

Can Indonesia solve climate and environment problems together?

Co-benefits in Brief

The Case of Biomass in Indonesia



Indonesia's rapid economic growth has produced a number of unwanted side effects. From a climate change standpoint, it has led to an increase in greenhouse gas emissions. The source of these GHGs, energy production, has also led to increased air, water, and waste pollution. By taking a holistic approach to tackling climate change, Indonesia could both mitigate GHGs while also confronting other important developmental needs such as improving air and water quality and achieving better waste management - This is known as a co-benefits approach. Japan and Indonesia have been pursuing a co-benefits approach in Indonesia since the environmental ministries of both governments signed a joint statement in 2007 agreeing to do so.

This "Co-benefits in Brief" memo - a byproduct of this cooperation - focuses on assessing potential co-benefits that could be derived from sustainable biomass in Indonesia, both in the short- and long-term. The brief begins with background information on biomass, turns to the co-benefits of sustainable biomass use, and then covers existing policy frameworks supportive of achieving these potential co-benefits.



A composter installed in front of a house in Surabaya, Indonesia

Background on sector and location



Surabaya, Indonesia

Indonesia is a heavily forested nation, and there is no shortage of potentially usable biomass spread across the country. These resources include forest biomass, agricultural biomass (palm, maize, rice, etc.) and livestock biomass (cattle waste, etc.). Some of these have already been used as fuels, even so far more efficient processing systems could be developed in order to achieve each resource's full utilization and potential.

Availability of biomass resources

Source:
Pacific Consultants Co., Ltd.

Biomass resource	Part	Current usage and potential usage	Current availability (GJ/year)	Projected availability (GJ/year)
Palm	Empty Fruit Bunches	Accumulated in factories so readily available. Contains a high ratio of water that has to be processed.	144,480,000	289,743,089
	Shell	Already being used as a fuel (usage rate is not available)	110,080,000	220,755,640
	Fiber	Already being used as a fuel (usage rate is not available)	247,680,000	496,702,439
	Effluent	Mostly unused. Partially used as a raw material for composting. Methane, which is generated in the process, could be utilized.	34,896,048	69,981,234
Cassava	Skin	Partially used as a fuel.	71,725,500	71,725,500
Corn	Core	Currently mostly goes unused. Can be used easily due to its abundant availability in factories (the stems and shells are not used either, but they are scattered across farms so could be difficult to collect.)	77,407,187	128,926,602
Sugarcane	Bagasse	Partially used as a fuel. Potentially could be a main source for bioethanol development (the leaves and fibers are not used, but they are scattered across farms or have high water-ratio making them difficult to be collected/used)	78,373,750	8,373,750
Rice	Chaff	Partially used (rice straw is not used and is difficult to collect because it is scattered on farms)	162,203,448	173,371,911
Cattle manure	-	A large number of cattle manure could be used for biomass development (Methane gas)	774,910,408	114,332,822
<p>Note: 1. Current availability according to 2010 data. 2. Projected availability is based on the target ratio of renewable energy (using biomass for 5% of primary energy resources) by 2025 from "National Energy Policy"</p>				

Potential Co-benefits

Using biomass does not only reduce GHGs attributable to energy production, which could help Indonesia meet climate goals, but could also support Indonesia's domestic energy security and decrease the country's reliance on fossil fuel imports. On a more local level, biomass use reduces organic waste, and could create job opportunities for low-income households by and affiliated industries to communities. Socio-economic co-benefits such as these are not the primary target of biomass production, so government support, direction or intervention is necessary in maximizing the associated benefits.



Existing policy frameworks and future implementations for realizing co-benefits

One possible measure for increasing biomass utilization in Indonesian businesses might be to amend the Program for Pollution Control Evaluation and Rating (PROPER program) to allow for the use of biomass. Originally passed in 1997, the PROPER program (enforced under the Environmental Law [Act 23/97 article 22.1]), evaluates company compliance and environmental accountability, protects residents' right to know, and mandates companies submit information relating to environmental management.

The PROPER program offers different benefits to different stakeholders:

1. For the government, the program serves as an opportunity to use integrated data to establish new policies that improve compliance.
2. For businesses, the program provides benchmarks to gauge opportunities and better understand the business environment, and incentives to improve their levels of compliance.
3. For investors and citizens, the program serves as a monitoring tool to assess companies' environmental management while also providing information on

marketable or otherwise beneficial environmental management while also providing information on marketable or otherwise beneficial environmental technologies.

On top of the PROPER program, the Indonesian government should also develop a comprehensive plan for the promotion of biomass use by businesses. This plan could include things like a feed-in tariff system for investments, incentives that foster other industries to start using more biomass, and support for the development of new technologies in the field. New frameworks that engender public-private partnerships and facilitate cooperation between government and local officials could also encourage further biomass utilization within Indonesia.

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