World Agroforestry Centre

Indonesia's 'Green Agriculture' Strategies and Policies:

Closing the Gap between Aspirations and Application

photos: Beria Leimona/World Agroforestry Centre

Adverse environmental impacts from rubber, coffee, cacao, palm oil (with Indonesia in the top-5 global producers for these export-oriented commodities) present both a threat for environmental degradation and an opportunity for greening the country's agriculture, particularly when there is a growing preference among a sub-set of international consumers for sustainably grown products, and commitments from the government for advancing its agriculture policies.

Key findings	Policy implications
The main environmental issues are: » Expansion of agricultural land & conversion of forests leading to ecosystem services and biodiversity loss » Organic and inorganic pollution, » Uncontrolled use of water resources, » Mismanagement of soil nutrients and poor site selection	Government functions for environmental management need to be strengthened, particularly in harmonizing data and their standards across sectors under a unified framework and management system.
Environmental challenges for the export-oriented cash crops and rice as the primary staple are intertwined with social conflict, rural poverty and livelihood uncertainty in the face of climate change and socio-political shocks	It is advisable to strengthen sub-national government policies, particularly on financial and planning capacity to manage and expand successful applications of variety of policy instruments, i.e. economic and voluntary approaches. Moreover, working more closely with private sector players is essential.
Indonesian policy makers have deployed a variety of instruments to reduce agriculture's environmental footprint, including direct regulation, incentives that create or correct markets, and voluntary and informational solutions.	The Indonesian budgeting system might need change as currently it is not flexible enough to accommodate such conceptually-advanced instruments. The system does not recognize the concept of earmarking and all revenues collected through taxes assigned to a general purpose budget, thus cannot be utilized for financing targeted environmental performance that aims at minimizing environmental risk from its source.
There are substantial opportunities for Indonesian policy makers to embark on a proactive but selective approach to greening agriculture in Indonesia, in active learning mode, based on articulating the country's national aspirations for sustainable development trajectories.	The Indonesian government can increasingly play the role of enabler of voluntary markets, institutional innovation, and promoter of voluntary action, leveraging the use of instruments on private interest and participation, and moving away from command control systems.

Indonesia's agricultural policies have recognized the environmental, social and economic imperative of green agriculture, and a significant portion of the national strategy of green growth aims to reduce agriculture's environmental footprint. But while such an approach is often crucial, it can be incomplete and only generates arbitrary good practices. Thus, a gap between aspirations and applications of sustainable agriculture does exist.

This study provides an overview of the state-of-the-art of green agriculture, the policies and strategies associated with it, the commonly applied instruments, and the situation in the field. The study aims to capture recent findings on the following questions: What are prominent environmental adverse drivers and impacts of environmental degradation associated with commercial agriculture? What are the major features of the country's strategy and policy in relation to green agriculture? What mixture of mechanisms, instruments and regulations are being deployed by the government and private sectors to address sustainable agriculture? What are capacity strengths and weakness for implementing green agriculture? And finally, what have been the main factors contributing to the continued gap between green aspirations and applications on the ground?

We focus on five commodities that are particularly important based on their competitive outlook and the degree to which they contribute to environmental and social risks for communities and private enterprises. These commercially valuable commodities are rubber, coffee, cacao, palm oil, and rice. The first four commodities have strong global demand, presenting both a threat for environmental degradation and an opportunity when there is a growing preference among a sub-set of international consumers for sustainably grown products. Rice is a staple food of Indonesian people with high domestic demand. In all cases, the environmental challenges are intertwined with social conflict, rural poverty and livelihood uncertainty in the face of climate change and socio-political shocks.

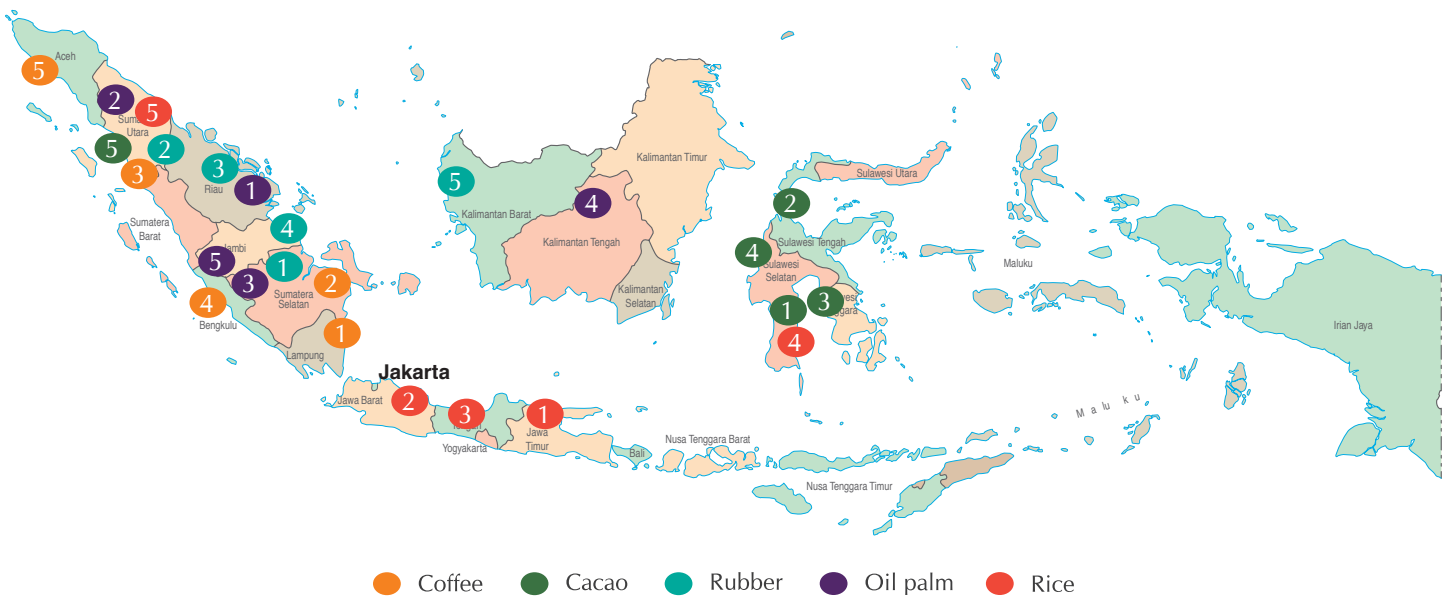
Indonesia's green agriculture challenge

Adverse environmental impacts from these commodities are highlighted in four categories:

Expansion of agricultural land & conversion of forests leading to ecosystem services and biodiversity loss – These environmental risks are mostly driven by sizable-scale growth of monoculture plantations, particularly estates and clear-cutting operations by timber industries. Intensive agriculture along the border of protected areas has increasingly led to loss of fragile habitats. Land conversion caused not only deforestation and biodiversity loss, but also 'carbon debt' and increased GHG emissions. The process of administrative and fiscal decentralization has, unintentionally, accelerated agricultural expansion into forested areas, as district governments obtain needed operating revenues through land concessions.

Organic and inorganic pollution – Inefficient use of fertilizers, latex processing operations and palm oil mills have led to water pollution and soil contamination. Rice has traditionally been a strong polluter. Further, the study found that oil palm, cacao and rubber have featured high level of problems related to effluent control and misuse of substances.

Uncontrolled use of water resources – Excessive use of water can lead to depletion of aquifers. The Indonesian study confirmed that Indonesian agriculture has been subject to risks from water scarcity, consistent with the expectations. Coffee, cacao and rice have shown signs of potential risk, predominantly through their relatively high water footprint. However, coffee and cacao consume mostly rainwater, not hindering other users from accessing water. In contrast, rice production implies rice farmers have to share their water with other domestic users and producers.



Top five commodities by provinces in 2013 (Pusdatin Pertanian (2013); BPS (2014))

Mismanagement of soil nutrients and poor site selection – selection of loose soil and steep slopes for agriculture, parallel contour ploughing, ground cover clearing and slash-and-burn contribute to soil degradation and erosion. Land degradation is most common when farmers are unaware of the perils of poor site selection or when they face limited availability of fertile and flat farming lands. Technically inappropriate irrigation can also degrade soils. Soil erosion has been problematic primarily when plantations have been planted on steep slopes. Unshaded production systems require more chemical inputs and lack natural mulch covering from shade trees which degrades the soil faster and increases soil erosion.

Indonesian green agriculture aspirations, applications and capacities

Indonesia has embraced sustainable agriculture, through a variety of national level strategies, such as the National Agenda 21, National Development Programs, and Revitalization Strategy for Agriculture, Fisheries and Forestry. These strategies have been implemented by The Central Planning Agency (BAPPENAS), the Ministry of Agriculture, and the Ministry of Environment. Many of these strategies contain appropriate elements for sound environmental management of export agriculture in Indonesia.

Motivations behind the enactment of these strategies have changed and seem to respond to different trends over time. First, Indonesian national strategies have favoured socio-economic goals over environmentally sustainable ones. Notwithstanding, environmental issues have proved to gain increasing prominence over time, as they appear more frequently in reforms and strategic documents in recent years. Second, strategy documents have also shown a shift in direction with an instrument mix with less exclusive attention to laws and regulations and more market creation instruments and voluntary approaches over time.

A mixed set of capacities, together with conflicts between conservation goals and local revenue raising imperatives, has led to inconsistent patterns and progress in different provinces. Significant improvements have been made to modernize agro-environmental regulations, drawing upon better knowledge and global good practice. Whether environmental risks present local or global threats, the level of environmental degradation in any given commodity, and the availability of legal, enforcement, fiscal and regulatory capabilities for sub-national governments tend to underpin the choice of instrument for policy.

In practice, Indonesian policy makers have deployed a variety of instruments to reduce agriculture's environmental footprint, including direct regulation, incentives that create or correct markets, and voluntary and informational solutions. Policy makers apply legal and regulatory instruments, but presumably targeting plantation states and sizable farms. It is worth noting the presence of mandatory ISPO standards (in local regulatory instruments section), as they these have been a relatively recent adaptation from voluntary standards. Additional considerations that influence policy-makers' decisions to apply any one instrument include the potential effectiveness of introducing the instrument relative to its costs, and the ability of the policy maker to introduce it, in the face of possible political resistance. In this regard, application of regulatory and legal instruments seem to work best for overseeing conspicuous investments, such as in the case of planting prohibitions, and requirements for Environmental Impact Assessment (EIA). The Indonesian study has also found that international pressure contributed to dissemination of planting prohibitions. In addition, deployment of regulatory instruments may work best when their administrative and monitoring expenses are already embedded into an existing administration, such as indirect product charges for import restrictions. However, applications of land use planning and zoning instruments have shown some limitations, such as inconsistent zoning between national and sub-national government agencies.

Instruments that create or correct markets have gained traction, but they still seem incipient in their application, with the exception of full cost charges for water use control. Payment for ecosystem services has played a growing role at the national level, as witnessed by the increasing number of collaborative programs involving various stakeholders, including the government. Applications of market instruments seem also to be directed towards commodities grown on state farms. For example, indirect subsidies for organic fertilizer and certification of organic farming have been applied for rice and horticulture products – administered through distributors – but limited to commodity states. Limited tax collection and management capacity have constrained applications of instruments that create or correct markets. For example, the Indonesian budgeting system does not recognize the concept of earmarking and all revenues collected through taxes are assigned to a general purpose budget. Thus, the funds collected through charges for resource use and environmental tax application for certain products cannot be utilized for monitoring of environmental performance or for other applications for minimizing environmental risks. One clear missed opportunity is scaling up of selected successful experiences with payment for environmental services (PES), which remain highly dependent on donor funding.

Information, advocacy and voluntary approaches remain known for commodity quality standards and certification. Certifications were introduced by the private sector through multi-stakeholder forums. The government embraced the initiative afterwards, even to the point of introducing mandatory national standard (i.e. ISPO), for palm oil. Another example of government response is PIS Agro, which is currently backed by 13 companies partnering with the government. This voluntary instrument presents a broad public-partnership program (PPP) which can enable better implementation of Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP) as the basis for certification. Application of voluntary approaches have been more prominent for issues related to natural resource management and quality such as soil, land and water, as opposed to address issues related to environmental protection. However, one limitation from current government standards is its focus on uniform technicalities that ignore the environmental context, specifically not taking into account

problems that ail sites. The standards provided by the Indonesia National Standardization Authority (BSN, *Badan Standardisasi Nasional*) present limited market uptake as it is usually perceived as a low rigor standard.

It is worth noting that information approaches are critical for the effectiveness of regulatory instruments. For example, restriction of pesticide use should be coupled with information to raise farmers' awareness and understanding about pesticides and fertilizer dosage. However, the application of extension services, which could convey communication programs for environmental management, remains limited to rice and basic food crops.

Bridging the gap between aspirations and applications

Based on the findings, the Indonesian study recommends the following: First, policy makers should strengthen government functions for environmental management, particularly to harmonize data and standards across sectors under a unified framework and management system. Second, policy makers should build sub-national government financial and planning capacity to manage and expand successful applications of economic instruments and voluntary approaches. Finally, national and sub-national governments should work more closely with private sector players to systematically advance agro-environmental action plans for specific commodities.

In addition, expanding the use of economic instruments and taking advantage of voluntary approaches will require that sub-national governments work in partnership with the private sector to introduce standards that respond to local needs. Moreover sub-national governments would need to rely increasingly on data and science to conduct diagnostics. The Indonesian government should increasingly play the role of enabler of voluntary markets, institutional innovation, and promoter of voluntary action, leveraging the use of instruments on private interest and participation, and moving away from command control systems.

In summary, Indonesian policy makers need to embark on a proactive but selective approach to greening agriculture in Indonesia. By looking at policy options, evaluating their adequacy for specific conditions of landscapes and learning from their own experience and adaptation of their strategies over time, Indonesians will be in a better position to meet their own aspirations.

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