure to improve water supply, they do not prioritize forest conservation and watershed restoration. Whilst investments in built infrastructure will be critical to improving water supply, this is a missed opportunity in terms of achieving climate mitigation targets. Further, although relatively small-scale, built infrastructure is also a direct and indirect driver of deforestation¹⁰. In this context, cross-sector coordination is particularly critical as water resource management responsibilities are divided across ministries; MOEF is responsible for managing water catchment area; the Ministry of Public Works for river management; and the Ministry of Energy and Mineral Resources (MEMR) for ground water.



ENERGY SECURITY

- Electrification ratio increase to 96,6% in 2019.
- New and renewable energy to reach 10-16% of energy mix by 2019, and 23% by 2025 (baseline 6% in 2014).
- Increase in new and renewable energy production by 2019 (baseline 2014) including:
 - Geothermal 122%
 - Biodiesel 80%
 - Hydropower 27%
 - Biomass 45%

Indonesia's energy security plans include targets to diversify the national energy mix, which is highly dependent on fossil fuels, by increasing new and renewable energy from 6% to 23% by 2025, mainly from geothermal, hydropower and biofuels. The resulting demand for land, particularly for biofuels, is set to impact forest conservation and climate mitigation targets with oil palm already a major driver of deforestation. Geothermal resources also overlap with forest area; 42% of 312 potential geothermal locations are in conservation forests and a further 18% are in protected forest¹¹. MOEF has already allocated 100,000 hectares of production forest area in Sumatra, Kalimantan and Papua for the development of energy estate crops, as well as further conservation forest areas for hydropower and geothermal plants¹². Furthermore, the continued exploitation of coal, oil and natural gas, which will remain the dominant component of the national energy mix, will also impact forests. A recent report by FERN suggests that up to 9% of Indonesia's forest cover is threatened by coal expansion¹³. The utilization of degraded forest area for the development of energy estate crops offers a pathway to reduce pressure on forests. However, growing demand for land for agricultural development, with the Ministry of Agriculture (MOA) also targeting convertible production forest, could lead to potential trade-offs between energy and food security targets.



RPJMN TARGETS

- Increase in calorie intake to 2150 kCal by 2019.
- Expansion of agricultural land by 300,000ha by 2019.
- Increase in food production by 2019 (baseline 2014) including:
 - Rice ↑ 26%
 - Soy ↑ 109%
 - Sugar ↑ 46%
 - Beef ↑ 67%

TRADE-OFFS AND SYNERGIES

Indonesia has ambitious food security targets that include increases in rice, maize, soy, sugar, beef and fisheries production. Meeting these food security targets will require extensive land¹⁴. Competing demands for land from export and energy estate crops, as well as urban expansion, therefore pose a threat to food security targets. In Java, despite ambitious rice production targets, the continued conversion of agricultural land (508.287 ha in 2013¹⁵; 10 million ha over past decade) to other land uses is an ongoing trend¹⁶. To address this challenge, the Government has issued a law on the protection of sustainable food crop farmland¹⁷ and has laid out plans to allocate 9 million ha of land for poor farmers under the Land Reform Plus Program. However, so far only four provinces have determined the area for sustainable agricultural land in their spatial plan; implementation barriers include the lack of reliable data on land suitability and rights and rejection by farmers¹⁸. Given the limited availability of agricultural land, this is likely to be at the expense of forest areas, threatening land-use emissions reduction targets¹⁹. Finally, whilst national climate policies identify a number of strategies to manage these trade-offs, such as prioritizing development on degraded land, these are not clearly articulated in agricultural plans.

Table 1. Key objectives and related targets for water, energy and food security in the national medium term development plan and related sectoral plans.

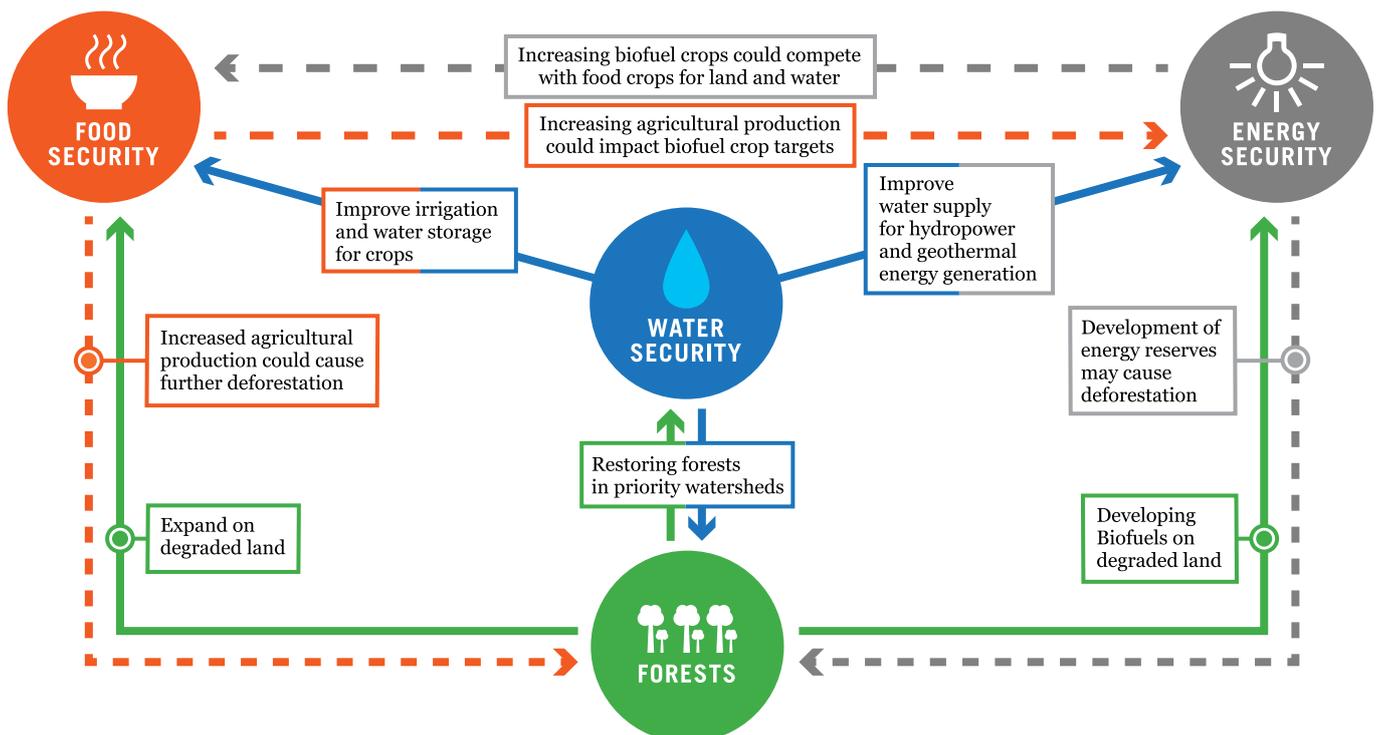


Figure 1. Key interactions between water, energy, and food security objectives in the national medium term development plan and related sectoral plans.

3. CHALLENGES AND OPPORTUNITIES FOR IMPROVING RESOURCE GOVERNANCE ACROSS SECTORS AND SCALES

The analysis presented points to a clear need for Indonesia to manage resource trade-offs (over land for agriculture and forests) and build synergies (between forest conservation and water supply for agriculture and energy production) to achieve its water, energy and food security targets. In reviewing pathways to achieve this, it is critical to recognise that Indonesia is an archipelago with significant variation in natural resources, infrastructure, culture, poverty levels, human capacity, access to finance and technical assistance amongst others.

Furthermore, this is not only a cross-sectoral coordination challenge. Provincial and district governments have significant authority in natural resource management, land use planning and decision making²⁰, which can affect the implementation of national development plans. For example, in terms of national targets to develop and rehabilitate Indonesia's irrigation network, 40% of this network is under the authority of district governments²¹. Importantly, local priorities and realities are not always aligned with the national development plan, hampering effective resource management and emphasising the importance of multi-scale coordination.

In an effort to identify opportunities for improving cross sector and multi-scale coordination, this brief reviews three key policy frameworks that govern resource use in Indonesia: (a) spatial planning (b) development planning and (c) climate mitigation and adaptation planning.

SPATIAL PLANNING

Indonesia's Spatial Planning Law²² sets out the spatial demarcation of land use across national, provincial and district scales, and guides the formulation of Indonesia's long and medium term development plans (Figure 2).

Cross sector coordination

The spatial planning law clearly articulates the principles of sustainable natural resource use and the importance of maintaining environmental functions. It also clearly recognises potential land-use trade-offs between agriculture and forests and the opportunities to build synergies between sectors; for instance, by identifying that infrastructure development for agriculture can also support the energy sector. It provides a clear framework for evidence-based land-use zoning of forests, water resources and agricultural land²³ and the use of incentives and disincentives to support implementation. Cross-sector coordination is facilitated by the National Spatial Planning Coordination Agency, which consists of all land based ministries and government agencies (and thus those relevant to WEF resources).

However, there are clear gaps in existing spatial plans, particularly the limited integration of strategic environmental assessments (SEAs)²⁴ and watershed plans²⁵, as well as data gaps such as forest demarcation and adat rights²⁶. This has implications for managing land-use trade-offs

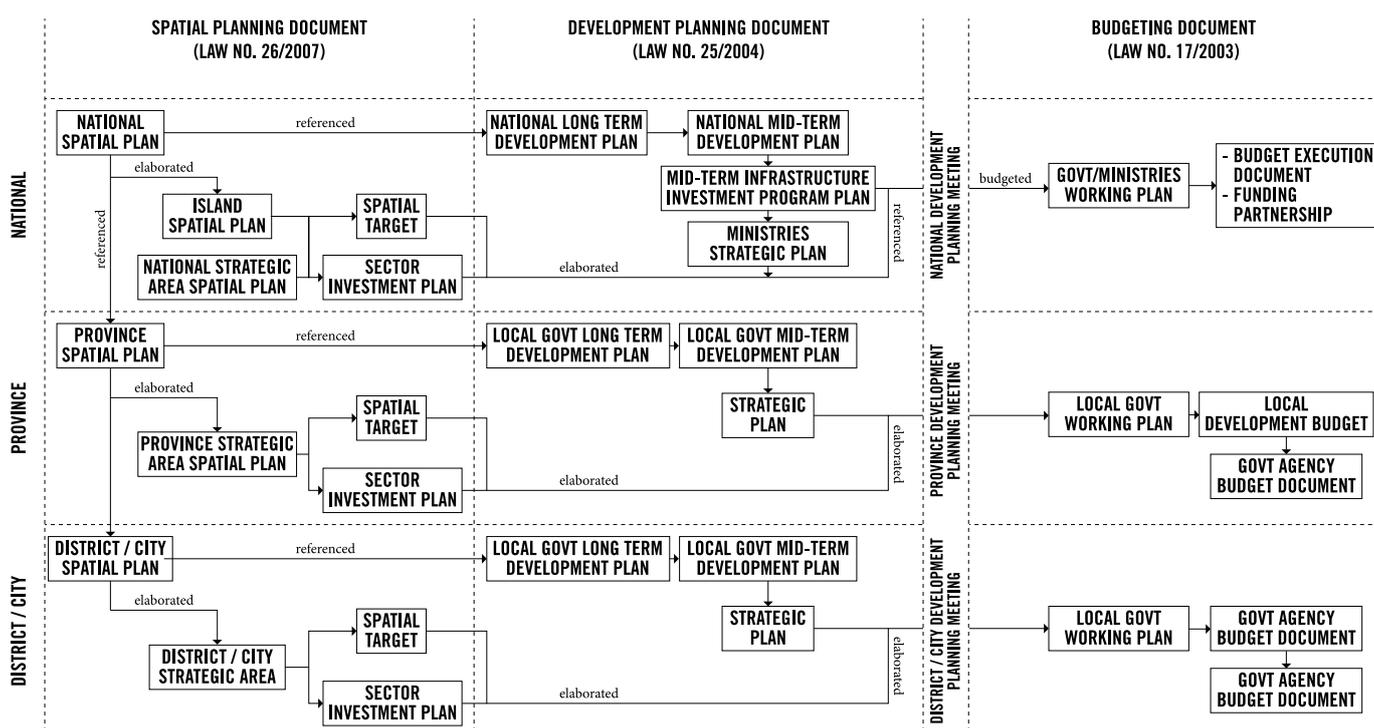


Figure 2. Synchronization and coordination between spatial planning, development planning and budgeting at national, provincial and district scale.

and realising the synergies between forest conservation in upstream watersheds and improving downstream water supply for critical agricultural and energy producing areas. Inconsistencies with other sector policies and land use licensing processes also lead to potential cross-sector conflicts as agricultural, mining and environmental laws all give the ability to designate land use.

Furthermore, despite the clear mandate for spatial planning to guide sectoral development planning (Figure 2), this is not always the case. A study in Aceh indicates that to meet 2019 oil palm production targets under current yields, a further 200,000 hectares of land is required, with clear trade-offs for both forest conservation goals in the Leuser Landscape and on the availability of land which is needed for meeting other food crop production targets²⁷.

Multi-scale coordination

The updated spatial planning law clearly lays out a hierarchy across scales of government (Figure 2). The national spatial plan acts as a reference for the development of provincial spatial plans, which in turn act as a reference for district spatial plans. This hierarchy is also reflected in both approval processes. The Ministry of Home Affairs (MOHA) is responsible for evaluating draft local government regulations for provincial spatial plans and in setting incentives and disincentives for development to follow spatial plans.

Data inconsistencies and gaps also impact coordination across national, provincial and district spatial planning. For example, delays in forest demarcation at the national level impact the ability of local governments to formulate spatial plans. Challenges in multi-scale coordination are reflected by the fact that as of July 2016, only 29 of Indonesia's 34 provinces have a local government regulation for the spatial plan²⁸.

Further, national strategic priorities may conflict with local priorities. For example, in Papua, the Merauke Integrated Food and Energy Estate (MIFEE), a national development priority that seeks to allocate more than 1.2 million hectares of land (mostly forest) for food crops (50%), sugarcane (30%) and palm oil plantations (20%), is not consistent with the provincial spatial plan²⁹ which seeks to maintain forest cover at 90%³⁰.

Entry points for change

Addressing information gaps, as well as inconsistent and unreliable geospatial data across different sectors and scales of government, will be essential to enable the effective implementation of spatial planning. Demarcating forests and mapping degraded land by its suitability for food and energy crops are key priorities in enabling the effective management of land use trade-offs. Indonesia's One Map policy³¹ and

associated national working group³² offers a pathway for improving the data that is needed for evidence-based spatial planning. The newly issued Presidential Regulation on the acceleration of the implementation of the One Map policy provides an immediate opportunity for relevant stakeholders to synchronize their data and information, which is an important step in improving the existing spatial plan. The SEA mechanism³³ offers an entry point for improving the analysis of resource trade-offs across the landscape, including ecosystem services, for example understanding the impact of upstream deforestation on downstream water supply, and ultimately the feasibility analysis of sectoral development targets.

DEVELOPMENT PLANNING

Indonesia's comprehensive development planning framework provides the basis for governing resource and land use planning across sectors and scales. The National Development Planning Agency (BAPPENAS) coordinates development planning with ministries and government agencies responsible for developing sectoral strategic plans³⁴.

Cross sector coordination

As outlined in the analysis in section two above there remain inconsistencies and gaps that evidence silos in current sector plans. This suggests that whilst the existing planning process (Figure 3) provides the framework for coordination between sectors and levels of government, there appears to be a gap in analysing the impact of different sector targets on other sector targets given the finite resource base (particularly of land). For example, production objectives for food crops and energy estate crops both target convertible production forest and degraded land in their efforts to find the land needed to meet their goals.

Another challenge in ensuring synergies and preventing potential trade-offs between sector targets is the inconsistent implementation of sector plans. A lack of synchronization between the development planning and budgeting processes can result in planned activities having no budget allocation or the implementation of activities that do not have budget allocated, whilst weak monitoring and evaluation processes can further affect the implementation of sector plans with knock on impacts for other sectors.

Multi-scale coordination

The national medium term development plan acts as a reference to develop local medium term development plans (RPJMD). In developing their sector plans, ministries and government agencies consult and get input from local

PROCESS OF FORMULATION OF NATIONAL MID-TERM DEVELOPMENT PLAN (RPJMN)

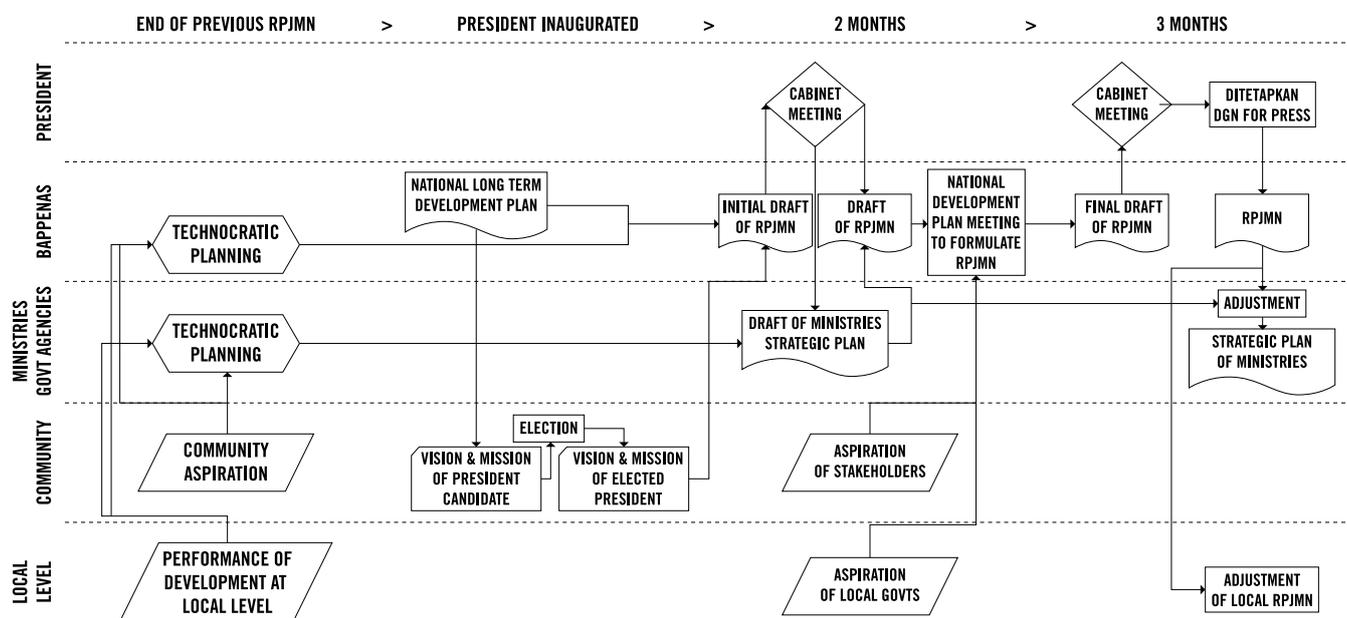


Figure 3.

BAPPENAS develops a first draft of the RPJMN, informed by a technocratic analysis under different development scenarios and the President's vision, mission and priorities³⁵. This informs the development of sectoral strategic plans. Finally, BAPPENAS³⁶ coordinates a cross-sector development planning meetings³⁷ at every level of government to create consensus for priority programs and activities of each ministry and government agency.

government. Importantly, whilst planning is primarily top down, programs and activities that support the achievement of water, energy and food security targets are primarily implemented at the provincial and district level.

To ensure national and local medium term development plans are coherent across scales, BAPPENAS³⁸ holds bilateral meetings with local governments to review the draft RPJMD³⁹ and ensure it supports national development targets (Figure 4). Ultimately the MOHA is responsible for approving the draft RPJMD local government regulations and for monitoring and evaluating its implementation.

The top down approach to the formulation of local development plans (RPJMD) is often viewed by stakeholders at the sub-national level to be ineffective as every province and district has different characteristics. For example, in Central Kalimantan where steep slopes and shallow soils dominate, the national mandate to maintain 30% forest cover is largely unsuitable, with higher forest cover more appropriate. Similarly, every local government has different development priorities which may not align with the national plan. This tension is evident in national food security targets, which largely centre around key staple crops such as rice, corn and soybeans, yet might not be compatible with local preferences or realities. For instance, in Papua, sorghum and cassava are local staples making existing rice development programs by the MOA at odds with the specific local context.

Some of these conflicts across levels of governance can be linked to the reversal of decentralization policies such as the Law No. 23/2014 on Local Government, which withdrew the authority of district government on the management of natural resources, transferring this authority to provincial government⁴⁰. According to a study by HuMa (Simarmata and Firdau 2016) the reduced role of districts' governments has led to them to resist the inclusion of forest monitoring and management programs and budget allocation for forest fire prevention in their development planning, leading to forest governance challenges⁴¹. More broadly, a recent review by the Climate Policy Initiative⁴² concluded that existing revenue transfer instruments⁴³ may be indirectly incentivizing local governments to develop land rather than intensify production (a vital strategy to meet ambitious agricultural targets sustainably⁴⁴). Without the correct fiscal incentives, local governments will face big challenges in transitioning to sustainable development.

Entry points for change

The development planning meetings and harmonization process provide a good platform for dialogue across sectors and levels of government on potential resource trade-offs and synergies. However, without better data and analysis of likely resource demands across sectors, the elaboration and assessment of the coherence of targets across different sectors is undermined. Improving the quality and implementation of spatial planning was identified as key priority in the current

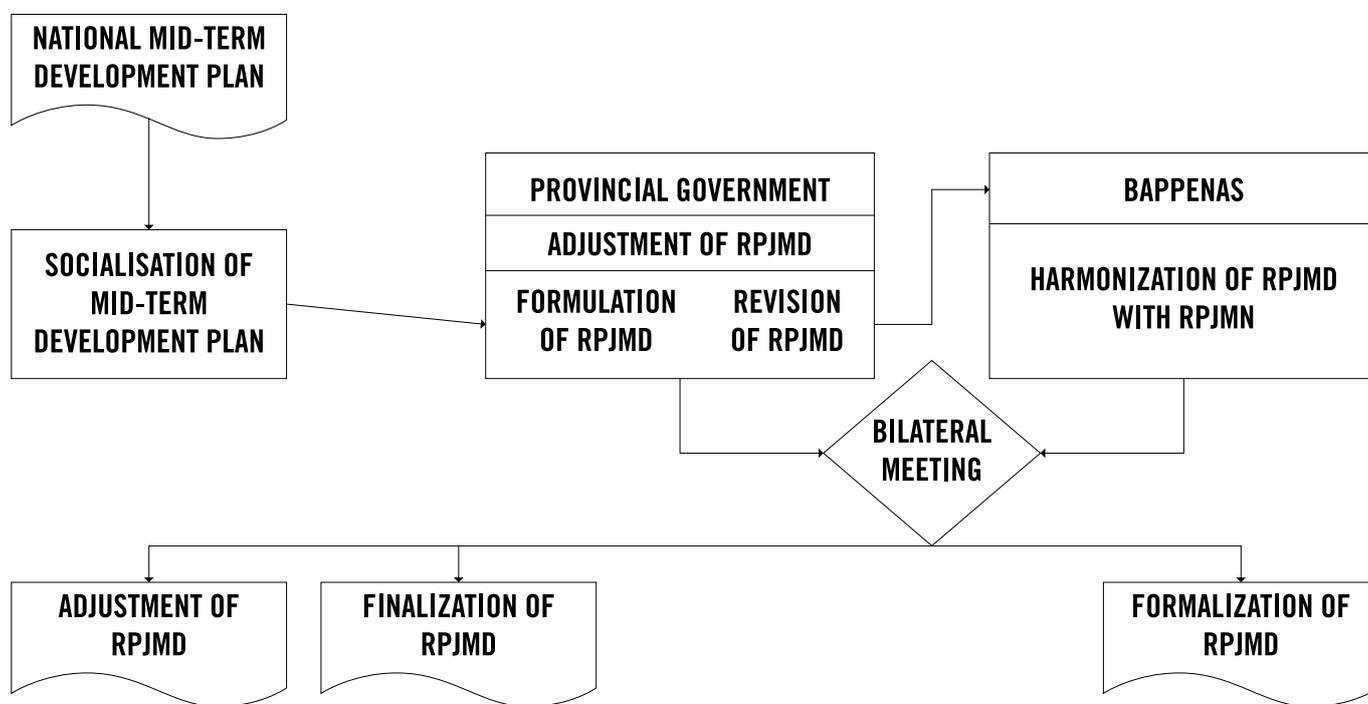


Figure 4. Process to harmonize the national and local development plans. Source: BAPPENAS⁴⁵

long term development plan (2005-2025) and should be the focus of ongoing efforts to address inconsistencies in development planning. The initiation of Indonesia's next mid-term development plan (RPJMN 2020-2025) in 2018 offers an entry point for achieving this. In the more immediate future, the review and development of annual sector plans offers an opportunity to build synergies across sector programs and activities.

Parliament offers an important accountability mechanism in land use planning, having the authority to approve and amend government annual budgets, spatial plans, and local government development plans. Improving the communication between government and parliament and the capacity of parliament to effectively review proposed plans and budgets should be prioritized. In Aceh, the Sustainable Development Caucus, a multi-party forum within Aceh Parliament, offers one such model that aims to build capacity and discuss various issues on sustainable development in supporting efforts to integrate environmental, social and economic aspects into the provincial development strategy.

CLIMATE MITIGATION AND ADAPTATION PLANS

Indonesia has already made notable strides to develop climate mitigation and adaptation plans and to integrate these into national development planning processes (Figure 5)⁴⁶. In November 2016, Indonesia submitted its first NDC to the UNFCCC setting out a unconditional emissions reduction target of 29% and conditional emissions reduction target up to 41% against the business as usual scenario by 2030⁴⁷. Achieving these targets will require significant changes in the land-based sector with forestry (including peat fires) expected to contribute to nearly 60% of Indonesia's emissions reductions. Accordingly, REDD+ (Reducing Emissions from Deforestation and Degradation⁴⁸) is identified as a key mechanism to achieve this target⁴⁹. As such, the NDC is inherently cross-sectoral, with emissions reductions in land-use dependent on the agriculture, forest and energy sectors. The significant changes required in the energy sector, which is expected to contribute 38% of the emission reduction target, and associated investment in biofuels will impact land use trade-offs.

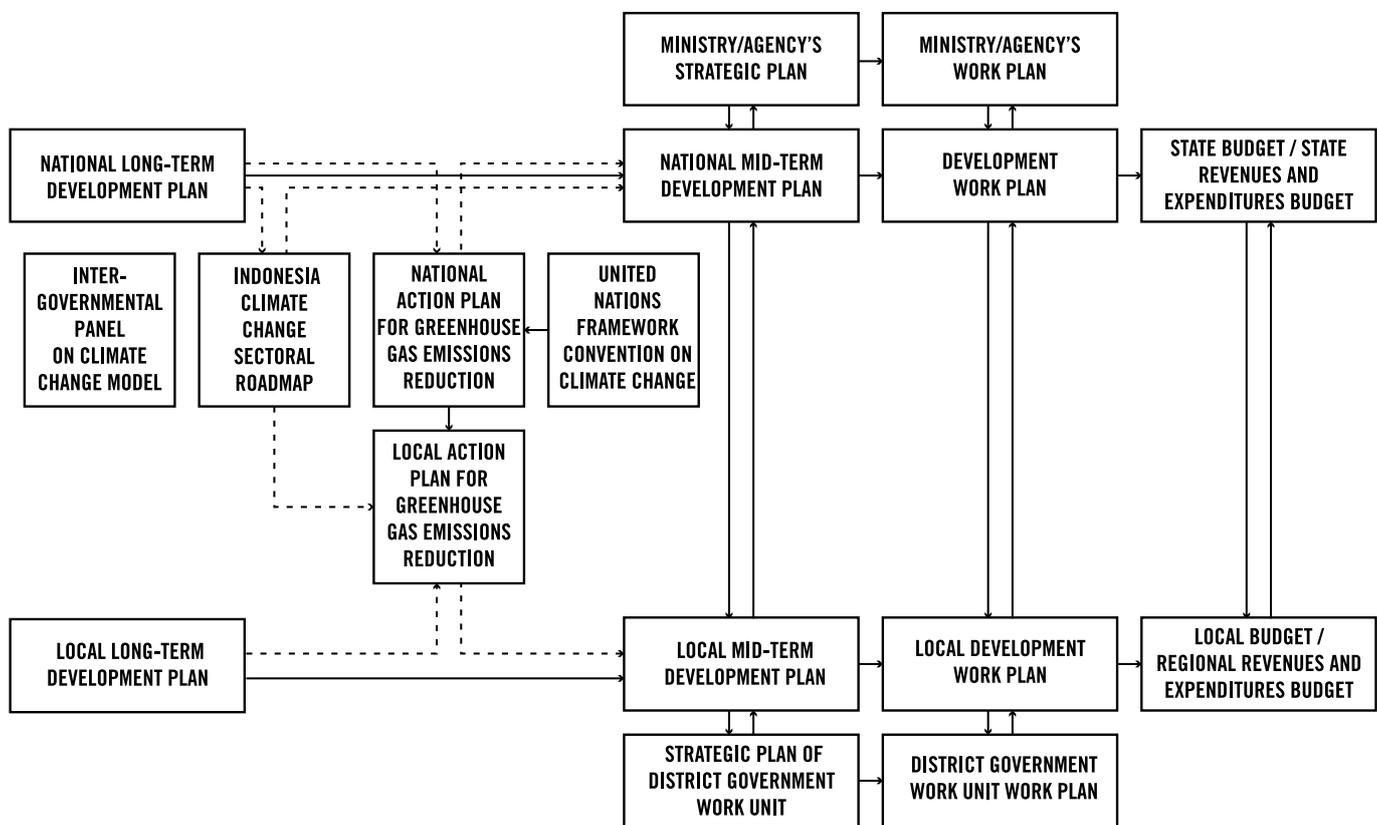


Figure 5. Mainstreaming of RAN/RAD GRK into national mid-term development plan

Cross sector coordination

Indonesia's climate policies clearly identify synergies (watershed ecosystem services and downstream agriculture and energy production) and trade-offs (agricultural expansion and forest conservation) with sector development plans, as well as strategies to build synergies and minimize trade-offs such as including increasing productivity, no burning, utilizing degraded land, and promoting value-added industries. However, these are not similarly articulated or prioritized in sector development plans, indicating an implementation gap in mainstreaming climate efforts into development planning. BAPPENAS highlighted this risk in guidance for implementing the RAN-GRK, stating that in preparing the development plans the government tended to focus more on synergies rather than trade-offs between climate mitigation objectives and other sector policies⁵⁰.

The NDC also highlights the strategic importance of natural ecosystems, including forests, in supporting water, energy and food security, articulating the need for a WEF approach. The NDC indicates strong support for REDD+ as an integral part of its emissions reductions strategy. However, although

the national REDD+ strategy recognises that the success of REDD+ is contingent on engagement across sectors and scales. Horizontal coordination and vertical coordination has been a significant challenge. The institutional set-up of the REDD+ Managing Agency (BP REDD+) as an ad-hoc agency has hampered its implementation and coordination efforts. Learning from this experience, the Peatland Restoration Agency has established and maintained communication and coordination with different government agencies and relevant stakeholders at the national and regional level.

However, BP REDD+ has had success stories, such as the One Map and Integrated Licensing System initiatives, both of which address fundamental land use planning coordination issues. More broadly it also succeeded in bringing together various stakeholders with different interests to agree upon the need to protect Indonesia's forests.

Finally, it is important to recognise that there is still significant deforestation under both the unconditional and conditional scenarios by 2030 (Table 2). These scenarios also demonstrate the scale of the challenge to achieve significant land use emissions cuts; the conditional scenario assumes



photo by Jose Javier Martin Espartosa

the area of peat restoration reaches 2 million ha by 2030 with a 90% success rate and the rehabilitation of almost all unproductive lands (about 12 million ha in total).

Multi-scale coordination

Whilst Indonesia's emissions reduction target is determined by the national government, implementation will be mostly by sub-national governments. This is reflected in climate plans that include an emphasis on sub-national or 'jurisdictional' approaches. Whilst BAPPENAS played a key role in facilitating local governments to develop climate mitigation plans (RAD-GRK), a review of RAD GRK integration into development planning in Central Kalimantan identified a gap at the district level, potentially exacerbated by the fact that there is no instruction from the provincial to the district governments that RAD-GRK should be used as a reference in the formulation of districts development plans⁵¹.

Entry points for change

The ratification of the Paris Climate Agreement will require the Government to ensure that national regulations are aligned with the emissions reductions target, providing an opportunity for land-based ministries/agencies and levels

of governments to come together to create an integrated plan that can achieve both climate change and sustainable development goals. The formulation of the next mid-term development plan (RPJMN 2020-2025) in 2018 offers a critical entry point for mainstreaming and operationalizing the NDC into sectoral development plans.

Although the development of REDD+ has faced significant coordination challenges, it has had some success, such as the One Map and Integrated Licensing System initiatives. A new willingness by private sector actors to make zero-deforestation commitments could support REDD+ goals, but potential conflicts between corporate sustainability initiatives and national laws need to be addressed.

4. CONCLUSION

Indonesia is committed to achieving a sustainable development agenda that can meet growing demands for food, water, and energy, while balancing conservation and climate objectives. However, in doing so it faces a difficult challenge in balancing competing demands on its resources, exacerbated by climate change and climate extremes.

The analysis above indicates that whilst Indonesia's key instruments for resource governance provide an adequate framework for cross-sector and multi-scale coordination, there are significant gaps and inconsistencies in sectoral development targets and policies that could undermine its sustainable development agenda. Underlying challenges in resource governance centre on incentives and power balances between local and national government, data inconsistencies and transparency, and accountability. In addressing these underlying challenges, it is critical to recognise that there are differentiated costs and benefits across stakeholders in transitioning to sustainable development, and that power dynamics between actors who truly govern resource decisions will greatly influence the outcomes of any policy changes.

Incentivizing and supporting local sustainable development agendas

Local governments will play key roles in implementing Indonesia's sustainable development agenda. However, there is currently a disconnect between top down national development planning and local priorities. In addressing this there is a need for more bottom up planning but also differentiated development models and policy instruments that respond to local dynamics across Indonesia's archipelago. Further, there is a clear need to align fiscal incentives to support local governments to transition to more sustainable development models, for example through integrating provincial performance-based payments and environmental criteria in budget proposals and transfers. Similarly, there are opportunities to explore the role of public finance and fiscal policy in fostering greater interest in low-carbon development strategies, for example investments in natural infrastructure.

Data, transparency and accountability

One of the most significant challenges for both cross-sectoral and multi-scale coordination on resource use is data coherence, consistency and accuracy. Robust datasets and standardized information flows will be paramount in elaborating coherent development and land-use objectives and in particular targets related to water, energy and food security.

Efforts are being made to address this through the One Map⁵² initiative and the Integrated Licensing Process⁵³ that

directly address data aggregation in efforts to improve land use planning. Mandates exist for all ministries/government agencies to use data issued by the Central Bureau of Statistics (BPS) as a single data source. Whilst this offers an independent source of data, questions remain on the quality and reliability of data and information provided by the BPS⁵⁴. Better information flows will also go hand-in-hand with efforts to address transparency and accountability which currently remain low among both public and private sector actors. Efforts by the Government to support greater public sector accountability include the newly established system of accountability of government institution performance (SAKIP) that integrates planning, budgeting and performance reporting. However, clear sanctions and incentives are required to improve the effectiveness of accountability mechanisms. For example, whilst the MOHA is accountable for ensuring local governments support national medium term development planning there are no clear sanctions for local governments who do not do so.

Next steps

In 2017, the Government of Indonesia is scheduled to hold regional elections in 7 provinces, 79 districts and 18 cities. Following the elections, these provinces and districts must formulate their new medium development plans. In 2018, Indonesia will initiate the process of developing the next medium term development plan (RPJMN 2020-2025). This provides an entry point to encourage the utilization of SEA within spatial planning as the basis to develop the next mid-term development plan, and to integrate more robust analysis of the coherence of sector targets and resource demands against resource availability. The ratification of the Paris Agreement and submission of Indonesia's NDC provides an opportunity to also fully address climate and development trade-offs in the next mid-term development plan.

In this context, this policy brief demonstrates the value of a WEF nexus framework to identify and discuss the interdependencies between different sectoral policies and assess how cumulatively they can work towards achieving Indonesia's development and climate goals. Indonesia's spatial and development planning frameworks provide a basis for this but urgently require a stronger evidence base on likely resource demands across sectors and resource capacity; this is particularly necessary given future climate change impacts.

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- ² Ministry of Environment and Forestry. (2015) Deforestasi Indonesia Tahun 2013-2014. Net deforestation was 400,000 ha with 170,000 ha of reforestation.
- ³ Other estimates suggest that from 2000 to 2012, Indonesia lost over 6 million hectares (ha) of primary forest. Margono, B. A. et al. (2014) Primary forest cover loss in Indonesia over 2000-2012. *Nature Climate Change*, 4(8), 730-735.
- ⁴ Land use change and forestry accounted for approximately 63% of Indonesia's total Greenhouse Gas (GHG) emissions.
- ⁵ Ministry of Finance. (2014). Green Planning and Budgeting Strategy for Indonesia's Sustainable, Development 2015-2020.
- ⁶ See input report and background reading Securing Indonesia's economic prosperity by ensuring environmental sustainability, and water, energy and food security for a workshop held in Jakarta in August 2016.
- ⁷ Global Canopy Programme and Wildlife Conservation Society Indonesia Program. (2016). How can Indonesia Achieve Water, Energy and Food Security? Available at: <http://globalcanopy.org/publications/how-can-indonesia-achieve-water-energy-and-food-security>.
- ⁸ This includes the rehabilitation of 5.5 million ha of critical land in forest management units and the development of 12.7 million ha of community forests.
- ⁹ This includes four national priority watersheds (Ciliwung, Citarum, Kapuas and Siak watersheds) and a further 26 priority watersheds. In terms of improving built infrastructure, targets include the rehabilitation of 3 million ha of damaged irrigation network and the establishment of another 1 million ha of irrigation.
- ¹⁰ Meanwhile, the anticipated construction of 36 dams in the period 2016-2019 is also expected to clear a further 10,087 ha of forest (<http://agroindonesia.co.id/index.php/2015/06/14/mimpi-yang-terancam-bayar/>)
- ¹¹ Dewan Energi Nasional. 2014. Ketahanan energi Indonesia. Jakarta (ID).
- ¹² Up to March 2013, MOEF had issued permits for mining exploration surveys over 2.6 million ha of forest and exploitation permits for 382,500 ha. (Ministry of Environmental and Forestry 2013).
- ¹³ FERN. (2015). Double jeopardy: coal's threat to forests. Available at: http://www.coalforest.org/pdf/CoalForest_Report.pdf
- ¹⁴ RPJMN target is to expand agricultural land by 300,000 ha by 2019.
- ¹⁵ According to the 2013 agricultural census.
- ¹⁶ This mostly occurs in the most productive rice fields and at a relatively high rate, approximately 100 thousand ha/year, while the establishment of new rice fields is occurring at a rate of less than 50 thousand ha/year. Badan Intilijen Negara. 2014. Memperkuat Ketahanan Pangan Demi Masa Depan Indonesia. 2015 – 2025. Hikam, MAS. editor. CV. Rumah Buku. Jakarta (ID).
- ¹⁷ Law No. 41/2009 concerning the protection of sustainable agricultural land.
- ¹⁸ Direktorat Pangan dan Pertanian, Kementerian Perencanaan Pembangunan. 2015. Evaluasi implementasi kebijakan lahan pertanian pangan berkelanjutan (LP2B). BAPPENAS. Jakarta (ID)
- ¹⁹ The Ministry of Agriculture (MOA) is in discussions with the MOEF and the Ministry of Agrarian and Spatial Affairs to identify up to 2 million ha of land for agricultural development. The goal is to utilise existing convertible production forest, estimated at 13 million ha, to oil palm, rubber, sugarcane, and cacao. Up to October 2015, the MOEF has issued 671 decrees for the conversion of approximately 6.6 million ha of convertible production forest to oil palm, rubber, sugarcane, and cacao. In Java, the MOEF in collaboration with the MOA is utilising 100,000 ha of state forest area for rice cultivation and a further 167,000 ha for maize. (Discussion with Director General of Forestry Planology, MoEF and Director of Cereal, Ministry of Agriculture, 2015)
- ²⁰ Law No. 22/1999 marked the start of the decentralization in Indonesia giving significant authority to district government to define and prioritize its development and government system. Most recently, the Government of Indonesia issued Law No. 23/2014 concerning Local Government, which withdrew the power of district government in managing natural resources, transferring authority to provincial governments.
- ²¹ ADB. (2015) Summary of Indonesia's agriculture, natural resources, and environment sector assessment. Eric Quincieu. ADB papers on Indonesia. No 8 October 2015.
- ²² Law 26/2007.
- ²³ Technical criteria to guide spatial demarcation/zonation for forest types, food and energy is the responsibility of respective Ministries, for example the Ministry of Agriculture is responsible for land suitability criteria for agricultural land.
- ²⁴ President of Republic of Indonesia. 2009. Law No. 32/2009 concerning environmental protection and management. Jakarta (ID).
- ²⁵ President of the Republic of Indonesia. 2008. Government Regulation No. 26/2008 concerning the national spatial plan. Jakarta (ID).
- ²⁶ Indonesia's medium term development plan recognizes the lack of synergy between the development of spatial plans and watershed management plans is a threat to the supply of water for downstream areas.
- ²⁷ Global Canopy Programme and Wildlife Conservation Society Indonesia Program. (2016). Aceh and the Archipelago Economy: Protecting forests for water, energy and food security. Available at: <http://globalcanopy.org/publications/aceh-and-archipelago-economy-protecting-forests-for-water-energy-and-food-security>.
- ²⁸ Direktorat Jenderal Tata Ruang, Kementerian Agraria dan Tata Ruang. 2016. Status RTRW provinsi/kabupaten/kota seluruh Indonesia. Jakarta (ID).

- ²⁹ The Papua government has developed a revised spatial plan which avoids 1.5 million ha of deforestation (25%) by 2031 in comparison with the previous spatial plan.
- ³⁰ Abdullah, S. (2015) MIFEE dan Mimpi Swasembada Pangan. Available at: <http://kedaulatanpangan.net/2015/07/mifee-dan-mimpi-swasembada-pangan/>. Accessed on 9 March 2016.
- ³¹ President Jokowi recently signaled continued support for its implementation in Presidential Regulation No. 9 of 2016 with a deadline set for 2019.
- ³² A national working group facilitates coordination and synergies across the 19 ministries and government agencies, which has agreed to support the provision of relevant data and information.
- ³³ Law No. 32/2009 concerning Environmental protection and management.
- ³⁴ BAPPEDA coordinates local government planning.
- ³⁵ Medium term development plans mirror presidential terms.
- ³⁶ BAPPEDA at the local level.
- ³⁷ Musyarawah Perencanaan Pembangunan – Musrenbang.
- ³⁸ A harmonization team within BAPPENAS is responsible for this.
- ³⁹ Guideline for the implementation of harmonization of local and national development planning 2015-2019.
- ⁴⁰ The issuance of Law No. 22/1999 concerning the Local Government marked the start of the decentralization era in Indonesia. The law gave significant authorities to district government to define its development priority and its government system.
- ⁴¹ Simarmata R, Firdaus AY. 2016. *Pemberlakuan UU No. 23/2014 dan desentralisasi: kajian di bidang pengelolaan sumber daya alam. Perkumpulan untuk Pembaharuan Hukum Berbasis Masyarakat dan Ekologi (HuMa)*. Jakarta (ID).
- ⁴² Climate Policy Initiative. (2015) *Improving Land Productivity through Fiscal Policy: A Framework for Analysis*.
- ⁴³ Land and building taxes and non-income revenue from forest and mining provide large percentages of revenue for regions.
- ⁴⁴ Results from a study of Aceh's agricultural development targets indicate that investments in increasing productivity could dramatically decrease the amount of land required for rice and oil palm, enabling development targets to be reached without further deforestation. Conversely, under business-as usual-production (with no increase in yields) there is not sufficient agricultural land, putting forests in the Leuser Ecosystem at risk of conversion.
- ⁴⁵ BAPPENAS. 2014. *Implementation guideline No. 3/Juklak/Sesmen/06/2014 concerning process of formulation of national mid-term development plan 2015-2019*. Jakarta.
- ⁴⁶ The Presidential Regulation No.61/2011 requires BAPPENAS to mainstream climate mitigation into development planning at all government levels.
- ⁴⁷ Government of Indonesia. (2016). *First NDC. Interim NDC Registry*.
- ⁴⁸ Reducing emissions from deforestation and forest degradation (REDD), and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+)
- ⁴⁹ Government of Indonesia. (2016). *First NDC. Interim NDC Registry*.
- ⁵⁰ Ministry of National Development Plan. (2011). *Pedoman pelaksanaan rencana aksi penurunan emisi gas rumah kaca*. Jakarta.
- ⁵¹ Jagau Y et al. (2014). *Kajian kesesuaian RAD-GRK ke dalam rencana kerja pembangunan daerah (RKPD) di Kalimantan tengah*.
- ⁵² Government of Indonesia initiated One Map Initiative following the development of the indicative moratorium map in 2011 to address the challenges of different agencies using different and often conflicting spatial datasets. Around 13 ministries agreed to incorporate their data into one map. The current administration further strengthened the importance of One Map in the country's economic development as part of its 8th economic stimulus package. The government expects the One Map to help resolve overlapping land-use conflicts and improve the reliability of information related to the location of economic activities, which will speed the land use licensing process.
- ⁵³ In January 2015, President of Indonesia launched the Integrated Licensing System as a national one-stop service under the Investment Coordinating Board (BKPM). The system is expected will improve the transparency and accountability of the licensing process, as a prerequisite for good spatial and land use planning.
- ⁵⁴ Data inconsistencies are highlighted in particular in the case of food security, where conflicting knowledge bases and data discrepancies on food production and imports in Indonesia were identified. These can be linked to issues in data collection and reporting (e.g. rice surplus not visible in data because of stocks kept by farmers).

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