

Report on 4th Sustainability and Resilience Workshop: Indonesia's low carbon development pathways December 2019



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Background

The Indonesian National Development Planning Agency (Bappenas) has requested support in incorporating policy research into Indonesia's low-carbon development strategies as the next step from the forthcoming National Medium Term Development Plan 2020-2024 (RPJMN) and [SDG roadmap](#). The specific request is for research inputs on renewable energies (RE; including geothermal, microhydro and bioenergy) in terms of their potential contribution to development and to climate mitigation, which has been highlighted as a crucial knowledge gap. To address these issues a workshop on low-carbon development was held in Bali on 27th-29th November 2019.

Day 1 featured presentations from policymakers and researchers working on these issues in the national government and across West Sumatra and Bali Province. Talks had particular focus on energy systems, SDGs and potential gender and equality implications of interventions. On Day 2, discussions focused on [renewable energy](#) as well as [tourism](#), and [waste management](#) as key sectors for increasing carbon efficiency while meeting development targets.

Renewable energy

Due to Indonesia's unique geography, not everyone has good access to energy infrastructure. There is a need to understand Indonesia's energy supply and particularly demand situation better – through improved reporting that involve different stakeholders. Ministries need to work with provincial governments to understand their regional issues. For instance in Bali, a program for installing solar panels in civic buildings and tourist resorts and hotels was selected but a barrier is lack of subsidies and maintenance agreements (similar to small scale biogas systems). Private finance investment has not been forthcoming due to lack of incentive: PLN's fixed price electricity tariff is too low and there is no guarantee on future electricity tariffs/concessions, access to subsidies and regulation on electricity standards. Thus **the government needs to develop incentives specifically for electrification in remote areas**, including PLN in the discussions and funds need to be allocated to this. Provincial governments also have a lot of authority in developing regulation in conjunction with low-carbon strategies.

Renewable energy - geothermal

In West Sumatra, geothermal is one of the most promising renewables alongside, solar, hydro and bioenergy. The electrification rate in the province is below the national average and several geothermal plants have been built in areas that have limited access to modern energy services. These projects have encountered different challenges and have improved access with different degrees of success - as perceived locally. The important thing to make geothermal successful is the **engagement with the local community in discussions and providing adequate land compensation** (land, job opportunities, etc). However, it is noted that across projects in RE (geothermal, but also micro-hydro and oil palm for biofuel) there can be striking differences in access and benefits between women and men, due to for example land tenure issues, compensation and income disparities, which may not be anticipated, so the projects risk increasing inequality rather than reduce it. For energy transitions to work as a universal benefit, decision makers should **consider socio-cultural contexts/nuances and bespoke approaches explicitly considering gender and social equity**. Doing so will support the ambitions of SDG5 on gender equality as well as SDG7 relating to universal provision of affordable and clean energy.

Renewable energy - biogas

Renewables are not being scaled up fast enough to meet government energy targets, nor GHG emissions reductions targets. Moreover, a siloed policy approach often misses wider development aspects - rural energy access, jobs etc. which are important for meeting SDG roadmap goals. Large-scale biogas could be part of the solution both for development and for emissions reductions, but is hardly mentioned in the LCD report – a probable gap in thinking. Low priority of biogas has resulted in a very scattered approach to biogas, focus on small scale systems (e.g., some pilot programmes in Bali) but very few large scale (few waste reactors in Indonesia). A policy recommendation is to **incentivise energy companies and entrepreneurs through offering attractive tariffs**, whilst clarifying policy in terms of RE targets (in the context of continued fossil fuel production, but also independently of fossil fuels). Private sector would be willing to invest but government must lessen/redistribute the risk. As well as regulation, **this requires energy needs assessments, feasibility studies** etc. Our research in Bali indicates that small scale is feasible and beneficial (technical problems can be overcome) but it is also clear that there has not been enough research on large scale biogas for electrification. Electricity from biogas, if priced at the right level, can save people money and create employment in power sector through biogas development, construction etc.

Other potential important renewables for Indonesia include solar, hydro and biomass – but these were discussed less at the workshop.

Tourism

Participants discussed how public transportation in touristic destinations is often not well-connected nor well-planned. Reliance on private vehicles adds to the problems of congestion, noise pollution and exhaust emissions. However the tourism sector could make many innovative contributions to sustainability planning in participation with local communities, for example through **substitution of biofuels in sustainable transport** (a fuel which is currently very expensive for local people but has high potential). In addition, ecotourism could be encouraged through

promotion of cultural ecosystem services (CES) and **eco-labelling of such products and services to state how carbon intensive a certain service is**. Low carbon actions should be mainstreamed into tourism development – some examples include the “Green Tariff” scheme by the Balinese government where hotels and other businesses buy green certificates, which then fund low-carbon development activities in the province – outside Bali the ‘Ten New Bali’ program aims to promote and rebrand tourist destinations in other parts of Indonesia and may also target sustainable tourism. Support of local people is also important for concrete action for reducing carbon emissions – dealing with this must involve those in the community as well as local government.

Waste management

Participants discussed food waste in urban areas and agricultural waste which have different challenges and solutions.

Urban waste/trash is a huge issue because the majority (80%) is not recycled and is costly to dispose of in landfills, whilst many individuals burn waste adding to urban pollution and emissions. It is difficult for the central government to impress on cities the need to consider emissions with respect to food waste, and their importance in meeting Indonesia’s NDCs. Land use is not always optimised for integrated solutions – for instance post-mining areas could be used. Laws and programs about waste management are lacking and a further problem is there are few private operators. Participants agreed that there are opportunities for valuing waste. This could be done in addition to government regulation (e.g. fines for burning waste) and investment. For example ‘green tourism’ promoted by **hotel industry could be an area for businesses/social enterprises to profit from processing waste** (moving towards a circular economy model) as currently waste collectors are not paid. Other solutions tackle the consumer side to reduce the amount of waste: mandatory education in waste management in schools, composting programmes in communities.

In the rural/agricultural areas, food waste is more likely to be used to feed animals and agricultural waste to create bioenergy/biogas. Communities could be encouraged to process organic waste for use as fertiliser, if for example the **government can help create a market for organic fertiliser** (government, horticulture firms, hotels could be buyers) and assisted with capacity building in local communities. Use of synthetic fertilisers accounts for around 10% of Indonesia’s GHG emissions in the agricultural sector. In addition biogas produced from animal waste can help reduce reliance of villages on use of firewood and LPG – leading to a small reduction in domestic carbon emissions.

Further recommendations are provided in discussion briefs and other outputs co-produced by SEI, Su-re.co, Universities of Udayana and Andalas. These resources can be accessed below:

[Contemporary Coal Dynamics in Indonesia](#)

[Risks, barriers and responses to Indonesia’s biogas development](#)

[Lessons from Bali for small-scale biogas development in Indonesia](#)



Follow up

Publication of BAPPENAS Low carbon development plan is imminent. It is expected that the plan will then be reviewed every year and will be used to prioritise projects at the national level.

Anticipating the potential high impact of the plan on Indonesia's RE development, and the scale of challenges ahead, Su-re.co and SEI and Universities partners would like to express they are keen to continue to provide support as knowledge partners to Bappenas and other diverse actors involved.