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The Economy and Environment Program for Southeast Asia (EEPSEA) was established in May 1993 to support training and research in environmental and resource economics across its 9 member countries: Cambodia, China, Indonesia, Laos, Malaysia, Papua New Guinea, the Philippines, Thailand, and Viet Nam. Its goal is to strengthen local capacity for the economic analysis of environmental problems so that researchers can provide sound advice to policymakers.

EEPSEA Policy Briefs summarize the key results and lessons generated by EEPSEA supported research projects, as presented in detail in *EEPSEA Research Reports*.

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Fighting Forest Fires – An Assessment of Policy Options in Indonesia

EEPSEA POLICY BRIEF • No. 2009-PB9

Uncontrolled forest fires are one of the key causes of habitat destruction in Indonesia. The haze they produce causes significant pollution problems for people in the country and in surrounding nations. Now a new EEPSEA study has highlighted the root causes of the fires and assessed a range of potential new policy options to improve the situation. The study is the work of Luthfi Fatah and Udiansyah, from the Faculty of →

A summary of EEPSEA Research Report No. 2009-RR9: 'An Assessment of Forest Management Options for Preventing Forest Fire in Indonesia' by Luthfi Fatah and Udiansyah, from the Faculty of Agriculture Lambung Mangkurat University, Jalan Jenderal Ahmad Yani, P.O. Box 1028, Banjarbaru 70713, South Kalimantan, Indonesia. Telephone/Fax: +62 511 477 2254, Mobile: +62 857 17000 529, Email: luthfi.fatah@gmail.com

“ The root cause of the problems

High-Priority Options with their Estimated Costs

Policy options	Rank	Estimated Cost	
		% of SQ*	Value**
e. Promotion of the delegation of authority and power from central government to local institutions	H	10	8,301
c. Introduction of fire permits for land clearing	H	15	8,678
b. Stronger implementation in the field	H	20	9,055
v. Workforces and institutions need to be formulated to Kabupaten (district) level	H	20	9,055
w. Appropriate and adequate budget allocation to support the functions of workforces or of institutions	H	30	9,810
a. Smaller units of executing agencies	H	40	10,564
o. Implementation of punishment and reward systems	H	50	11,319
d. Stronger monitoring and reporting systems	H	60	12,074
m. Establishment of an institution to monitor and record stakeholder compliance and violation	H	70	12,828
		315	91,684

*SQ = Status Quo. Cost is expressed as a percentage increase of the status quo budget

**Value is in million rupiahs

→ Agriculture at Lambung Mangkurat University, Indonesia.

The study finds that the weak enforcement of forest conservation rules and regulations is a key problem and that this is caused by a wide range of resource and institutional failures. It highlights three key policy improvements that would address the forest fire problem in a cost effective way. The improvements involve strengthening policy implementation in the field, putting in place an effective reward and punishment system and the establishment of an institution to monitor and record stakeholder compliance and violation. The study recommends that all three of these policy options are of a high priority. It also highlights a number of steps that must be taken to make sure that they are implemented effectively. These include ensuring that parliament supports and finances the appropriate policies, and empowering local

communities to help weed out corruption and bribery.

The Forest Fire Crisis

Indonesia experienced its most serious forest fires in 1997-8. One of the main contributing factors to this crisis was the severe El-Niño weather event that was taking place at the time. This caused dry conditions and made the forests prone to fire. In addition, some forests had been over-logged and degraded, which created ideal conditions for fires to spread. The impact of the fires was catastrophic. Many Indonesian cities were covered in a blanket of haze that also affected surrounding countries such as Singapore and Malaysia. Visibility was limited and many people experienced health problems and difficulty in breathing.

Since 1998, uncontrolled forest fires and haze have reoccurred almost every year. Partly as a result

of these fires, Indonesia is currently losing nearly two million hectares of forest every year. Deforestation on this scale, at this speed, is unprecedented and deeply worrying. Indonesia's forests are home to a large share of the world's biodiversity and also provide a livelihood for millions of people.

Numerous policy initiatives have been developed by the Indonesian government and other stakeholders to combat the country's fires. However these efforts have proved to be ineffective. The causes of the fires are varied and the solutions are complex. However it is clear that the root cause of the problem is weak regulation. Inadequate controls lead to a situation where the government is unable to rapidly implement appropriate responses. Weak regulatory control also means that the authorities do not know which companies are complying with the rules and regulations and which are

... is weak regulation”

not. In turn, this makes it difficult to reward companies that are following forestry management rules and regulations or punish those that are not.

Looking at Alternative Ways Forward

This study assesses alternative policy options that could reduce the occurrence and impact of forest fires. The scope of forest management policy is wide, so the research focuses on policy options that would address the root causes of forest fires. The information for the study was collected in many ways. Primary data was collected via in-depth interviews with ‘key informants’ from relevant government, commercial and NGO organisations. To help sharpen the research results, a case study was conducted in Riau Province. Riau is the province that has the greatest number of forest fires – during 2001-06, it had an average of 8,839 fire hotspots.

Secondary data was collected from various relevant private and public institutions (including development, planning and environmental management agencies at both regional and national levels). This

data included recent information on the number of forest fires, forest fire distribution and the physical and financial damage caused by forest fires. Overall, the scope and reach of information obtained ensured that results would be applicable to the whole of Indonesia.

The first step in the policy assessment was a review and evaluation of existing government forest conservation policy. Current government policies for forest management are based on establishing forest areas and legally safeguarding the conservation of natural biological resources. These policies are enforced by the country’s environmental agencies and supported by community empowerment and participation programmes.

Policy Weaknesses

The study found five main areas of weakness in current government forest conservation policy: 1) Rules and regulations are not consistent and lead to low levels of law enforcement. 2) There are a range of operational problems including a lack of analysis of the cost and benefits of policy actions and a duplication of functions across agencies. 3) There

is a lack of skills and capacity to combat forest fires. 4) There are a range of compliance and enforcement problems, including a lack of accurate data on forest resource use and insufficient and unreliable monitoring systems. 5) There is a lack of coordination between different levels of government. This means that long delays can occur between central government making a decision about a forest fire problem and the local government responding. What is more, local government has limited research and development skills and the influence of bribery and corruption is ever-present.

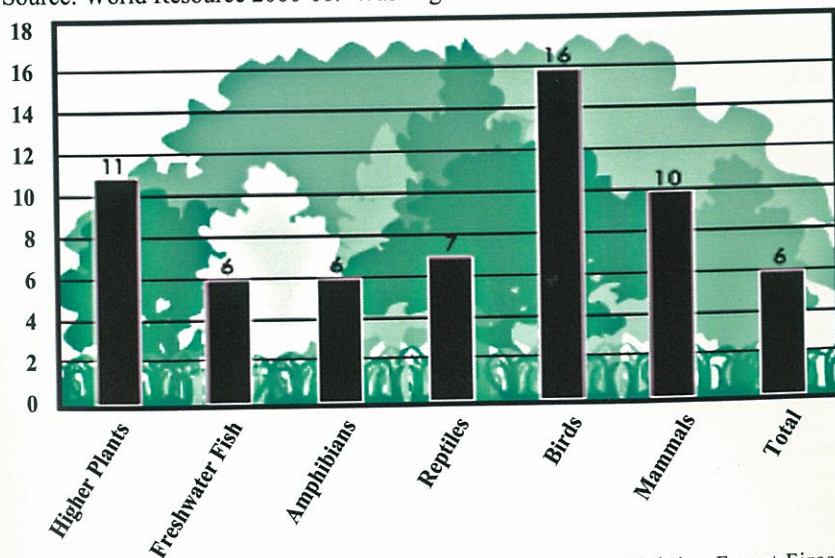
To highlight potential alternative policy options, examples of policies from other countries and suggestions from key informants were assessed. Several alternative policy options were short-listed and these were then reviewed in a workshop. The workshop highlighted over 20 alternative policy options that could potentially be adopted by the government. The proposed policy improvements involved actions in three main areas: 1) improving institutions by, for example, expanding the role of the Manggala Agni (fire brigade) and developing a regulatory ‘super agency’ to co-ordinate the prosecution of those lighting illegal fires. 2) Improving policy implementation by, for example, enhancing the training of law enforcers and using technology to help forest conservation activities. And 3) Improving community involvement in the monitoring and control of fires.

Which Policies Should be Adopted?

To see which policy options were best, each was assessed against a

Indonesian Share of World Species

Source: World Resource 2000-01. Washington DC: World Resource Institute



wide range of criteria which covered all of the main policy weaknesses that had previously been highlighted. For example each policy option was assessed to see whether it would help make the decision-making process transparent and accountable. Policies were ranked according to how well they addressed each of the main policy weaknesses.

Nine policy options were found to be very effective and were classed as 'high priority'. In general these policies related to the stronger implementation of rules and regulations in the field. Five policy options were classed as being 'medium priority'. These policies generally related to the development of more community involvement in forest fire prevention and mitigation and to the provision of budget support for these tasks.

All nine policy options that were identified as being high priority had their implementation costs estimated. To do this, interviews with key informants were used to estimate both the cost of existing government policies and the additional costs of implementing the new policy options. This information was once again taken to a workshop for a final round of assessment.

Three High Priority Policies

The study results indicate that there are three key policy options that will provide cost-effective ways to

improve forest fire prevention and mitigation. The first policy option involves improving policy implementation in the field. This would require funding of an additional 65% on the top of the existing budget, equal to 4,905 million rupiahs. The second policy option involves implementing a reward and punishment system. This would require funding of an additional 50% on the top of the existing budget, equal to 3,773 million rupiahs. The third policy option involves establishing an institution to monitor and record stakeholder compliance and violation. This would require funding of an additional 70% on the top of the existing budget, equal to 5,282 million rupiahs.

All three recommended options are high priority; therefore there is an urgent need for the government to implement these proposed options rapidly. This will require the government to obtain strong support from parliament because budget approval will be needed. Consequently, it is important that parliament have a better understanding of what policies are needed to address the forest fire problems. Support from a wide range of stakeholders is also key because their voices will help to convince parliament to support and finance the recommended policies.

Prioritising Action and Tackling Corruption

The study stresses the urgency of swift action to the forest fire problems

noting that as soon as forest fires start, they require a rapid and appropriate response. This necessitates that the central government delegates appropriate authority, skills, capability, and budget to local government.

Out of the three recommended options, the establishment of an institution to monitor and record stakeholder compliance and violation will probably require the most time. Furthermore, such a monitoring institution will play a significant part in the implementation of the other two policy options: The improvement of the application of policy in the field will need the help of a reliable monitoring system. Monitoring will also help to locate problems and will support the enforcement of a reward and punishment system. Therefore, it would be best if this option was implemented first.

The study also recommends that stakeholders be involved in the implementation of the recommended policies. Stakeholders' vigilance will avoid bribery, corruption, and collusion of all kinds from taking place. Involving local communities, along with NGOs in the monitoring activity is vital, as locals are often the first people to come into contact with the causes and problems of forest fires.

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