

Box 4.7

MINING IN FOREST AREAS: POLICY DUALISM

Exploitation of mineral resources is one of the sources of state income, which amounted to Rp. 2.4 trillion in 1999. Income from mining activities contributed 5% to Indonesia's total export and 2.8% of the GDP (Price Waterhouse Coopers 2001). In the current crisis, the government is giving more incentives to mining companies in order to increase the state income.

However, mining is an extractive activity that frequently has negative impacts on the environment and its biodiversity, particularly if conducted in protected and conservation areas. Mining area in Indonesia is 84,038,415 hectares (Ministry of Energy and Mineral Resources 2000), about 11,038,415 hectares of which are located in the protected and conservation areas (FWI and KEHATI 2000).

Other sources reported that the MEMR had given permit to 22 mining companies to operate forest areas amounting to 11,441,852 hectares in Sumatra, Kalimantan, Java, Sulawesi, Nusa Tenggara, Maluku and Papua (Sinar Harapan 2002).

On the one hand, through government regulation No. 28/1985 on Forest Protection and Presidential Decree No. 32/1990 on the Management of Protected Areas, the government prohibits cultivation and exploitation activities within protected areas. But according to a joint decree between the Minister of Mining and the Forestry Minister No. 969 K/08/MPE/1989 on Guidelines for Mining and Energy Activities in Forest Areas states that mining activities may be conducted in Nature Reserves and even in areas to be designated for national park. This joint decree is still effective now. It clearly shows there is dualism of government policies. On the one hand the government develops a policy to designate certain areas for conservation purposes. On the other hand, it provides an opportunity to exploit conservation area for commercial purposes.

Furthermore, Acts No. 5/1990 (KSHDE) clearly prohibits cultivation (production) activities within nature reserves and national park areas as these will transform ecosystem integrity. This law should be treated as the highest in the legal hierarchy to be complied with (Sembiring 1998). Act No.41/1999 on Forestry also has firm provisions

on banning open pit mining in protected forest areas. Nevertheless within this same regulation there is a special clause that permits mining activities as long as members of the House approve it. Such a dualism in government policy often causes a conflict of interest and controversies. There was much debate on this issue and finally for the sake of increasing economic growth the government decided that mining activities may be continued in selected areas after a special team of officials from the Ministry of Forestry and Commission III in the House of Representatives approved these activities, while others must be terminated.

In a meeting between five ministries early July 2002, Coordinator Minister for Economy, Dorodjatun Kuncoro Jakti pointed out that since the 22 mining companies stopped production because of regulation No. 41/1999, the state has lost as much as US\$ 11.5 billion in revenue. In addition, the government might have to face an international law suit because of non-compliance as regulation No. 41/1999 was issued after Indonesia has signed contracts with some mining companies. There is, however, a clause in each mining contract and also in any other contracts between government and mining companies of *force majeure* point, which gives a right to the government to take action to save critical forests. In other words, mining contract can be terminated if the government sees it as necessary to save forests (Media Indonesia 2002).

Considering that forest degradation in Indonesia is very serious (an annual rate of deforestation of 2 million hectares), while the majority of forests in good condition are only in conservation areas, mining in conservation areas are a major threat to biodiversity of natural forests. The government and all components of the nation need to formulate clear policies to solve the controversies surrounding mining and forest management, to resolve overlapping of areas, and to recalculate the costs and benefits from mining activities compared to those obtained from conserving the natural forest. International communities must also be committed to helping Indonesia since they also enjoy the benefits arising from conservation areas with global importance.

and participation, has led to inequity and conflicts. The source of conflict is generally unequal access and control over natural resources, and decision-making process on the use of resources (LATIN 2001). In the past, the government often used excessive security approaches in handling existing conflicts over natural resource management. The military involvement as an extra judicial institution, which then expanded into military financing, has hampered efforts to democratize resource management. This security approach was often abused to protect violation of conservation regulations as in the case of illegal logging described in Box 4.5.

5. **Lack of mechanism for community participation.** Government policy on biodiversity management often has little consideration for the role of community in using and conserving biodiversity, and there was a tendency to marginalize them. This is evident from the lack of official recognition for traditional community's rights over natural resources and the lack of legal protection for their traditional wisdom in biodiversity management. In addition, the opinions of experts, views of NGOs and others outside the government circle have not been fully adopted. This is also true in the case of policy formulation in the legislative body.

Weak institutional arrangement

A strong and effective biodiversity management system virtually does not exist in Indonesia. Consequently, the planning, implementation and supervision of sustainable biodiversity management are poorly integrated. The management of biodiversity is undertaken by various institutions. The MoE is the national focal point to implement the CBD and is supposed to coordinate other various institutions, but it has no clear legal authority. The MoA is responsible for the conservation and use of agricultural genetic resources; MoF is responsible for the management of protected areas while the MMF is responsible for coastal and marine resources conservation and utilization. Meanwhile, LIPI and the Ministry of Research and Technology (MRT) and research institutions within the MoA conduct researches related to biodiversity.

Basically, the coordination and integration of programs among these various management

agencies is very poor. One of the reasons for this is the lack of strong and legitimate national direction to be used as the basis for sectoral planning. As a result, decisions made are often not comprehensive, and sometimes the policy of one sector can contradict the decision of another's. The lack of institutional capacity also influences the ability to implement the country's obligations as signatories of various international conventions such as CBD, Ramsar Convention and CITES.

Weak legal system and law enforcement

Achieving sustainable biodiversity management is difficult because of poor legal system and instruments. Law enforcement institutions often lack the understanding of the legal matters related to biodiversity, as reflected, for instance, in the rampant illegal trade of flora and fauna. In some cases, law enforcement personnel themselves are involved in violating the regulations. Box 4.5 on illegal logging describes the effect of poor law enforcement in Indonesia. The lack of independent and weak judicial system has also hampered law enforcement. Limited funding, inadequate human resources and infrastructure to support it aggravate this situation.

Given the lack of public participation during policy formulation, communities are often not aware of the existence of certain regulations and hence their lack of participation in their enforcement. Furthermore, sometimes regional government officials are not aware of or do not heed policies made at the national level. Finally, many state policies do not conform with existing traditional (*adat*) laws of certain communities and therefore are difficult for those communities to accept them.

Inadequate research, information system and human resources

Because the current development paradigm adopted by the government leads to emphasis on economic growth through raw material exploitation, very little attention has been paid to the importance of applied research related to sustainable management of biodiversity and the development of relevant information system, as illustrated below.

As described in Chapter 3 data on coastal, marine and small island ecosystems as well as wetlands are inadequate, both in terms of quantity and quality. In most cases, very limited data are available on the carrying capacity of a given

area in providing natural resources and environmental services, projection of demands of certain resources and in controlling pollution. The existing data are often out of date and no longer describe the accurate situation in the field.

In the forestry sector, relatively more data are available. Many research and survey reports have been published, although they are not available for public use because they are often not in “ready to use” and “user friendly” forms. One example is, the Center for Information on Nature Conservation at the Directorate of Forest and Nature Conservation, MoF that manages data on conservation areas in Indonesia.

One of the major problems faced by Indonesia is the lack of basic and strategic research on biodiversity. Basic researches are required to identify the potentials, distribution, abundance, uses of and threats on biodiversity, particularly for the indigenous and endemic species of fauna and flora. This information is needed as the basis for effective and efficient planning and implementation of biodiversity management.

Effective maintenance of specimen collection is another problem. For example, Herbarium Bogoriense’s botanical collection is three times larger than any other collections in Southeast Asia, but it is threatened by lack of storage facility and funding as well as limited skilled human resource. The public’s access to its established database is also limited. The whole collection in the Research Center for Biology (including the Herbarium Bogoriense) needs an annual budget of about US\$100,000 but the budget provided by the government is far from adequate.

The botanical collection has a very high value for herbal medicine industry, however, only foreign pharmaceutical companies have been using the services provided by the Research Center for Biology to develop their product. This research center can actually charge a fee for research, plant identification and the use of its collection to generate income for their activities (Putterman 1999).

A similar situation is faced by the agricultural germplasm collection. Inadequate data management system makes information exchange difficult, leading to duplication of work and storage and inefficient use of funds. Although the Research Agency for Agriculture Biotechnology and Genetic Resources has pioneered the establishment of food crops germplasm data management system, overlap with other agencies might still be happening.

In terms of human resources, sustainable biodiversity management needs various experts on, among others, taxonomy, agricultural product management and development, conservation, ethnobotany, and natural resource economics. But such experts are inadequate in Indonesia, particularly, within the government institutions. For instance, in a research institution, there may only be about 15 researchers with germplasm expertise and only two of them hold doctorate degree. In other research institutes, the number may even be smaller. Information on the number and distribution of skilled human resource in other sectors is not available.

It should be noted that human resources having skills for negotiations at the international level is also inadequate. Indonesia is a party to various international conventions but its interests have not been much represented in the decisions taken at the meetings of those conventions. Apart from the language problem (since all negotiations are conducted in English), negotiating skills and analysis of global issues that have national implications are poor. To that end, the coordination between the national focal point for the relevant conventions (MoE for the CBD, MoF for CITES) and the Ministry of Foreign Affairs has also been weak; as a result officials came to negotiation meetings with little technical preparation and inadequate negotiating skills.

The weaknesses identified above have led to the mismanagement of biodiversity in Indonesia. This is very unfortunate since biodiversity is one of the foundations to achieve the welfare of Indonesian people and it may be one of the building blocks to solve some, if not many, of the current problems faced by the country.

THE PRESENT AND FUTURE CONTEXT

The ongoing biodiversity crisis must be addressed immediately by reversing the mismanagement that has happened so far. This is very crucial as the remaining and unique biodiversity puts Indonesia in a strategic bargaining position in the global arena. Given its rich biological resources, this country still has great potentials to become a major source of the world’s food, source of raw materials for medicine, and carbon sink and tourist destination (Sukara 2002).

To achieve the objectives of sustainable management of biodiversity, the existing and potential constraints and opportunities faced by the country must be identified. In this way, the constraints can be managed and the opportunities may be developed to the optimum.

In the context of these changes, there are four important issues, i.e. economic crisis and reform process, decentralization, globalization, and the political trends and good governance.

The economic crisis and reform process

In 1997, Indonesia faced severe financial crisis when the exchange rate of rupiah towards the US dollar was reduced to almost a quarter of its previous value. The crisis then soon led to economic, social and political crises. In the same year, Indonesia faced the worst environmental crisis, the worst forest and land fires in the last 20 years. Various natural disasters such as floods and landslides then followed in the last two to three years.

In 2001 the total government debt was equivalent to 93.2% of the GNP (40% and 44.2% for foreign debt and private sector debt, respectively). Meanwhile total government expenditure for development was only 4.4% of the GNP in the same year (compared to 6.2% in 1999 and 2.8% in 2000). Thus many development sectors compete with each other to gain access to this meager budget allocation, mostly to finance short-term and urgent programs such as poverty alleviation. Before the crisis, budget allocated for environment management was already very small, which means

that the economic crisis have further reduced the government's ability to provide funding for environmental management. Should this trend continue, it would be very difficult for the government to allocate its state budget for IBSAP implementation. On the other hand, some donor countries demand environmental protection and management as conditionalities for their loan packages. Experience shows that to date the Indonesian government has not been successful in fulfilling these requirements.

The impact of the economic crisis on biodiversity is most easily seen in the forestry sector. A research by Sunderlin (2002) in 1999 indicated the following: 1) the economic condition of one-third of communities living around forest areas was worse; 2) illegal logging became more rampant, even though it is acknowledged that this practice had been going on even before the crisis. On the other hand, the reform era has led to many policy changes in the forestry sector although some feel that the desired changes have not been achieved fully.

But the crisis also brought opportunities for change. First, the crisis can be treated as a "warning" that the development currently pursued by the government is not sustainable and its direction should therefore be reversed. However such an opportunity has not been fully understood or harnessed either by the government or the non-governmental organizations. Furthermore, the economic crisis provided the grounds for reforms, giving way to the democratization process. Although it is still at its initial stage, people can now voice their concerns and aspirations; a transparent and open mechanism as well as changes in policy and reforms towards good governance has begun. This transition is not smooth, nonetheless it provides some opportunities for improvement in the future, if it is managed well.

Decentralization and regional autonomy

The above-mentioned reforms also encouraged decentralization of government that takes place at a full speed and at a large scale (World Bank 2001a). Decentralization and regional autonomy are the landmark of good governance in the post-New Order era of Indonesia, as an antithesis of the centralistic development process and approach before the reform era.

There are two important Laws related to decentralization, namely Law No. 22/1999 on Regional Government and Law No. 25/1999



Figure 4.7. Environmental crisis leads to environmental disasters such as more frequent flood and landslides.

(Doc. ICRAF)

on Fiscal Balance between Central and Regional Governments. The devolution of most authority on decision-making, financial management and governmental affair to the regency and city levels and the elimination of hierarchic relationship between the provincial and district levels of government provide an opportunity to improve efficiency in sustainable resource management and to implement good governance. This devolution is characterized by improvement in consensus building capacity, public participation in decision-making and accountability of government. However, this must also be followed by substantial changes in the attitude of individual government officials and their institutions. If not, the newly empowered and autonomous units of government with limited technical capacity will just aggravate the existing biological resource degradation. This is especially true when local governments use biodiversity in their areas only as sources of regional government revenue (World Bank 2001b).

In fact, that is the trend in managing natural resources since the decentralization era began. The autonomy in natural resource management has in fact created new vertical and horizontal conflicts, instead of resolving existing conflicts. In fact, decentralization has not been able to improve efficiency in resource management, instead it has increased economic cost due to increasing transaction costs in the form of various new charges and retributions (Forestry Dept., Bogor Agricultural University 2002).

During the IBSAP Regional workshop in Papua, the participants stated their concerns that the Special Autonomy status for Papua can become a threat to conservation effort if decision makers are not aware of the implications of sustainable natural resource management. Regional development policy might be directed towards increasing regional income from natural resources exploitation instead of the long-term benefits of development by applying the principles of sustainable management. In essence very little has changed since decentralization era began.

On the other hand, decentralization can provide a great opportunity for the implementation of pure genuine community-based biodiversity management. Act No. 22/1999 on Regional Government provides an opportunity to empower village level democracy

through village council and village head elections without any influence from higher level of governments. There is even a possibility to redefine boundaries of the villages in order to revive traditional or adat villages (Bennet 2001). If and when the village governance can be revived, then there may be a possibility to formulate policy and institutions for natural resources management at the lowest level, in this case the village, with greater and more genuine participation from community members. There is also an opportunity to revive traditional wisdom and adat institutions or to develop new local institutions that will have authority to regulate the management and use of natural resources, including biodiversity. Unfortunately these opportunities have not been discussed extensively and therefore, implementing them is yet a very difficult task.

Globalization

Globalization provides opportunities and challenges for sustainable development (Plan of Action, WSSD 2002), including the management of biodiversity. There are two important components of globalization that are linked to biodiversity management. The first is the global/international policies that influence biodiversity management at the national and local levels; the other is the globalization of biodiversity business supported by the globalization of technologies in biology. Both are inter-related as described in the following sections.

Policy globalization

There are several international/global agreements and policies related to biodiversity. In general, the agreements among the UN member countries are related to sustainable biodiversity management, and these are usually implemented through a restriction or regulation on the use and transfer of technology as well as through collaboration in conservation activities. Agreements under the World Trade Organization (WTO), on the other hand, are related to trade regulations.

1. CBD and WSSD

The main agreement on biodiversity is the UN Convention on Biological Diversity (CBD) as described in Box 4.1 and its derivative i.e. The Cartagena Protocol on Biosafety, adopted in January 2000. The Protocol regulates the

biosafety of the handling and trans-boundary movement of genetically modified⁷ organisms (GMO) released into the environment, which may have adverse impacts on, with its potential detrimental, on biodiversity, and consideration for human health. This Protocol, although considered weak by some activists and developing countries, is the only international agreement that regulates the use of genetically-modified organisms.

The Cartagena Protocol internationally acknowledges that the release of GMO must be treated differently from organisms which have not been manipulated at the genetic level. Some essential components of this protocol are the precautionary approach, public participation and access to information, the importance of risk analysis and management and provision of advanced informed agreement. Indonesia has signed this protocol and is in the process of ratifying it.

A new agreement on biodiversity is presented in the Plan of Implementation, World Summit on Sustainable Development (WSSD). Chapter IV, point 42 emphasizes on biodiversity management plan for the next ten years. Important components include reduction of the rate of biodiversity loss by 2010, negotiation of international regimes to increase and guarantee equitable distribution of benefits from the use of genetic resources, completion of the negotiations on Intellectual Property Rights (IPR), Genetic Resource and traditional knowledge and Folklore within WIPO, and the discussion of the relationship between the CBD and TRIPS (Trade Related Aspects of Intellectual Property Rights).

The CBD and WSSD agreements provide many opportunities for biodiversity management at the national level. Firstly, because these are international agreements, a significant amount of funding is made available through the Global Environment Facility (GEF) for the implementation of the CBD in developing countries. This can become one of the sources of funding for Indonesia. For example, the publication of IBSAP documents is made possible through a grant from the GEF. Secondly, through international agreements, Indonesia may be able to protect its national resources from some global threats. For instance, through the Cartagena Protocol, the

government can prevent negative impacts of the release of transgenic (genetically modified) plants. Furthermore, the government can formulate regulations on traditional knowledge protection in accordance to article 8 (j) of the CBD. These opportunities, however, have not been fully explored and harnessed.

2. The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

ITPGRFA was adopted under FAO in the middle of 2002. Its main objectives are to conserve plant genetic resources for food and agriculture (PGRFA) as the basis for food security, and to encourage sustainable utilization and equitable distribution of benefits from their use in sustainable agriculture, in harmony with the CBD. Some its components are multilateral arrangements for the access to and sharing of benefits arising from the use of plant genetic resources and their collection at international agricultural research centers, regulation on farmers' rights, and institutional and funding arrangements. Another important component of this treaty is its mandate to formulate a global action plan for conservation and sustainable utilization of PGRFA as adopted in a meeting of FAO member countries in 1996; this action plan was also the embryo of ITPGRFA. Another mandate of this treaty is to develop a global information system on PGRFA to facilitate exchange of information related to the conservation and utilization of PGRFA.

Indonesia has not ratified this treaty, so it is imperative that the government first analyzes the costs and benefits of ratifying it, and how to maximize the benefits and minimize potential losses.

3. TRIPS

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) is one the agreements under WTO. TRIPS have some implications for biodiversity management. Two of the most important are the opportunity to apply and get patent rights on living organisms and the possible impacts on the rights of community over their traditional knowledge and ownership of biodiversity.

Article 27.3 (b) of TRIPS provides an opportunity for patenting of microorganisms. The

⁷ The protocol actually uses the term living modified organisms (LMO), further discussion on genetic engineering and genetically modified organisms is provided in the section of Globalization of Biodiversity Business.

same article stipulates that new plant varieties must be protected through an effective *sui generis* system. Furthermore, TRIPS stipulates that the patent holders must be individuals or legal entity such as business company, but there is no regulation to protect communal innovation or community intellectual property.

Indonesia has ratified WTO through Act No. 74/1994 and then made some changes in the national IPR regulations. Accordingly, Indonesia revised Act No. 6/1989 on Patent through Act No. 13/1997 on Revision of Act No. 6 and then through Act No. 14/2000 on Patent. In addition, the House of Representatives (DPR) has also passed Act No. 29/2000 on Plant Variety Protection (PVP) which the government adopts as *sui generis* system. These two Acts were formulated to conform as much as possible with the TRIPS provisions.

Acts No. 14/2000 and No. 29/2000 raised some controversies among various parties, that can be grouped into two categories of opinions. The first group, comprised of researchers in biodiversity, some governmental institutions and NGOs who predicted that patent rights over biological materials/biodiversity, and the PVP law will have the following potential impacts:

- It may lead to monopoly of biodiversity control together with the associated knowledge, because patents are issued to companies, although local communities are in fact the real custodian of biodiversity.
- It might eliminate or weaken the intellectual property and innovation of traditional and local communities, as TRIPS does not recognize the knowledge developed communally.
- Patent on biological materials may potentially lead to bio-piracy in Indonesia.
- It may negate farmers' rights over seeds, among others, because local varieties developed by local community are controlled by the state.
- It will reduce the opportunity for agronomic researches to develop new plant varieties or livestock at national research institutions.
- Its implementation maybe contradictory to the CBD, therefore at the international level, both in the UN and in WTO, there is ongoing talks to conduct a study on relationship between the two international treaties.

Moreover, this first group criticized the process of formulating the two Acts as non-participatory and without public dialog. Finally, they questioned whether the implementation patent rights over biological materials is in line with the morality, ethics, culture, and the social-economy of the Indonesian society (Jhamtani and Hanim 2002).

The second group comprised of other scientists, some government institutions and business people, who stated that the two Acts are appropriate and they will have potential positive impacts as follow:

1. It will accelerate the transfer of technology and investment in the country.
2. It will save national biodiversity heritage because IPR protection would prevent outsiders to patent Indonesia's genetic resources.
3. It will boost research on biodiversity because there will be better protection for Indonesian researchers and breeders. They also stated that it was important to comply with international agreements such as TRIPS to avoid trade sanction by other countries.

The second group also stated that the PVP Law would encourage the private sector to be more involved in agricultural development. This law has a 'safety mechanism' by which no protection will be given to new varieties of organism that violate the existing laws, public order, morality, religious norms that might endanger the environment. Similarly local varieties are controlled by state so as to protect farmers and give compensation to local communities. The state must also conserve and register local varieties. This group said that the laws respect farmers' rights because they will be allowed to store and use seeds for their own use, or exchange them among farmers.

Both opinions should have been discussed before the government and the DPR ratified the laws. Such a controversy also occurs at the international level, and therefore the government and DPR should have delayed passing those laws. The most important step is to study the impact of TRIPS on biodiversity and traditional knowledge so that the potential problems can be anticipated in the future (Jhamtani and Hanim 2002).

Globalization of biodiversity business

The 21st century is said to be the era of biology and the business that will thrive is related to life sciences in which with living or-

ganisms are as the raw materials and modern biotechnology will dominate. Bio-economy (biological-matter-based business) and bio-informatics (the combination of biology and informatics) will dominate global economy. Biological resources will be very precious, mainly genes and chemical extracts from biological materials. Just a drop of biological extract (in micro-litter scale) may be valued thousands of dollars. The extract can be sold as raw materials for gene therapy, modern pharmaceutical industry, etc. Biological resources will become the green-gold of the 21st century (Sukara 2002).

As a result, biodiversity is not only a local or national environmental issue but has become a global issue. Therefore, globalization will certainly influence policies on the ownership, conservation and use of biological materials, particularly in relation to the trends in privatization and trade liberalization (Jhamtani 2002).

Two important aspects of the globalization of business in biodiversity will be elaborated. First is the commercialization of biological materials, in their natural forms, extracted or modified. Second, is the issue of bioprospecting and biopiracy.

1. Commercialization of biological materials

In the 21st century, the world market will sell more products and services related to biological materials. Among others, transgenic crops are already in distribution, and may soon be followed transgenic livestock. In addition, gene therapy or human organs through xenotransplantation are now being developed at an advanced stage. Biological weapons may also have been manufactured and might be traded soon. Moreover, mammal cloning has been successful, while human cloning is in its final development stage with all the associated controversies (Jhamtani 2002).

The commercialization of transgenic crops is an important issue in relation to sustainable management of biodiversity. In 2001, the area planted with transgenic crops was 52.6 million hectares, or an increase of 19% compared to 2000 (James 2001). The sale of major main transgenic seeds were US\$ 1550 million for soybean, US\$ 765 million for corn and US\$ 1110 million for cotton (The Economist, in Nugroho 2002).

Transgenic plant commercialization in Indonesia started in 2001 with the planting of transgenic cotton (bt cotton – cotton seeds inserted with genes of *Bacillus thuringiensis*, to

make the plants resistant to certain insect pest) in seven districts of South Sulawesi. Other transgenic crops are either waiting to be released, in field trial stage or still in development stage.

Opinions differ on transgenic crop commercialization. On one side, NGOs and some scientists suggest that the release of transgenic crops must be conducted with precautions because there are concerns about their environmental and social impacts. One concern is the possibility of gene transfer from transgenic crop to its related species. This process is known as biological pollution and it might have an impact on biodiversity. Biological pollution that occurs in the center of diversity or center of origin of certain plants such as Indonesia, might increase the possibility of genetic erosion. Another concern is the displacement of local varieties by transgenic crops, which might increase the rate of biodiversity loss. Finally, NGOs argue that the benefit and risk of transgenic crops have not been adequately analyzed and therefore the environmental safety of these crops cannot be established as yet (Jhamtani 2002). Several NGOs formed a coalition and filed a law suit at the State Administrative Court against the Ministry of Agriculture for issuing the decree to release the transgenic cotton in South Sulawesi. They said that the MoA made its decision without adequate analysis on benefits and risks, and without risk management procedure or environmental impact assessment. The legal battle was won by MoA, but the controversy continues.

Some researchers and government institutions, on the other hand, believe that transgenic crop development is required to improve agricultural productivity and increase food production. They said that there is no evidence that the transgenic crops have adverse impact on the environment. Some transgenic crops that are modified to be able to resist pests infact reduce pesticide applications and reduce environmental pollution. In addition, transgenic crops will improve farmers' income because the production cost is lower and the yields are higher (Mardiana 2002).

An initiative to resolve the controversy was taken by formulating a government regulation on Biosafety and food Safety of genetically modified crops and products. In 1999, a joint-decree of the MoA, MoF, Ministry of Health and the State Ministry for Food and Horticulture was issued to regulate genetically

modified agricultural products. This decree was, however, considered inadequate in regulating all aspects of genetically modified products as mandated by the CBD (Article 8 point g and Article 19 (1) and (3) on the safety of modern biotechnology). Under these articles, each member state is required to formulate and implement laws and regulations on biosafety, including the food and animal feed safety. Consequently, the MoE together with the MoA and other relevant institutions had prepared a draft regulation on biosafety and food safety which include among others arrangement for the type, requirements, research and development of genetically modified products, the import of GMO, the study, release and distribution of GMO, institutional arrangement and sanctions for its violations. The draft is still being discussed in interdepartmental meetings.

As with TRIPS, the controversy over transgenic crop commercialization also takes place at the international level. But the adoption of the Cartagena Protocol on Biological Safety, under the CBD, is a proof that the international community wants the commercialization of GMO to be regulated to guarantee safety and for the conservation of biodiversity.

One of the supporting pillars of bio-economy is TRIPS which paves the way for patenting of life forms. In 2001, 150 patents on human genes were granted in the USA, while another 2500 applications are still being processed. Around 600 patents on plants have been awarded including nutmeg, rubber and cacao (which have high economic value for Indonesia). Patents have been granted for biological materials such as plant extract, gene or formula, DNA of Iceland population, GMO products and process, and cloned organisms (Ho, in Jhamtani and Hanim 2002).

Advances in biological science and technology, particularly genome mapping, have also supported the development of genetic resource business. Currently virtually the entire human genome has been mapped, and is expected to be a resource for gene therapy development. In addition, the rice genome mapping is almost finished while banana genome mapping is still in process. Multi-national companies (MNCs) in developed countries have done most of these mapping, while developing countries are left far behind.

This trend has both positive and negative impacts. On the one hand, Indonesia as a country rich in biodiversity can gain advantages by developing its genetic resources. On the other hand, the lack of technology and capability will make it difficult for Indonesia to compete in the international market.

Furthermore, there is an argument that trade in genetic resources is leading to commodification and privatization of life; life has been changed from something sacred and belonging to nature into tradeable commodity and owned by individuals/commercial companies. This will lead to the deliberate extinction of organisms, which are considered to have low or no economic value, which in turn will lead to loss of biodiversity.

2. *Bio-prospecting and bio-piracy*

Given the very high value of biological resources, many parties are interested in bio-prospecting biological materials in the same manner as mining oil or harvesting timber. Most of the bio-prospectors are MNCs, although others are also involved, such as universities or government institutions.

Many developing countries that are rich in biological materials are not prepared to address the associated legal, economic and social issues. Indonesia, for example, has no regulation on bio-prospecting. The existing policy, namely Presidential Decree No. 100/1993 on Research Protocols for Foreign Researchers only regulates general researches conducted by foreign researchers in Indonesia. This regulation is often violated because it is considered too bureaucratic, while no regulation is in place for research on genetic resources. On the basis of this Presidential Decree, LIPI has formed a coordinating team whose task is to issue research permit for foreigners. However, there is no regulation on the collection of genetic resources for commercial purposes or on sharing of benefits arising from the marketable products of bio prospecting. Given the lack of such regulation, the MoE together with other relevant parties initiated the formulation of a more comprehensive policy that deals with access to and sharing of benefits from the commercialization of genetic resource as described in Box 4.8.

Box 4.8

INITIATIVES ON POLICY AND INSTITUTIONAL ARRANGEMENTS

There are some initiatives in policy development and institutional arrangements in relation to natural resources management, including land use and genetic resources management. The following initiatives might provide the basis for sustainable management of biodiversity if effectively and appropriately enforced.

MPR Decree No. IX/2001 on Agrarian Reform and Natural Resources Management

This decree provides a mandate to the DPR and President of Indonesia to implement policies on agrarian reform and the management of natural resources according to the principles of sustainable development, national integrity, human rights, legal supremacy, justice, democracy, participation and people welfare, taking into consideration the social, economic and cultural conditions of the community and the ecological functions of natural resources. This decree also provides direction for natural resource management policy such as:

1. Review of the existing regulations so as to develop inter-sectoral policy synchronization.
2. The need to conduct a comprehensive inventory of land use, ownership and control.
3. The need to implement reforms on the control, ownership and utilization of land (land reform) so as to be more equitable, taking into consideration ownership of land by the people.
4. The need to resolve existing conflicts over agrarian resources.
5. Rehabilitation of degraded ecosystems caused by over-exploitation of natural resources.
6. The need to formulate strategies for optimum and sustainable use of natural resources.

This decree also clearly recognizes, protects and respects the rights of traditional/adat communities and cultural diversity in the management of natural resources in Indonesia.

Formulation of draft regulation of Natural Resource Management

This initiative is one of the follow-up actions of MPR Decree No. IX/1999, as proposed by the Ministry of Environment with strong support from various NGOs and universities. This group argues that it is important to immediately review and reform government policies on land and natural resources management, which had been formulated by sectoral agencies to achieve economic growth without consideration for the carrying capacity and sustainability of the environment. Many sectoral regulations, such as for mining, forestry, fisheries and irrigation often overlap each other and treat natural resources merely as commodities to be exploited, with little regard for the principles of natural resources management as stipulated in the MPR Decree No. IX/2001.

Therefore the initial draft Natural Resources Management law (PSDA), as follow up of the above MPR decree, proposes a natural resources management pattern that applies a holistic approach, consistent with sustainable development principles; i.e. natural resources are treated as natural capital or stock, as an integral part of natural ecosystem and the local community. The draft law also has provisions to ensure the cohesiveness, correlation and integratedness of sectoral policies on natural resources management, by applying the principles of good environmental governance.

An important aspect of this initiative is the consensus among the government, DPR and NGOs that the process of drafting the law until its ratification will be conducted through public consultation. This will be done through polling and dialog among many relevant parties, not just among the different government sectors, but also NGOs, universities, adat communities, regional government, the private sector, etc. The Public Consultation Working Group, consisting of BAPPENAS, MoE, and NGOs are preparing to organize public consultation forums at the regional, provincial and kabupaten levels in 13

areas in Indonesia. The objective is to provide an opportunity to all segments of the society in the regions to provide input for the PSDA draft law. In this way, hopefully when the law is passed, it will be acceptable and implemented by all stakeholders.

Formulation of regulations on Genetic Resources

LIPI, MoA, MoE, National Commission on Genetic Resources, MRT and Bioforum, and an NGO Network initiated this. The legal basis for this is the Act No.5/1994 on the Ratification of CBD.

Based on a Presidential Directive, the MoE was appointed as the institution to coordinate this regulation. A team has prepared the draft Academic Paper and an initial concept of the Bill on the Conservation and Utilization of Genetic Resources. Socialization to various stakeholders and further discussion will follow.

Some groups, particularly NGOs, have suggested that this initiative be integrated into the

PSDA law initiative to avoid overlapping of regulations as is currently happening.

Establishment of the National Council on Sustainable Development (NCS)

This was an initiative by MoE in 2000 to fulfil the mandate of the 1992 Earth Summit. The issue had been discussed for a long time, but the process began in 2000 when the MoE formed a committee chaired by WALHI (a national NGO), with members from NGOs, academics and government. The objective of the committee was to form an institution, the NCS, which will start to mainstream social and environmental dimensions into national development. A draft Presidential Decree containing the organization, mandate and membership of the NCS has been formulated.

So far the process of establishing NCS is as yet to be finalized. When it does, it is suggested that NCS be one of the institutions that will be charged with coordinating and evaluating the implementation of IBSAP (see Chapter 7).

The lack of policy has paved the way to bio-piracy, in which biological materials and the associated knowledge of the community or developing countries are exploited without the agreement and prior informed consent of the latter. Bio-prospecting and bio-piracy involve not only wild plants and animals, but also human genes. For example, a university collaborated with a USA-based pharmaceutical company in 2001 to "harvest" the DNA of the Toutou community in the Anhui Mountain, China. The community was promised free medical service as long as they are willing to give their blood. They were given a brochure describing that this activity was part of a genetic research to look for a certain gene therapy. However, most of the community members were illiterate and those who could read did not understand the contents of the brochure. The genes of this isolated community were estimated to be able to create million dollars profit for the company. It should be noted that there is no regulation pertaining to human gene in the CBD.

Another bio-piracy case involves patent applications by big companies in developed countries for various medicinal plants, whose medicinal properties have been known and used by local communities for a long time. Example of these are turmeric and the neem

plants from India, and a medicinal plant *Swartzia madagascariensis* from Africa (Grain in Jhamtani 2000).

Bio-piracy cases in Indonesia have not been revealed, which does not mean they do not exist. Recently, a cosmetic company had withdrawn their patent application for nine medicinal plants from Indonesia which they filed in 1999. This was due to protest from various parties stating that Indonesian communities have extracted and used the plants for medicine and cosmetics for a long time (Kompas 26 March 2002).

As a biodiversity rich country, it is imperative that Indonesia formulate and implement regulation for preventing bio-piracy, so as to get the maximum benefits from bio-prospecting.

The political trend and good governance

Indonesia is still in a transition period, marked with political and social instability. The transition direction is still not clear, although many parties hope that it will lead to democratization. Nevertheless it is closely related to implementation of good governance. Good governance is a consensus on how to manage state affairs, which is mutually created by government, civil society, and private sector. It has the following characteristics:

1. Inclusive (involving all levels of society).
2. Transparent and responsible.
3. Effective and fair.
4. Certainty of legal supremacy.
5. Certainty of priority setting based on consensus.
6. Accommodating marginalized groups in decision making related to development resources.

Good governance means responsive, effective, efficient, fair, responsible and accountable state management (UNDP 1997). Therefore, it is hoped that good governance can overcome crises and lead the transition towards the desired direction. The process of good governance is only at its initial stage and is facing many obstacles. But hopefully it will bring about a positive effect on the management of biodiversity.

Towards sustainable management

Indonesia is in the process of losing its most precious pearl; namely its biodiversity as described in the previous sections. This occurs mostly due to mismanagement. At the same time, current and future biodiversity management will face global and national challenges. If past mistakes and development pattern is not redirected towards a more sustainable management, Indonesia will inevitably lose its most precious resource. Therefore a comprehensive and effective action plan, to be implemented based on national consensus, is very much required.

The biodiversity crisis at present cannot be separated from the lack of sustainable biodiversity management supporting system after the publication of BAPI 1993. Ten years after biodiversity sustainability is given attention in development policy, good environmental governance is still lacking, even after the transition and political reform towards democracy has begun to take effect in Indonesia. This presents a challenge for IBSAP to effectively mainstream sustainable biodiversity management within government development policy by incorporating different political and institutional arrangements.

The MPR Decree No. IX/MPR/2001 on Agrarian Reform and Natural Resource Management has provided the direction for natural resource management policy in Indonesia. This Decree emphasizes the importance conflict resolution and anticipation of potential conflict arising from natural resource manage-

ment, inter-sectoral policy synchronization, restoration of degraded ecosystems as a result of exploitation, identification of resource quantity and quality, information access for community. It also encourages social responsibility in application of technology and optimizing resource utilization through the creation of value added products for the benefit of the community. This initiative has begun to be implemented as presented in Box 4.8. This it is a challenge for IBSAP to interpret the direction of this policy, especially in supporting effective decentralization as the foundation for the implementation of good governance in the management of biodiversity.

The strategies and action plan described in the IBSAP documents will hopefully be used as one of the references or tools for these actions. In addition, the direction of biodiversity management requires three strong bases, namely:

- **Shift in development paradigm**
National development needs to be redirected by adopting the sustainable development concept, i.e. development pattern that is capable to meet the needs of the present generation, without compromising the future generations to meet their needs. Sustainable development has three main pillars to support it: economic growth, social welfare and its equal distribution, and environmental protection. Biodiversity can be a productive asset for development if it is managed according to this development paradigm. This means that the orientation of development must be changed, from short-term economic benefits to sustainability, from growth into balance, and from domination over nature into harmony with the nature.
- **New social contract** between government, the private sector, NGOs and communities at national, regional and local levels. Basically, this is an agreement on how the relationships among them will be governed with the purpose of developing a mutually agreed value system relevant to sustainable and equitable biodiversity management with long term vision and strategy, based on local wisdom and knowledge. This contract provides an arrangement for developing relationship among stakeholders, characterized by fair distribution of power, benefits and risks arising from biodiversity management. It

is expected that IBSAP will be used as the basis for this new contract.

- **Strengthening the preconditions for sustainable and equitable biodiversity management.** This process requires the availability of accurate information on biodiversity and its potential economic value, and the condition of local communities. This is crucial for the formulation and implementation of development policy, considering how little such information base was used in resource management in the past. As a result many development

activities were damaging to the environment. A set of criteria will be needed to determine which resource is becoming scarce and how to manage them sustainably; this would also apply for resources which are relatively still abundant.

The three foundations can be built if Indonesian people are willing to change their attitude and behavior so as to support biodiversity management. Therefore, IBSAP should emphasize on human development in equilibrium with biodiversity conservation.



Leopard (*Panthera pardus*) is the last member of the large cat family in Java, after the Javan tiger has been declared extinct. This fauna is protected by Indonesian law.

5

STRATEGIES FOR BIODIVERSITY MANAGEMENT

One way to resolve the biodiversity crises described in Chapter 4 is by formulating and effectively implementing the Indonesian Biodiversity Strategy and Action Plan (IBSAP). This document is compiled for the national level, but it gives as much opportunities for the regional governments to develop their own strategies and action plans based on their respective conditions and potentials.

The strategy and action plan consists of the strategic plan (Chapter 5) and the action plan (Chapter 6). This chapter outlines the vision, mission, objectives, goals and strategies, while Chapter 6 provides the action plan. IBSAP is formulated for the period of 2003-2020, and in conformity with Decree of People Representative (TAP MPR) No.VII/2001 on the Vision of Future Indonesia.

VISION

The vision for biodiversity management in Indonesia at the national level is as follows:

“An Indonesian society who is concerned, empowered, independent, intelligent in conserving and utilizing biodiversity in optimum, fair and sustainable manners through responsible management with the ultimate purpose of enhancing its community welfare.”

MISSION

To achieve the above vision, our missions are as follow, each with a brief description.

1. **To encourage changes in attitude and behavior of the Indonesian individuals and society, as well as, the existing institutions and legal instruments, to be more concerned with conservation and utilization of biodiversity for the welfare of the community, in harmony with national laws and international conventions.**

This mission provides the foundation of and is strategic for the responsible, fair, and sustainable management and use of national biodiversity for the welfare of the

Indonesian nation as well as human kind all over the world, for both present and future generations.

2. **To apply scientific and technological inputs, and local wisdom.**

This will be achieved by encouraging the development of science on biodiversity through basic and applied science researches with the ultimate purpose of enhancing knowledge on the biophysical condition, and the sustainable use and conservation of biodiversity. This measure will be in tandem with the development of technology, particularly appropriate and environmentally friendly technology, which will enable the community to sustainably manage and use biodiversity in Indonesia. This type of technology will also equip community members to produce and use goods as a substitute for biological resources, in order to generate value added and increase competitiveness, while maintaining their resource bases. In addition, existing local wisdoms will be identified and further developed to support the conservation of biodiversity and the long-term maintenance of balanced ecosystems in Indonesia.

3. **To implement a balanced conservation and sustainable use of biodiversity.**

This will be achieved by enhancing ecosystems conservation, reducing the rate of their degradation, and developing biodiversity management and its sustainable use, in order to improve the welfare of Indonesian individuals and society in equitable, fair, responsible, balanced and sustainable manner. These efforts will be undertaken based on identification of existing problems, using approaches that balance the needs of conservation and sustainable use of biological resources for community welfare.

4. **To strengthen institutions and law enforcement.**

This will be achieved by building and developing institutional capacity to formulate legal and policy instruments, as well

as by empowering their law enforcement officials at the local, regional, and national levels. These will ensure order and legal certainty for the management of biodiversity in a fair, responsible, accountable, balanced and sustainable manner.

5. **To resolve conflicts over natural resources.**

This will be achieved by identifying potentials and existing conflicts over natural resources among relevant stakeholders, such as of individuals, community groups, the private sector, government, as well as foreign parties or international communities. This would include identifying and resolving conflicts that arise from human activities with negative impacts on wildlife. Subsequently, a mechanism should be developed to resolve conflicts based on a consensus that is fair, mutually beneficial, transparent, responsible and accountable.

OBJECTIVES AND GOALS

There are five objectives, each with specific goals, to realize the above vision and mission for the sustainable management of Indonesian biodiversity, as listed below:

Objective 1:

To develop the quality of Indonesian individuals and society who are concerned with the conservation and sustainable use of biodiversity.

Goal 1:

1. There is a shift in the behavior and attitude so as to create quality individuals and communities who are concerned and empowered, and are able to actively participate in the management, utilization and conservation of biodiversity at the national, regional, and local level.
2. There is a progress in the role and participation of individuals as well as indigenous, local, regional, and national community groups in the management, utilization and conservation of biodiversity.
3. There is a progress in the partnership between indigenous, local, regional and national community groups with international and global communities in the management, utilization and conservation of biodiversity in a fair, balanced, responsi-

ble, accountable and sustainable manner.

4. There is an increase in the effectiveness of local and indigenous community-based management of conservation areas, supported by effective, fair and impartial law enforcement.
5. There is a progress in the development of community education efforts with particular emphasis on balanced and sustainable management of biodiversity.
6. There is a progress in the development of general education curriculum on the significance of management, utilization and conservation of biodiversity for the livelihood of communities in a fair, balanced, responsible, accountable and sustainable manner for generations.
7. Implementation of an incentive system to stimulate community creativity and initiative in the management, utilization and conservation of biodiversity for the balanced and sustainable welfare of communities.
8. Application of incentive and disincentive system, and fair and impartial law enforcement to create positive attitude and compliance towards customary laws and various regulations at the local, regional and national level, as well as various international conventions on the management and conservation of biodiversity.
9. Formulation of laws on the protection and development of traditional wisdom, and their implementing regulations, related to the management of biodiversity based on community rights over resources, and equitable sharing of benefits arising from the sustainable use of resources based on such wisdom.
10. Identification of biodiversity issues for the business sector and formulation of guidelines for business activities based on sustainable and balanced management of biodiversity.
11. Dissemination of IBSAP documents to a wide variety of stakeholders, so that they can be used as a reference for biodiversity management.

Objective 2:

To strenghten resources for supporting the development of science, technology and the application of local wisdom for the conservation and sustainable use of biodiversity.