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INDONESIA



COUNTRY PROFILE



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INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

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LIST OF COMMONLY USED ACRONYMS

ACS	Association of Caribbean States
AMCEN	Africa Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CARICOM	The Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CIS	Commonwealth of Independent States
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development of the United Nations
DESA	Department for Economic and Social Affairs
ECA	Economic Commission for Africa
ECCAS	Economic Community for Central African States
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIDA	Foundation for International Development Assistance
GATT	General Agreement on Tariffs and Trade
GAW	Global Atmosphere Watch (WMO)
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring System (UNEP)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GLOBE	Global Legislators Organisation for a Balanced Environment
GOS	Global Observing System (WMO/WWW)
GRID	Global Resource Information Database
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IAEA	International Atomic Energy Agency
ICSC	International Civil Service Commission
ICSU	International Council of Scientific Unions
ICT	Information and Communication Technology
ICTSD	International Centre for Trade and Sustainable Development

IEEA	Integrated Environmental and Economic Accounting
IFAD	International Fund for Agricultural Development
IFCS	Intergovernmental Forum on Chemical Safety
IGADD	Intergovernmental Authority on Drought and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPCS	International Programme on Chemical Safety
IPM	Integrated Pest Management
IRPTC	International Register of Potentially Toxic Chemicals
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources
LA21	Local Agenda 21
LDCs	Least Developed Countries
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NSDS	National Sustainable Development Strategies
OAS	Organization of American States
OAU	Organization for African Unity
ODA	Official Development Assistance/Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Papers
SACEP	South Asian Cooperative Environment Programme
SADC	Southern African Development Community
SARD	Sustainable Agriculture and Rural Development
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Coordinator
UNEP	United Nations Environment Programme

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
WFC	World Food Council
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund
WWW	World Weather Watch (WMO)

CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES

Decision-Making: As a member of the World Trade Organisation (WTO), Indonesia is legally bound to its rules, stated in the General Agreement on Tariffs and Trade (GATT) and the General Agreement on Trade in Services (GATS). By joining the WTO, Indonesia hopes to establish itself in a strong position in trade liberalisation, ultimately benefiting the welfare of the Indonesian people. However, there are some concerns that developed countries are using high environmental standards as non-tariff barriers for products from developing countries. The State Ministry for Environment therefore joined the WTO National Team, chaired by the Minister of Industry and Trade, to deal with those issues. Another issue to be taken in consideration is the international free trade in environmental services. With regards to trade and environmental issues in the WTO, and contrary to the American delegation's wish, Indonesia choose not to discuss those issues at the Ministerial Meeting IV in Doha. Indonesia felt those issues had already been covered in Multilateral Environmental Agreements (MEAs). However, it was decided to examine them as New Rounds.

The State Ministry for Environment issued a recommendation to the Ministry of Industry and Trade concerning the Trade Related aspects of the Intellectual Property Rights (TRIPs) proposing a moratorium to Article 27.3 (b) on the patent of genetically modified organism. Indonesia has not finalised its own legislation dealing with biodiversity and patent nor accepted a patent on living organism. On a regional basis, Indonesia also joined the Asia-Pacific Economic Cooperation (APEC). In the initial years, APEC's concern was to advance the process of the region's economic cooperation. Subsequently, cooperation went further to include environmental and sustainable development issues with priorities in five areas. These are: cleaner production; protection of the marine environment, sustainable cities, food, energy, and the environment in relation to economic and population growth (FEEEP); and the APEC Framework for Capacity-Building Initiatives on Emergency Preparedness. Being a founding member of Association of Southeast Asian Nations (ASEAN), Indonesia is actively involved in the establishment of the ASEAN Free Trade Area (AFTA). Each member states attempt to reduce tariff barriers on selected commodities as an effort to implement AFTA.

Programmes and Projects: In Collaboration with the National Standardisation Agency (BSN), the State Ministry for Environment is developing certification schemes (ecolabelling) for some export commodities. Indonesian versions of environmentally friendly criteria for textiles, leathers, leather products, papers and paper products have been established. To promote environmentally friendly investment, the State Ministry for Environment has given suggestion to BKPM (Investment Coordinating Board) and the Ministry of Internal Affairs regarding environmental policies, strategies and programs that should be integrated within investment policies, strategies and development program.

Status: Trade and environment issues are still under study and the related policies have not been finalised, let alone implemented.

Capacity-Building, Education, Training and Awareness-Raising: The Deputy Head of Social and Environmental Economic Affairs of the State Ministry for Environment has often been asked to speak on trade and environment issues in seminars arranged either by private, academic institutions or NGOs.

Information: Information on trade and environmental issues can be obtained from the Public Information Centre (Pusinformas) of Bapedal and the State Ministry of Environment.

Research and Technologies: The principle of "Green stock" aims to integrate environmental aspects in the stock market. In co-operation with the Agency for Stock Market Monitoring (Bapepam), the Jakarta Stock Exchange (BEJ) and the Centre for Environmental Studies of the University of Indonesia (PSL-UI), the State Ministry for Environment has conducted a study on green stock criteria to determine green stock index.

Under the Sustainable World Programme, the State Ministry for Environment is carrying out a study to estimate the price of the emission reduction certificate. The study has made preliminary identification of factors influencing the price.

Financing: The State Budget and International grants or loans are the main source of finance for trade and environment issues. Recently, a US\$ 30,000 agreement has been signed between the State Ministry for Environment and UNEP to perform a project called "Study on Utilisation of Economic Instruments to Encourage the Sustainable Use of Natural Resources and Internalise Environmental Impacts Resulting from Trade Liberalisation and Export Growth in the Industrial Sector"

Cooperation: Within the Indonesia-Australia Ministerial Forum (IMF), the Joint Working Group on Environment (JWGE) has been established chaired by officers from both countries' environment ministry. JWGE aims to promote cooperation on the environmental dimension of economic and trade.

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CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: No information available.

Capacity-building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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CHAPTER 3: COMBATING POVERTY

Decision-Making: The Indonesian Constitution of 1945 defined development based on the democratisation of the economy and on “brotherhood principles” – hence, the major public initiatives for the alleviation of poverty. The policy for poverty alleviation is aimed at providing for the basic needs while increasing and developing a productive economy, and providing social security for the poor.

Programmes and Projects: When the economic crises hit Indonesia in 1997/1998, the government and the World Bank launched The Social Safety Net Programme (JPS). The programme had the short-term goal of “rescuing” and the long-term one of “recovering”. This programme has five components: (1) enhancement of food security, (2) safety net in education, (3) safety net in health, (4) provision of work and (5) community empowerment fund. Some examples of such activities are special market operations to distribute rice, providing scholarships for students in elementary and medium level as well as additional food for students and special initiatives for unemployed women. The Urban Poverty Project (P2KP) as part of the JPS was launched in 1999. It was expected to empower the urban poor through the strengthening of local institutions, to build community awareness and creativity in developing local resources and to promote and stimulate people’s participation in problems solving in their own environment. During 2001, the amount of direct assistance to the community reached 80.6% of the target groups. However, continued efforts are needed to achieve the principles of democracy, participation, transparency, accountability and decentralization (Media Partisipatif, 2001).

Status: Indonesia’s population is estimated at 210 million in 2000. In 1993, of the 185 million inhabitants, approximately 25.9 million were living in “poverty” as defined by international absolute standards. After the severe economic crises, that number increased to 49.5 million in 1998 or 24.2% of the total population. In 1999, this number decreased to 37.5 million or 18.2% of total population. 20.2 million of those poor lived in rural areas and 12.4 million in urban areas (www.bps.go.id). These are still enormous numbers and the fight against poverty must be conceptualised in an integrated fashion taking the following aspects into consideration:

- The impact of the changing economy on the poor;
- The need to develop public infrastructure; and
- The impact that such developments will have on the environment at local and regional level

Capacity-Building, Education, Training and Awareness Raising: In the implementation of the JPS programme, a special task force (GTP-JPS) has been formed to handle complaint management, campaign management (dissemination and Socialization of JPS) and problem solving management (to give recommendation to improve the programme). The task force is a trans-sectoral group consisting of directing and controlling teams directly responsible to the President of RI.

Information: The Coordinating Ministry of People’s Welfare is in charge in the development and implementation of the Information System of People’s Welfare and Poverty Alleviation (SIKESRA), which is an inter-ministerial programme.

Research and Technologies: Many governmental and non-governmental agencies have been engaged in research to find the causes of poverty and ways to alleviate it. Those agencies include the Ministry of Social Affairs, the Demographic Institute of the University of Indonesia (LD-UI), the Social Monitoring & Early Response Unit (SMERU) and so on.

Financing: From 1998 to 2003, approximately 10% of the entire state expenditure is spent on eradicating poverty. Many international organizations such as the Consultative Group for Indonesia (CGI), the World Bank, AusAID, USAID also contributed sums of money.

Cooperation: As stated above, many international organizations (such as the World Bank, USAID, AusAID, ADB and so on) cooperate to eradicate poverty in Indonesia. Some projects financed by ADB include, among others the

Coastal Community Development and Fisheries Resource in 1997, and the Central Sulawesi Integrated Area Development and Conservation in 1999.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS

Decision-Making: This issue embraces a broad range of topics and involves many government institutions under the coordination of the Ministry of People's Welfare. In general, the Ministry of Food and Horticulture, the Ministry of Agriculture, the State Ministry for Environment and the National Logistics Agency (BULOG) all look at the issue of sustainable food consumption patterns. In order to deal with consumer's rights and environmental sustainability, some regulations were released. To mention but a few, there has been Law n° 102/ 2000 on National Standardisation, Government Regulation n° 69/1999 on Food Labelling and Advertisement, and Law n° 8/ 1999 on Consumer protection. Law n° 6/1996 on Food was issued to guarantee the provision of safe, nutritious, healthy and affordable food to fulfil people's needs.

Programmes and Projects: Based on National Agenda 21, the government must develop policies and strategies to promote changing consumption patterns focusing on 3 programme areas: Food Production and Consumption Patterns and Nutrition Adequacy; Production and Consumption Patterns of Energy Resources; and Production and Consumption Patterns of Water Resources. Production and Consumption Patterns in the Energy and Transportation sector will be touched upon in the following section.

Status: Population growth, an increasing urban population, and an economic structure shifting from agriculture to industry, have all contributed to increase Indonesia's consumption patterns particularly in basic needs such as food, clothes, housing, clean water and energy. The increasing level of education and flow of global information have also contributed to the shift to a higher-consumption lifestyle, especially in urban areas. This changing consumption pattern has put considerable pressure on the environment, especially in Java where development activities were concentrated in the past (National Agenda 21). According to BPS, there has been a significant change in people's expenditure before (1993-1996) and after the crisis (1999). Percentage of monthly per capita expenditure on food (one indicator of welfare) declined from 1993 (56.85%) to 1996(55.34%). After the 1999 crisis, expenditure increased again (62.94%). Although generally there has not been a substantial change in the daily per capita food consumption patterns, some changes can be noted. For example, people have turned to eating more soybean curd (*tahu*) and fermented soybean cake (*tempe*) than animal protein due to the decreasing purchasing power (BPS, 2001b). Clean water consumption, on the other hand, shows signs of steady increase with an annual growth of 9.6% during the period 1996-1999 (BPS, 2001a). Provision of clean water still need to be enhanced to meet people's basic needs especially in rural areas. Non-food consumption patterns generally remain the same with the biggest proportion of the per capita income being spent on housing (46%), goods and services (31.52%), and clothing and footwear (11.45%) (BPS, 2001b). The shift to cleaner production and environmentally sound processes in each sector are described in other chapters. So far, the government, through various incentives, has encouraged the private sector to develop safe and environmentally sound production and distribution. It has also tried to increase the role of the cooperatives, the development of Small and Medium Enterprises and traditional establishments (National Agenda 21).

Capacity-Building, Education, Training and Awareness-Raising: Campaigns for water and energy conservation aim to raise awareness on the importance of sustainable consumption patterns. As stated in the presidential decree n°50/1995 and 45/1997 the government has attempted to increase BULOG's efficiency and effectiveness in supplying staple food by reformulating its functions (Amin and Supanto, 2000).

Information: Development of data and information with regard to sustainable production and consumption is conducted in coordination with government institutions and in collaboration with international organisations.

Research and Technologies: Research and technologies concentrate on food diversification to support the national food security and developing simple and appropriate food processing technologies for local communities (National Agenda 21).

Financing: No information available.

Cooperation: Indonesia intends to continue working with international organisations such as UNEP, UNFPA, FAO, World Bank and UNDP to assess how variations in demography, environment, development and economic influence changing consumption and production pattern.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS - ENERGY

Decision-Making: The Ministry of Energy and Mineral Resources (previously known as the Ministry of Mining and Energy) currently manages energy issues. The Presidential Decree n° 43/1991 promoted Energy conservation in support of sustainable development in Indonesia. This was followed by the Energy Conservation Master Plan (RIKEN) launched by the National Energy Coordinating Agency (BAKOREN) in 1995. A ministerial decree n° 1895.K/1995 was also issued to promote energy diversification efforts particularly in rural and remote areas not yet provided with electricity. Furthermore, in 1998 the Ministry of Mining and Energy produced General Policies for the Energy Sector (KUBE), improving the 1984 KUBE. Many other regulations relating to energy issues have been released within the last 2 years. In addition, the National Agenda 21 for the Energy Sector was published in late 2000. It looked into problem identification, objectives, recommended actions, targets and actors in order to achieve sustainable energy use and development.

Programmes and Projects: According to KUBE, energy policies in Indonesia are based on five principles: intensification; diversification; conservation; energy price; and environmental sustainability. Learning from past experience and in anticipation of future regional autonomy, the National Agenda 21 dealing with the Energy Sector recommends the inclusion of principles of equity, socialisation, community participation and empowerment, enhanced national capacity, and decentralisation.

Status: There has been an increasing rise in energy consumption. The amount of electricity sold increases by 8.9% every year and the State Owned Gas Company (PGN) increased its gas production by 5.8% per year during the period 1996-2000 (BPS). By 1994, commercial primary energy and final energy consumption had increased respectively 9 and 7 folds from the First Long-Term Development phase (PJP I) (National Agenda 21). The per capita energy consumption has also grown relatively a lot by 9.45% per year during 1985-1996 (National Agenda 21-Energy Sector). Presently, the energy consumption is still dominated by fossil fuels with the oil consumption alone amounting to 55.5% of it. However, it should be noted that the percentage is already declining.

In 1995, however, the National Electricity Company (PLN) could only bring electricity to 37.3% of rural areas. Energy consumption in Indonesia is 0.45 TOE/capita, much lower than ASEAN countries (0.59 TOE/capita), while the energy use intensity is 590 TOE/million US\$ compares to ASEAN countries with 516 TOE/ million US\$ and the world with 397 TOE/million US\$ (National Agenda 21-Energy Sector). So far, some measures have been taken by the government to cope with the above problems. There have been attempts to reduce problems of emissions, to establish ambient air quality and emission standard, to encourage the use of cleaner production processes in industries, and to introduce the requirement of an environmental impact assessment for power projects. The potential for energy conservation in industry, transportation, households and commercial buildings are respectively 30%, 25%, and 10%-30%. To promote energy conservation programmes; the government has started to adjust energy (fossil fuels and electricity) prices to the market price. This price includes the environmental cost, and the government has reduced the subsidies for fossil fuels by applying a selective and fair subsidy mechanism. Subsidies for fuel and electricity have been decreased significantly from Rp 28.2 trillion and Rp 10 trillion in fiscal year 1999/2000 to Rp 17 trillion and Rp 1.3 trillion in the year 2000. PLN has also tried to improve its production and transmission efficiency in the electricity sector as indicated by a reduction in distribution losses from 21% in 1983 to 12.4% in 1990.

In support for energy diversification programmes and through the introduction of incentives, the government has started to encourage the use of new and renewable resources. In future, further incentives and disincentives have to be introduced (National Agenda 21-Energy Sector).

Capacity-Building, Education, Training and Awareness-Raising: In the last two years, government has carried out intensive mass media campaigns and seminars to increase public awareness on the importance of energy conservation and selective subsidies for fuel.

Information: The Ministry of Energy and Mineral Resources disseminates information relating to energy issues. In future, information must be better disseminated to increase people's participation in energy programmes.

Research and Technologies: Research and technologies are directed at clean technology processes. One such example is the research in environmentally sound coal exploration techniques by using underground technique and the use of low sulphur coal (National Agenda 21-Energy Sector). Currently, there has been a proposal to research new policy instruments to manage energy prices.

Financing: In 1999/2000, the State Revenue and Expenditure Budget (APBN) allocation for mining and energy amounted to 8.02%, down from 11.89% in the fiscal year 1996/1997.

Cooperation: The State Ministry for Environment has collaborated with UNDP in the creation of the National Agenda 21 for the Energy Sector.

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CHAPTER 4: CHANGING CONSUMPTION PATTERNS - TRANSPORT

Decision-Making: Attempts to turn to a more sustainable transportation system has involved the State Ministry of Environment, the Ministry of Energy and Mineral Resources (MEMR), the Ministry of Transportation and the Ministry of Trade and Industry. The State Ministry for Environment has issued regulations to deal with the deteriorating air quality due to car emissions. For example, there is the Ministerial Decree n° 35/1993 on Emission Standards for Motor Vehicles, the regulation n° 15/1996 on Blue Sky Programme (Program Langit Biru), and n° 45/1997 on Air Pollutants Standard Index. The Ministry of Transportation has also released Ministerial Decrees n° 6 and 7/1997 regarding the environmental management plan (RKL) and the environmental monitoring plan (RPL) for the air transportation sector; and regulations concerning operational requirements and testing of motor vehicles.

Programmes and Projects: The Blue Sky Programme for non-point sources is intended to control and minimise air pollution originating from the transportation sector. The preparation for the programme was started in 1992 with the implementation beginning in 1996. The programme covered conversion to unleaded gasoline, energy diversification to CNG and LPG use, particularly for public transport, and awareness raising. The Minister of Environment targeted lead free gasoline for Jabotabek, Cirebon, Cianjur in 2001, Java in 2002, and the whole of Indonesia in 2003.

Status: The transportation sector contributes to 46.2% of the total 50.6 million kL of fuel consumption. Furthermore, fuel consumption increases by 8 % annually. On this basis, it was estimated that air pollution would double in 2000 and increase ten folds in 2020 compared to 1990 level (National Agenda 21). Based on the BPS report, the number of motor vehicles recorded by the State Police Indonesia in the year 2000 was 18.98 million, an annual increase of 9.8% since 1995. A recent study of air pollution in Jakarta reported that vehicular pollution was responsible for almost 100% of airborne lead, 89% of HC, 64% of NO_x and almost all CO.

By 1998 and as a result of the energy diversification programme, approximately 3000 taxis and 100 buses ran on CNG (www.pii.or.id). In the mean time, by 1995 around 1500 taxis, 300 passenger cars and 3 buses were using LPG (www.bapedal.go.id). In 1996, the State Owned Oil and Gas Company (Pertamina) also released a lubricating oil called Mesrania 2T Enviro which was ashless and contained extra low sulphur. By 1998, there were 3 kinds of unleaded gasoline. Pertamina distributed Super TT and BB2L while Petro 2T was distributed by a private company. This partial progress is due to the limited number of gas stations (SPBG) available, the lack of incentives for the industry and community to convert to unleaded gasoline, and the lack of coordination between government institutions. As a result, in July 2001, the State Ministry for the Environment together with MEMR and Pertamina re-launched the unleaded gasoline programme. Pertamina, which gradually reduced its lead content from 1.5 cc/US gallon to 0.2 cc/gallon in May 2001, stopped the production of leaded gasoline in its Balongan Refinery on 15 June 2001. It then proceeded to convert to the production of 8000 tonnes of unleaded gasoline per day. In 2001, the price of unleaded gasoline was the same as the leaded one in order to encourage people to use it (Pikiran Rakyat, July 6, 2001). The Coordinating Ministry for Economic Affairs also lent its supports with the introduction of various incentives. These included tax free imported conversion kits and electricity tariff incentives to help SPBG to reduce its operating cost. Meanwhile, the Ministry of Transportation imposed operational requirements on motor vehicle (Bali Post, October 10, 2000).

Capacity-Building, Education, Training and Awareness-Raising: Raising public awareness is conducted through local garages that routinely give reports to the Environmental Impact Management Agency (Bapedal), media campaigns as well as emissions competition in which government and private offices located in Jakarta and its vicinity participate (www.bapedal.go.id).

Information: Air Quality Monitoring Stations have been built in Jakarta, Semarang, Bandung, Surabaya, Denpasar, Palangkaraya, Pekanbaru, and Medan to inform the public on the air quality in their areas. Bapedal has also planned to announce air quality in those cities through electronic media (TV and radios) as well as through electronic media.

Research and Technologies: Researches are directed at technologies which can produce and use more environmentally friendly fuel. The Ministry of Transportation has conducted studies on port environmental improvement project, standardisation of infrastructures and facilities for handling sea pollution, and the environmental assessment of a bridging port in Jepara (www.dephub.go.id).

Financing: Transportation, meteorology and geophysics were allocated 10.23% of State Revenue and Expenditure Budget (APBN) in the fiscal year 1999/2000, down from 19.62% in the fiscal year 1996/1997. The government allocated an annual budget of Rp 300 billion for the import of HOMC (High Octane Mogas Components) used in the unleaded gasoline production in Balongan Refinery. According to the Minister of Energy and Mineral Resources, Pertamina would need US\$ 250 million to invest in an additional catalytic converter to avoid HOMC imports (Pikiran Rakyat, July 2, 2001).

Cooperation: The government have collaborated with many of institutions such as SwissContact, NEDO, and Walhi.

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CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: The Family Planning programmes are coordinated by the National Family Planning Coordinating Agency (BKKBN), under the Coordinating Ministry for People's Welfare and Poverty Eradication. The House of People's Representatives (DPR) is divided into 11 committees to process, scrutinise and produce draft legislation. Public health, social affairs and the National Family Planning Coordinating Agency come under one of these committees.

Transmigration, the national programme to relocate people from highly densely populated areas to scarcely populated ones (especially from Java to other islands), has been coordinated under the Ministry of Transmigration. Since February 2001, this Ministry has been integrated into the Ministry of Manpower and Transmigration.

Programs and Projects: Indonesia has succeeded in lowering its annual population growth rate (see status). This was done through the ongoing national family planning programmes. However, an even population distribution has yet to be achieved. Therefore, in certain areas, the carrying capacity of the environment has been surpassed, particularly in relation to agricultural reproductivity. To date, population distribution has been dealt with separately from environmental management. In the past, it was argued that family planning programmes were implemented with insufficient quality of care, especially for women. The programs were conducted in a quantitative target-oriented way and did not respect people's right to choose. A new paradigm has thus emerged to improve the quality of service and pay more respect to women. In some areas, transmigration has led to severe conflicts between the newcomers and the indigenous people. The relocation program has been halted and currently efforts at being made at social and ecological improvements.

Status: Indonesia has succeeded in lowering its annual population growth rate from 2.34% during the 1970-1980 period, to 1.98% during the 1980-1990, to approximately 1.66% during the 1990s (www.bps.go.id). It is projected that the growth rate will decrease to 0.68%. Demographic changes will precipitate major changes in Indonesia. For example, an increase in both urbanisation and the population growth are expected to increase Indonesia's urban population to 132.5 million (i.e. 50% of total population) by 2020 (National Agenda 21). While poverty and consumption have clear and tangible needs for management, to date the population dynamics of Indonesia have been less readily dealt with. The increasing population is faced with an unequal regional development. According to the 2000 Population Census, Java, which occupies 7% of the country's area, is inhabited by 59% of the total population. Maluku and Papua have 25% of the total area but are only inhabited by 2% of the total population (BPS, 2001a). Population affects human services and broader social and environmental factors in a variety of complex and recursive ways.

Capacity-Building, Education, Training and Awareness Raising: Efforts to improve the family planning programmes have aimed at upgrading service, communication, information and education (KIE). Training is also underway to increase the quality of the programme's field officers (Republik Indonesia, 2000). In 1987, BKKBN established the International Training Program for Family Planning/Reproductive Health (ITP). Since November 2001, ITP has hosted a total of 3,920 participants from 92 countries in various types of programs and sent BKKBN personnel to provide technical assistance to at least 17 countries in Asia, the Pacific, and Africa (www.bkkbn.or.id).

Information: In 1999/2000, indicators for quality and quantity of population and indicators for the balance of population and the environment were standardized. The National Family Planning Coordinating Board (BKKBN) has undertaken efforts to operate Information System on Population and the Family (SIDUGA-NET) in user format. For the budget year 2001/2002, the government has proposed a program to improve the demographic administration system, develop new concepts and try out the population registration system at national and regional level (BPS, 2001a).

Research and Technologies: Research on population studies are continuously done at universities and research institutes, such as Lembaga Demografi UI, UGM, Population Council and so on. UNFPA, for example, has provided assistance for research on the reproductive health needs of adolescents.

Financing: The ongoing Family Planning Programme has received its funding from the national budget and aid from foreign agencies, especially UNFPA, USAID and The World Bank. The UNFPA-assisted fifth country programme supported comprehensive population activities with a budget of \$US 30 million over a five-year period. The programme started in January 1995, to assist the Government of Indonesia in reaching its population and development objectives (www.unfpa.org).

Cooperation: Indonesia has established cooperation with several international institutions such as The World Bank, UNFPA, John Hopkins University, etc.

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CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH

Decision-Making: The Ministry of Health is the coordinating body. The government's role is to provide health infrastructure such as personnel, hospitals and community health centres that are accessible to all. To ensure that health services and facilities are equitably distributed in the community, development funds have been instituted. This was done through a specific presidential instruction. Other Presidential Instructions cover environmental health, health manpower, development and distribution.

Programmes and Projects: Jaminan Pemeliharaan Kesehatan Masyarakat (JPKM), which can be literally translated as "Guaranteed Health Care for the Community" is the Indonesian principles of Managed Health Care. JPKM is a compulsory management method for the provision of pre-paid comprehensive and continuous quality health care. All pre-paid health care programmes run by the government as well as private sectors have to abide to these principles of management. Various measures have been carried out to increase the efficiency and effectiveness of health development, to make health services more accessible to the population, and to improve their distribution and quality especially in remote areas. Some of the efforts involve appointing doctors, dentists and village-based midwives on a contractual basis. Another measure requires recently graduated specialists to spend a limited amount of time in a designated area. These are only a few of the measures which have been taken in the hope of overcoming the impact of the prolonged economic crisis on the poor. Primary health care has improved with the growth of the Village Community Health Development Programmes, which operates through the "posyandu" network.

In order improve drug distribution and their accessibility to the population, one of the strategies followed by the Ministry Of Health is the marketing of Branded Generic Drugs (BGD). These are drugs using an official name mentioned in the Indonesian Pharmacopea and the International Non-proprietary Names (INN). By enhancing the availability of those drugs since 1989, the Ministry has boosted both the number of producers and the variety of BGDs. One of the projects under the Ministry of Health is the Provincial Health I and Family Health Nutrition. The Provincial Health Project/PHP is developed to support and accelerate the process of decentralization and financing reform through the improvement in services especially for the poor.

The Family Health and Nutrition Project was modified after the mid-term review in 1999. The objective is to improve the health and nutritional status while decreasing the fertility rate of poor families through a shift to a healthier lifestyle. Local programme holders have been encouraged to modify the interventions according to the local situation. The modified strategy introduces several innovative products to achieve the main objective: family empowerment on health, nutrition and economic issues. Regarding HIV/AIDS, the government set up a National AIDS Commission in 1994. The key programme areas include information, education and communication; prevention; blood testing and counselling; treatment, service and care; research and study; and monitoring and evaluation.

Status: Many health issues have been improving in Indonesia. The infant mortality rate decreased from 145 per 1000 live births in 1967 to 52 per 1000 in 1995. The average life expectancy of men and women both increased significantly over the same period. However, regional variations in programme implementation and effectiveness remain significant. Services tend to be uniformly distributed, whereas human resources in the health sector differ from place to place. It is recommended that health services be based on a spatial approach aimed at self-sufficiency. Furthermore, health services should be enhanced especially the part of the population most vulnerable to infectious diseases such as tuberculosis, cholera and malaria. These diseases must be eradicated, and urban health services must be developed in line with urban community growth. A long-term plan is to eliminate a variety of significant diseases (e.g. cholera, hepatitis B, rabies). Mass immunisation and institutional development programmes will require an expenditure of approximately US \$ 52 million (www.depkes.go.id). According to the Indonesian Demographic and Health Survey in 1994, Maternal Mortality Rate (MMR) is still high, i.e. 390 per 100,000 live birth. Under-five Mortality in Indonesia, has declined significantly from 111 per 1000 live birth in 1986 to 59 per 1000 in 1997 (www.depkes.go.id). The cumulative number of HIV/AIDS cases reported from April

1987 to September 2001 was 2313. However, WHO estimates the real numbers to be closer to 35,000-50,000 cases (www.depkes.go.id).

Capacity-Building, Education, Training and Awareness Raising: Primary health care has improved with the growth of the Village Community Health Development Programmes, which operates through the “posyandu” network. This programme doubled its organizational members to 200,000 between 1984 and 1989. In 1998, there were 7,602 health centres across the country. If one centre caters for 30,000 people, then the ratio of health centre to population is 1.12. In addition, there are 21,417 community health sub-centres and 6,310 mobile health centres across the country (www.depkes.go.id).

Information: Information on governmental health programmes is made public through mass media.

Research and Technologies: Integrative methods to develop research and disseminate research findings have been implemented in Tropical/Infectious Disease Research Centres in universities. Technologies in immunology, vaccination and geographical epidemiology are also being developed and disseminated.

Financing: Health financing in Indonesia comes from different sources, the usual two being government and the community, including the private sector. Financing by the government comes out of the national, provincial and district budget. In the budget year 1999/2000, the total budget of the Ministry of Health was 5.742 trillion rupiah including foreign aids. This is a 39.69% increase compared to 1998/1999. The per capita health budget has also increased (BPS, 2001). International donors, international agencies, bilateral and international NGOs play important roles as partners in Indonesia’s HIV/AIDS effort.

Cooperation: Partnerships exist among the government, non-governmental organizations and institutions to improve health care services. Multi-sectoral cooperation is obvious for example in developing the methodology of Environmental Health Impact Assessment (ADKL) and in the National Task Force for eradicating infectious diseases. ASEAN regional cooperation has declared 2020 as the year of ASEAN Health, involving Brunei, Indonesia, Malaysia, Singapore and Thailand.

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CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: Since 1984, policy has attempted to engage all aspects of housing and residential areas management in a single integrated process. Thus far, however, housing policy has not reflected the importance of environmentally sound and sustainable human settlement development as a primary conceptual and planning system. The Ministry of Settlement and Regional Facilities is responsible for :

- establishing proper and productive settlements;
- reliable and functional public facilities in the framework of holistic, just and sustainable regional development; and
- providing housing for all.

Programmes and Projects: In 2001 there were 361 national projects under the Ministry of Settlement and Regional Facilities, of which 30 were housing projects and 113 facilities projects. State-owned (Perum Perumnas) and private developers construct housing, and a state-owned bank (BTN) facilitates housing credit for poor people. In 1996, the state-owned developer constructed 38,035 housing units and in 1999 this number decreased to 2,669 units. (BPS, 2001a, www.kbw.go.id). Sectoral Agenda 21 on Human Settlements was launched in 2000 by the State Ministry for Environment and the UNDP, with a special emphasis on equity for all and a balance between macro and micro growth. Long term goals and specific action plans are described. There are three long-term goals mentioned, i.e. (1) the development of participatory, transparent and accountable human settlement institutions and regulations, with an emphasis on the settlement provision for under-served people and the prevention of monopoly and disintegrated development; (2) the improvement of regulations, in order to empower all classes in the community, especially those who have been marginalized, to efficiently and effectively allocate spatial, financial and infrastructure resources; (3) to increase the roles and responsibilities of local government in the management of human settlements. There are two main agendas to achieve these goals, namely institutional development and action programmes, including anticipation or urbanisation, empowerment of currently marginalized communities and maintenance of a unique environment.

Status: Human settlement issues are exacerbated by poverty, resource scarcity, pollution and population density. There are qualitative and quantitative needs for more and better housing. Recent studies suggest that approximately 750,000 new housing units will be needed by 2020, and much of them will be required in densely populated urban centres. This will reflect not only population growth but also a demographic change in housing from extended families to nuclear families. Provision of human settlement must also come with provision of facilities. It is estimated that in 2000, 75% of total population had access to clean water supply, 86% to state or private electricity and only 55% of households had their own toilet facilities. As much as 22% of households are approximately 5 kilometres or more from public health centres and 67% of households are 5 kilometres or more from a fire hydrant (BPS, 2001a). There have been several failures in developing environmentally sustainable human settlements. The floods in Jakarta in the beginning of 2002, for example, have shown how Environmental Impact Assessment (AMDAL) has not been carried out properly in the past. To improve this, major reforms in the decision-making sectors are needed.

Capacity-Building, Education, Training and Awareness Raising: The Sectoral Agenda 21 places great emphasis on institutional building, especially at local government level, to be able to incorporate the development of human settlements with an increased people's participation and local values. In 1997, The ADB funded a project called Capacity-Building in Urban Infrastructure Management. The aim was to improve the urban infrastructure management throughout Indonesia by helping the government to develop human resource programs designed at equipping urban managers with the necessary tools and knowledge.

Information: An Integrated information system on housing and settlement management (SIM-Rukimdu) has been established. The homepage Simnas-Rukim provides information on policies and regulations and offers a link between stakeholders (Republik Indonesia, 1998). For the budget year 2001/2002, the government has allocated 3 billion rupiah to improve the information system (RAPBN, 2001).

Research and Technologies: For the budget year 2001/2002, the government has allocated more than 5 billion rupiah to develop research and application of technologies in this sector. Holistic research will be done to review standard and guidelines. Technologies on mapping, water resources management, road construction and post-disaster analysis are on the agenda.

Financing: The housing sector (i.e. dwelling and residence) was allocated 3.8% of the national expenditure in the fiscal year 1999/2000. In 2001, as much as 5,983.5 billion rupiah was allocated for settlement and regional facilities development, of which 104.7 million rupiah is under the environmental and spatial management sector (BPS, 2001a, www.kbw.go.id).

Cooperation: Regional cooperation under the Ministry of Settlement and Regional Facilities includes cooperation with APEC, ASEAN, Economic and Social Commission for Asia and Pacific (ESCAP), Centre for South-South Technical Cooperation for Non Aligned Movement (CSSTC) and Australia Indonesia Development Agreement (AIDA), and the establishment of Indonesia-Malaysia-Thailand and Indonesia-Malaysia-Singapore Growth Triangles.

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CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

Decision-Making: Environmental economics is a new concept in Indonesia. The Environmental Economic Division of the State Ministry for Environment was established no more than two years ago. Most economic methods for solving environmental problems are still under study. Thus, their application are not widespread nor formally regulated by law.

Programmes and Projects: Recognising the lack of law enforcement as a major constrain in implementing "command and control" methods, economic instruments have been introduced as an alternative. By giving incentives or disincentives to favour the environment, it is hoped that the consumption patterns could be improved for a wiser utilisation of environmental resources. For example, waste treatment devices are being subsidised by the Government. The State Ministry for Environment has tried to compile and analyse regulations that explicitly or implicitly encouraged better environmental practices. The results of the analysis could be used as a basis for natural resource management. Debt for Nature Swaps (DNS) is one of an alternative to solve Indonesia's international debt problems. The State Ministry for Environment has set up a team to study the possibility. The team has made an inventory of what had been done on this issue by other institutions such as Indonesian Bank (BI), the Ministry of Forestry and the Coordinating Ministry on Economics.

Status: Natural resource evaluation is an attempt to include environmental aspects in policy making. The State Ministry for Environment has completed the estimation of the Cisadane and Musi watershed areas in order to decide on the best way to manage those areas. The study was in collaboration with the University of Padjadjaran and the University of Sriwijaya.

Capacity-Building, Education, Training and Awareness-Raising: The State Ministry for Environment has prepared a handbook of environmental economics. The book will be used to socialise the issues of environmental economics at district and community levels. Seminars and training on environmental economics are often held for industrial, academic communities and even local government.

Information: The current development indicators fail to indicate the sustainability of development as they are only concerned about financial achievements. The State Ministry of Environment has initiated Green GDP, a sustainable development indicator taking environmental loss into account. This indicator is currently being developed at national level. All the studies on natural resource accounting (NRA) that had ever been conducted have been compiled. After that, based on best practice, a guideline on the calculation of NRA was written.

Research and Technologies: The other natural resources evaluation studies made by the State Ministry for Environment are on coral reefs and mangroves. A monetary valuation of the karst ecosystem was also carried out with the support of CEPI (Canada).

Financing: A governmental regulation on an environmental fund is currently being elaborated. Only a very small portion of the State Budget is allocated to the environmental sector. As a result, the government wants to set up a Environmental Fund with funding from the general public, private companies and NGOs. There already exists the Reclamation Fund and Reforestation Fund. However, most of the money is misused. Under this new regulation, it is hoped the management of fund could be transparent with a clear monitoring mechanism.

Cooperation: SIDA (Sweden International Development Agency) is committed to work together with the State Ministry for Environment on a study on NRA but no agreement have been signed to date.

CHAPTER 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: Government Regulation n° 41/1999 on air pollution control serves as the basis for air quality management in Indonesia. Other technical instructions are regulated by Ministerial Decree, such as air pollution standard index (for ambient air quality standard), emission standard for mobile and static sources. For industrial air pollution, there are industry specific emission standards. Concerning the depletion of the ozone layer, the government of Indonesia has proved its commitment to phasing out ODS by enacting Ministerial Decree n° 110/MPP/1998 followed by Decree n° 410/MPP/1998 on the prohibition of producing and trading ODS and new appliances using ODS. Indonesia has ratified the United Nations Framework Convention on Climate Change through Law n° 6/1994 and a National Action Plan has been formulated with NGOs assistance.

Programmes and Projects: The Blue Sky Program was launched by Bapedal to control air pollution in big cities. The program targets industries and vehicles as they are the biggest contributors to air pollution. The focus of its activities is in four provinces, namely DKI Jakarta, West, Central and East Java, as this is where pollution is at its worse. The main mechanisms to control vehicle emission are: phasing out leaded gasoline, reducing sulphur content in diesel fuel, introducing alternative fuels such as CNG and LPG as well as emission test for vehicles. The schedule for the phase out of leaded gasoline was 1 July 2001 for Jakarta and 1 October 2003 for everywhere else. Besides the source of air pollution, Bapedal also monitors the ambient air quality in ten big cities. Additionally, there are mobile monitoring stations prepared to monitor air quality in areas prone to forest and land fires. Five parameters are used to indicate pollution: PM-10, CO, NO₂, O₃ and SO₂. An Air pollution standard index (ISPU) is formulated to indicate the level of air pollution. Daily data of air pollution is displayed publicly on the side of several streets to inform people.

In line with the Montreal Protocol, Indonesia has set up an ODS phase out project supported by World Bank. This project was approved in 1994 and will go on until 2007. The Government proposed to phase-out all ODS by the end of 1997, except for halons which will be phase-out in 1996. The action plan combines the efforts of the Government, industry and NGO in specific activities, which will affect the phase-out strategy. The actions are classified in 6 categories: i) institutional measures, ii) regulatory measures, iii) incentives/disincentives, iv) information awareness, v) investment and technical assistance, and vi) monitoring. In response to its commitments to UNFCCC, Indonesia has prepared its First National Communication. The components of the project consisted of an inventory of greenhouse gases (GHG). It provided an assessment of potential impacts of climate change, analysis of potential measures to adapt to the increase in GHG emissions and climate change. The project was expected to enhance the general awareness and knowledge on climate change related issues and to strengthen the dialogue, information exchange and cooperation among all the relevant stakeholders including governmental, non-governmental, academic and private sectors.

Status: According to Bapedal's data, during 2001, ambient air quality in ten big cities went from as "good" to "unhealthy" with the major polluter of PM-10. Air quality in Jakarta and Bandung ranged from "moderate" to "unhealthy". Forest fires in Kalimantan made air pollution in Palangkaraya and Pontianak reached the level of "unhealthy" despite relatively low industrial and transportation activities there. Indonesia's emissions of major GHGs in 1994, the last year for which an emission inventory is available, amounted to approximately 343 MT of CO₂ equivalent. A further 156 MT of net CO₂ emissions were caused by changes in land use, primarily deforestation. CO₂ accounted for approximately 70% of the total emissions.

Capacity-Building, Education, Training and Awareness-Raising: Concerning ambient air quality, Bapedal has trained local operators to operate air quality monitoring system in their regions. A public campaign was launched to warn the public of the danger of leaded emission from vehicles as well as to socialise the government's schedule of leaded gasoline phase out. Bapedal arranged interactive dialogs in the radio and in all Indonesian TV stations. Seminars were also held, particularly at universities. Seminar on ODS Phase-out solution for the Refrigeration sector was held supported by Swisscontact. To exchange international experience, Indonesia participated in a

comparative study between Asia and Europe. The media was used as a campaign tool by arranging talk shows in radio and on television as well as writing in newspapers.

Information: A database of Indonesia's compliance with the Montreal Protocol has been set up and complemented by an internet home page.

Research and Technologies: To learn about the severity of air pollution caused by leaded gasoline, Bapedal did a survey on lead content in primary students' blood in Jakarta. The results proved that an immediate action needed to be taken. Various study have been undertaken in the field of climate change, ranging from the socio-economic impacts of climate change and the possibility for Indonesia to participate in the clean development mechanism under the Kyoto Protocol.

Financing: The implementation of the ODS phase-out is supported by several international institutions, namely UNDP, IBRD and UNIDO.

Cooperation: Realising not much can be done alone, Bapedal established cooperation with institutions with similar concern, whether they governmental, NGOs or private companies. Pertamina as producers of gasoline is a necessary partner in the phase out of leaded gasoline. Several NGOs have allied to form the Leaded Gasoline Phase-out Committee (KPBB) and helped to accelerate the leaded gasoline phase-out schedule. Bapedalda is Bapedal's regional partner in air quality control. Collaboration with privately owned garages is important in emission test programmes. For the ODS phase-out program to be successful, it requires cooperation with private companies, whether they are importers or producers of ODS as well as producers of appliances using ODS (air conditioning, refrigerators).

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CHAPTER 10: INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES

Decision-Making: The need for a coordinating body for the integrated planning and management of land resources was met with the establishment of the National Spatial Coordination Agency (BKTRN) in 1993, under the National Development Planning Agency (BAPPENAS). To enhance its performance, the presidential decree n° 62/2000 regarding National Spatial Coordination was issued. The Spatial Planning Law n° 24/1992 aiming to achieve an integrated and environmentally sound spatial use was complemented by Government Regulation n° 47/1997 on the National Regional Spatial Plan and Law n° 69/1996 regarding public participation in spatial planning.

Programmes and Projects: In National Agenda 21, the focus of land resources management is: improving efficiency in spatial and land resources planning, developing and strengthening the related regulations and law, institutional arrangement, development of sound data and information system. A government initiative on Land Administration Project was undertaken in 1993 in collaboration with the World Bank. Its objective was titling and registration (LAP-A), improvement of institutional framework for land administration (LAP-B), and development of land management policies (LAP-C). BKTRN consists of 1 technical team and 3 working groups, with a programme to review, coordinate and formulate regulations; to ensure land and natural resources are used according to the spatial plan; to establish spatial management procedures and criteria (www.bappenas.go.id). Management of land resources is also carried out in programmes like land consolidation, readily developed areas (Kasiba), and readily developed environment (Lisiba).

Status: The conversion of agricultural land to non-agricultural land, the expansion of urban socio-economic activities, and the rapid population growth contribute to problems in land resources management. As a result there is ongoing tension between the provision of the current needs and the maintenance of sustainable levels of resource quality and quantity for medium and long term uses. These problems are exacerbated by the lack of coordination between government agencies and sectors of development, complex regulations and mechanisms related to land resources, and weak law enforcement. Conversion of agricultural lands to other uses amounted to 106424 ha in 1993-1995 with settlements representing more than 50% of it. The destroyed land totals 30 million ha with two thirds in Java (National Agenda 21).

Inefficient land resource use in urban areas is denoted by the existence of 1.2 million ha of idle land in (Hamilton & Sumardjono, 1998). All land, which has not been registered through LAP A and LAP B, are registered sporadically under a range of programmes, such as the National Certification Program (PRONA), transmigrations sites, residential applications, etc. At present there are 18 millions of sporadically surveyed parcels in Indonesia. 610,000 land units have been produced in 3 years and currently the system is producing 400,000 parcels a year (Fourie & Nasution, 1997). Issuance of Land Rights certificate increased by almost 87% during 1993-1997 (BPN, 1998). In support of sound land resources management and planning, a land registration baseline mapping (PDPT) programme was initiated. The result was a 79% achievement by 1998, with the lowest achievement in the province of West Sumatra. Regarding regulations on integrated land resource management and planning, hitherto BKTRN has generated 3 government regulations, 4 drafts government regulations (RPP) in the refinement phase, 3 RPPs under appraisal phase, while 4 RPPs are being formulated (www.bappenas.go.id).

Capacity-Building, Education, Training and Awareness-Raising: Recognising the lack of coordination, authority and support for BKTRN in the past, the new presidential decree released in 2000 allows better interdepartmental coordination. It is headed by the Coordinating Ministry for Economy, Finance and Industry, and with 6 ministries and the National Land Agency (BPN) as its members. BPN is conducting Land Office Computerisation (LOC) programme to enhance public services on land related matters.

Information: Dissemination of issues related to spatial management and planning is conducted by Working group III of BKTRN, for instance through socialization to local parliament, socialization of public participation in spatial

planning, and establishment of Spatial Information System (www.bappenas.go.id). BPN is taking inventory of laws, regulations and court decisions regarding land under the auspices of the World Bank (National Agenda 21).

Research and Technologies: Current technologies of aerial photography, digital mapping, remote sensing, and satellite image such as SPOT and LandSat has been developed in a number of institutions and universities. Those technologies have been used to produce Geographical Information System or Land Information System. BPN has made use of satellite technology for remote sensing and Global Positioning System to determine mapping points.

Financing: There is no specific information on allocation of land management and planning within the State Revenue and Spending (APBN). However, in the fiscal year 1996/1997, the BKTRN function of coordinating national spatial management required a budget of Rp 2.582 million (www.bappenas.go.id).

Cooperation: Major collaborations have been carried out with CIMSA and the Government of Spain for LOC programme and the World Bank for LAP.

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CHAPTER 11: COMBATING DEFORESTATION

Decision-Making: The Ministry of Forestry and Crop Estates has authority over forest management. Within this ministry, the Directorate General of Production Forests has the authority to release logging concession rights (HPH's). The Department of Trade and Industry has the authority to issue permits for the establishment of timber and forestry enterprises. The Department of Agriculture also has an important role in particular concerning forest conversion to agricultural land. The Department of Transmigration and Forest Settlement requires forest land for transmigration of "forest pioneers" communities while the Department of Mines and Energy grants mining rights in areas which frequently include forest areas. Law n° 41/1999 on forestry has given new a paradigm to forest development planning. Forest planning must be transparent, integrated, participatory as well as taking into consideration local uniqueness and aspirations. The law accommodates the role and right of people living in and around conservation area in forest management. However, lower set of regulations are still needed to implement the law. To prove its seriousness in combating illegal logging, the government has issued the President's Instruction n°. 5 of 2001 on abatement of illegal logging and distribution of illegal forest products.

International communities have a very important role in policy-making process of forest management in Indonesia. The Consultative Group on Indonesian Forestry (CGIF) was established in 1994 as a coalition of institutions from various donor countries. In 1999, CGIF supported the formation of a team consisting of representatives from government, academics, NGOs, donor countries and individuals. Their task was to prepare the national forest program (NFP) but unfortunately, the team was not able to produce a finalised NFP. Following Indonesia's commitment in the CGI meeting in October 2000, an Inter-Departmental Committee on Forestry (IDCF) was established and one of their tasks was to formulate the NFP. In July 2000, the Ministry of Forestry and Crop Estates had compiled its strategic plan for 2001 – 2005, helping the formulation of NFP. The CGI meeting in October 2000 encouraged the Ministry to draft an Action Plan on the Government Commitment to Forestry. One of the plans was to establish a multi-stakeholder organisation to prepare the NFP. To date, the process of producing a finalised NFP is still going on.

Programmes and Projects: Recently acknowledging the important role of communities living near or within the forest in maintaining the sustainability of forest, the Ministry of Forestry and Crop Estates is supporting community-based management. The Ministry facilitates the growth of forest production centres in villages and develops participatory monitoring system for forest resource utilisation. Routine patrols and intelligence operations have been conducted in areas prone to illegal logging and distribution of illegal forest products, such as in Leuser and Tanjung Puting National Park. To fight forest fires and to prevent future disasters, the Ministry of Forestry and Estate Crop established the Forest and Ground Fire Control Centres in 14 provinces/ Meanwhile, Bapedal set up a National Co-ordinating Team for the Control of Forest and Ground Fires. Additionally, some international institutions, like GTZ, JICA and the European Union have set up programmes in forest fire prone locations. Their activities include setting up early warning system, monitoring and socialising hot spot data and public-awareness campaign. However, problems have arisen due to the lack of co-ordination between different institutions. The government's efforts concerning forest rehabilitation programmes through reforestation and afforestation encourage participation from communities. During 1999/2000, the government targeted a total area of 155,688 ha for reforestation and afforestation. This number, however, is lower than the previous five years. The Ministry of Forest and Estate Crops formulated a Forest Use Agreement (TGHK) in 1983. TGHK classifies forest areas as being permanent production forests, limited production forest, convertible production forests, protected forests and nature reserves. In 1997, the TGHK and Provincial Spatial Zoning Plans (RTRWP) were harmonised in accordance with Law n° 29/1992 on Spatial Zoning. This harmonisation is necessary to prevent forest encroachment.

Status: The government classified forest according to its function into three categories, namely protected forest, production forest and nature reserve. The total forest area, up until October 1999, was 120.3 million ha, consisting of 33.5 million ha of protected forest, 66.3 million ha production forest and 20.5 million ha nature reserves (BPS, 2000). However, the Ministry of Forest and Estate Crops has a different data. According to TGHK (Forest Use

Agreement), Indonesia's total forested area amounts to 143.3 million ha with a smaller area for protected and nature reserves and a much greater area for production forest compared to the BPS data (Ministry of Forest and Estate Crops, 1999). Deforestation rate is estimated at 1.6 million ha annually (Republik Indonesia, 2001). The provision of HPH is the major cause for deforestation since concessionaires only focused on forest exploitation and ignore their obligation to conserve the forest. It was recorded that as many as 421 logging companies own HPH for a total forest area of 51,639,152 hectares. Forest fires and illegal logging are another major cause. Lack of law enforcement and the gap between supply and demand for timber have enhanced illegal logging.

Another contributing factor to the depletion of forest is land conversion for transmigration purposes. Up to March 1999, a total forest area of 1,298,990 ha had been converted, not only from the area of production forest but also from the protection and reservation forest area. Mining activities in forested land are posing a major threat too. Timber production in the year 2000 consisted of 13.6 million m³ logs and 5.1 million m³ plywood, sawn wood, pulp, veneer as well as other processed timber (Republik Indonesia, 2001). The potential for non-timber forest products (NTFPs), such as rattan, resin (damar), callo phonium, etc., has not been fully developed. During 1999/2000 all NTFP production decreased drastically compared to the previous year. Cajaput oil and rattan production decreased by 82.22% and 48.65% respectively (BPS, 2000). In 2000 Indonesia only produced 272,900 tonnes of NTFPs. (Republik Indonesia, 2001)

Capacity-Building, Education, Training and Awareness-Raising: The Ministry of Forestry and Crop Estates runs several training centres and a diploma programme. They are designed mostly for human resource development within the ministry itself. In addition, international institutions often participate in Capacity-Building programmes. For example, GTZ assisted a programme called "Strengthening of Management Capacities of the Indonesian Ministry of Forestry". Forestry Faculties exist in many public universities all over Indonesia, like Gajah Mada University (Yogyakarta), Bogor Institute of Agriculture, Mulawarman University (Samarinda) to name but a few. The curricula are undergoing reforms by being extended to include social sciences relating to forest management.

Information: The Ministry of Forestry and Crop Estates runs a Documentation and Information Centre on forestry. Forest resources data, including maps and reports, is available on the internet as well as in the library. To enhance the accuracy of the data, the Ministry has planned new programs such as the mapping and assessing the potential of natural resources. Additionally, alternative information is provided by NGOs, like WALHI, WWF and Konphalindo.

Research and Technologies: The Forestry and Crop Estates Research and Development Unit manages several forestry research centres all over Indonesia. Bogor was also chosen as a research base for CIFOR (Centre for International Forestry Research) and ICRAF (International Centre for Research in Agroforestry). University based research centres on forestry have been established and some have collaborated with other national as well as international institutions. For example, CIDA had funded collaboration between Mulawarman University and University College of the Cariboo (British Columbia) to enhance research on social forestry in East Kalimantan. One important research topics is the development of more environmentally friendly logging practices and timber-processing technologies with reduced wastes. Forest commodity technologies are also being developed but are not sufficiently socialised to people who need them.

Financing: The state budget, reforestation funds (DR) and forest resources provisions (dana PSDH) are the main source of domestic funds. DR used not to have clear collection and management mechanism so its funds were often misused. Besides domestic sources, the financing for forest management also comes from international (multilateral and bilateral) institutions, such as the World Bank, ADB, CIDA, DFID-UK, USAID, GTZ, JICA, etc., Foreign funds, however, have not been effective or efficient. A lot of the cooperation with foreign institutions is often not in accord with the prioritised programs of the Ministry of Forestry and Crop Estates. Bappenas has the authority to approve any forest project proposals from abroad. However, Bappenas, international donor agencies and the Ministry all have different sets of criteria for priority programs.

Cooperation: The importance of the Indonesia forest has made the international community want to participate in its management. International institutions provide not only funding but also technical assistance for sustainable forest management. There is not yet a clear mechanism for cooperation between the government and NGOs which means evaluation and monitoring activities have not worked well. The Ministry is also considered to dominate the decision making process. To strengthen their role in forest management, many NGOs established networks, such as the Community Forest System Development Group (KPSHK), the Community Forest Communication Forum (FKKM) and the Participatory Mapping Cooperation Network (JKPP).

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CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

Decision-Making: The Ministry of Forestry and Crop Estates has been chosen as the focal point in the implementation of the Convention to Combat Desertification (CDD). The countries of Southeast Asia, who all have similar ecological characteristics, have agreed that to overcome land degradation and its related poverty problems, they need help from the international community within the framework of the Convention.

Programmes and Projects: As part of its commitment to CDD, Indonesia is soon to formulate a National Action Program to mitigate land degradation. Attempts to rehabilitate critical land involve soil and water conservation activities. From 1999 to 2003, the government has targeted 1.2 million ha inside forest and 2.6 million outside areas to be rehabilitated. However, many land rehabilitation programs have failed as droughts and floods still occurs in many places. One major cause of the failures is the lack of coordination among institutions involved in the program. A way to prevent land degradation to occur is by designating areas as being either protected or vulnerable. For example, the ones with very high slopes and located upstream.

Status: According to the 2000 statistical data owned by the Directorate General of Land Rehabilitation and Social Forestry, the extent of critical land in Indonesia amounted to 8.1 million ha inside forest area and 15.1 million ha outside forest area (Ministry of Forestry website). BPS had different data, stating that the extent of critical area was 2.4 million ha of which 0.26 million ha could not be rehabilitated (BPS, 1996). The main arid and semi-arid areas in Indonesia include East and West Nusa Tenggara and Central Sulawesi. Besides the natural factors like the dry climate and the soil's original characteristics, careless human activities have accelerated the rate of land degradation. Forest clearing is the major cause of erosion of the productive layer of soil. The extent of critical land expands 400,000 ha annually. From 1985 to 1987 the rate was even higher: 2.5 million ha (Kurnia, U. et al.).

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: The Meteorology and Geophysics Agency provides information on weather and forecasts future prolonged drought in certain areas while the Ministry of Forestry and Crop Estates provides data on the extend of critical land.

Research and Technologies: The Institute for Land Research in Bogor started doing research on soil and water conservation technologies in the 1970s when the Division of Soil and Water Conservation was established. The Research Centre for Soil and Agroclimate also actively conducts research. Pilot projects exist in many provinces and since many of them are on-farm, they involve farmers.

Financing: The major constraint for land rehabilitation is the lack of funding. Indeed, some soil and water conservation technologies are expensive. The State budget and the reforestation fund (DR) have allocated funds for land rehabilitation. It is hoped that international institutions will provide additional fund within the framework of CCD. To encourage farmers to expand their agricultural activities in arid areas, the government provides credit for agriculture and conservation in water catchment area (KUK-DAS). If farmers accept the credit, they have to integrate soil and water conservation techniques in their agricultural activities.

Cooperation: No information is available.

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CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

Decision-Making: No information available.

Programmes and Projects: In order to mitigate the negative impacts of volcano eruptions, the National Forum for Coordinating Natural Disaster Alleviation continuously monitors volcanic activities through several monitoring points. In 1997/1998, 64 volcanoes out of 79 were under direct monitoring from 70 volcano monitoring posts. Even monitoring satellites are used especially to monitor remote volcano such as Peut Sague (Aceh), Soputan (South Sulawesi) and Gamkonora (North Maluku). The mitigation effort is concentrated on volcanoes located in highly populated areas, such as Merapi, Semeru and the Kelud Mountains. Volcano mapping has also been conducted with a focus on geology, topography, risk zone, lava flow mapping and remote sensing. However, due to limited resources, the mapping activities have not achieved the targets yet. In addition, the Ministry of Mining and Energy has initiated mapping of disaster sensitive areas of 16 volcanoes/cauldrons. Being ecologically sensitive areas, some mountains have been designated as national parks to ensure their conservation. Those are Leuser (Aceh and North Sumatra), Gede Pangrango (West Java), Halimun (West Java), Rinjani (West Nusa Tenggara) and Palung (West Kalimantan) Mountains.

Status: There are 129 active volcanoes in Indonesia. 15 of them are categorised as critical volcanoes, meaning they are likely to explode. There are three to five volcanic eruptions annually.

Capacity-Building, Education, Training and Awareness-Raising: No information is available

Information: No information is available

Research and Technologies: No information is available

Financing: No information is available

Cooperation: No information is available

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CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: The Ministry of Agriculture is the coordinating body in agricultural development. At the national level, several regulations have been issued to promote sustainable agriculture, such as the Pesticide and Seed Control (under Law n° 12/1992), the prohibition on the Conversion of Wet Rice Land to Non-agricultural Purposes (Presidential Instruction n° 3/1990), and Restrictions on the Pesticides permitted for Rice Crops (Presidential Instruction No. 3 of 1986). The regulations, however, need further law enforcement measures.

Programmes and Projects: National Agenda 21 proposes a variety of activities to shift towards sustainable agricultural practices. Overall, it recommends the inclusion of both long-term planning and environmental concerns, including soil nutrition and water use, as criteria in all major policies and programmes activities. A variety of measures are proposed, including strict monitoring and control of pesticide use, legal restrictions on land conversion and agricultural extension programmes focused on issues such as soil fertility and uses of crop wastes. In terms of rural development, the ministry of agriculture has launched the P4K programme to increase the incomes of small-income farmers and fishermen. (See chapter 32: Strengthening the Role of Farmers).

Status: Agriculture is still by far the largest natural resource sector of the Indonesian economy and is also the way of life of a majority of its people. Issues that relate to rural development and agriculture have special importance for broader attempts to implement sustainable development. The agricultural sector (excluding forestry) contributed 15.75 % to the country's GDP in 2000. This excluded agriculture-based industry such as food manufacturing industry and restaurant business. The agricultural sector (including forestry) provided jobs for 45% of the population in 2000 (BPS, 2001a). The agriculture sector is transforming due to the increase in both technological intensity and international market pressures. It is expected to become more efficient, specialised and diversified and concurrently to employ considerably fewer small farmers. The main concern for land resource management is the conversion of agricultural to non-agricultural land. During the period from 1980 to 1995, the urban area increased by an estimated 367,500 ha, an average of 25,100 ha per year. Almost 60% of that development occurred in Java (Damayanti, 2002). During 1981-2000, as much as 246,700 ha of wet rice land nationally was converted into other type of land-use (www.deptan.go.id). The World Bank estimates that by 2010 roughly 13% of Java's 3.4 million ha of rice fields may be converted to non-agricultural land. In 1983, the average landholding was 0.98 ha per agricultural households with the average in Java being 0.58 ha and outside Java 1.88 ha. In 1993, these figures had declined to 0.83 ha nationally; 0.47 ha in Java and 1.27 ha elsewhere (Damayanti, 2002). Agricultural-employee households have the lowest income compared to other groups. Even agricultural households owning more than 1 ha land make less money annually than non-agricultural lower-level urban households (BPS, 2001a). This explains the high level of urbanisation and calls for more effective and serious efforts in rural development.

Capacity-Building, Education, Training and Awareness Raising: The Ministry of Agriculture acts as the coordinating body in agricultural development. One of the most successful programs to promote sustainable agriculture is the Integrated Pest Management (IPM) program. IPM was pioneered in Indonesia following the 1986 Presidential Instruction banning the use of 57 pesticides on rice and cutting off pesticide subsidies. Nearly 1 million farmers have been trained in IPM in Indonesia so far, and nearly every village in the major rice-growing areas has had at least one Farmers' Field School (FFS). Some 2700 full-time government IPM trainers operate in the country, along with over 12000 part-time farmer trainers. In the FFS program, each farmer is given 40 to 60 hours of training (www.fao.org).

Information: The Ministry of Agriculture, the Central Statistics Bureau and the Ministry of Forestry and Plantation have information available regarding the status of the agricultural sector. However, the information needs to be coordinated and integrated to produce useful information to promote sustainable agriculture. Indicators of sustainable agriculture for decision-making purposes have not yet been developed nationally.

Research and Technologies: There are many research agencies engaged with agricultural development, made up of governmental bodies, academic institution and NGOs. To name but a few, these are, The Agency for Agricultural Research Development (AARD) of the Ministry of Agriculture, Bogor Agricultural University (IPB) and Centre for Agricultural Policy Studies are to name a few. The major challenge is how to transfer and implement research findings to the targets.

Financing: The agriculture sector (including forestry and irrigation) was allocated 9.8% of the national expenditure in the fiscal year 1999/2000, down from 10.5% in the previous year. In REPELITA I (1969-2004) the budget was as much as 22.6%. Domestic investments in agricultural sector (including fishery) during 1967-2000 amounted to 81,412 billion rupiah with 7410,5 billion rupiah of foreign investments (BPS, 2001a). There is no information available on the financing for sustainable agriculture.

Cooperation: International cooperation under the AARD can be categorised as technical assistance, project aid and collaborative research. During 1992-2002 AARD has carried out more than 30 projects on sustainable agriculture in collaboration with CGIAR, the United Nations (Asia Soil Conservation Network), Australia, France, Thailand, Japan, the EU and Morocco.

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CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: Indonesia has issued two important basic laws in relation to biodiversity conservation, Law no. 5/1990 on conservation of living resources and their ecosystem and Law no.5/1994 on the ratification of the UN Biodiversity Convention. Conservation areas are managed by the Directorate General of Forest Protection and Nature Conservation (PHKA) under the Ministry of Forestry and Crop Estates. Meanwhile Bappenas is an important partner in multi-sector planning. The State Ministry for Environment has the role of coordinating all government's activities that have an impact on the environment. In the early 1990s, the State Ministry for Environment developed a National Biodiversity Strategy. While in 1993, the National Development Planning Agency (Bappenas) developed the Biodiversity Action Plan through a broad-based consultation and participation. The international trade traffic in endangered species are regulated by CITES. However, each year many endangered species leave Indonesia unnoticed by PHKA due to their limited resources. On 10 July 1991, CITES European Committee banned the imports of wild life and its products from Indonesia to try and stop the phenomenon.

Programmes and Projects: Indonesia is conserving genetic resources by designating conservation areas in-situ as well as ex-situ in the form of arboretum, botanical gardens, etc. Until 2000, 356 terrestrial conservation areas have been designated with a total area of 17.8 million ha (www.mofrinet.cbn.net.id). They are in the form of nature reserves (166 locations; 2,464,722.34 ha), game reserves (47 locations; 3,550,085.12 ha), recreation parks (79 locations; 293,681.73 ha), hunting parks (15 locations; 247,392.70 ha), national parks (34 locations; 11,050,743.23 ha) and grand forest parks (15 locations; 247,876.50). Not all of the areas are still virgin habitats yet those areas are important as genetic warehouses. In addition, 30 marine conservation areas have been established constituting 4.6 million ha (see also Chapter 17). However, many conservation areas have very limited effective management system or not at all.

In mid 2001, Kehati (Indonesia Biodiversity Foundation) initiated a dialog, involving the government, NGOs and the community on biodiversity management within the framework of Indonesia Biodiversity Forum (www.kehati.or.id). This forum resulted in a joint strategic agenda for biodiversity with three main programs, namely: strategic alliance in education and empowerment; policies and laws; and data and information.

Status: Indonesia is biodiversity rich, in term of ecosystem, species and genetic diversity. Specific ecosystems in Indonesia range from icy land in Irian Jaya to lowland forest, from deep lake to shallow swamp, and from coral reefs to sea grass. Indonesia owns approximately 17% of all world species (www.menlh.go.id). Although the exact numbers are difficult to estimate, Indonesia is said to give shelter to 11% of known flowering species, 12 % of mammals, 15% amphibians and reptiles, 17% of birds, and at least 37% of world's fish species. Many Indonesian islands used to be isolated from one to another for a very long period of time causing the evolution of local species into endemic species. Sulawesi, Irian and Mentawai Islands have very high levels of endemic species. The importance of genetic diversity has only recently been acknowledged. Genetic variation is the main technique to create new prime seeds. Indonesia is the centre of genetic diversity for banana (*Musa* spp), nutmeg (*Myristica fragrans*), cloves (*Syzygium aromaticum*), durian (*Durio* spp) and rambutan (*Nephelium* spp). Indonesian, especially traditional, communities possess bio-knowledge concerning the use and management of biodiversity. More than 6000 plant and animals species local communities are utilised daily by Indonesian. Indonesia is facing a tremendous biodiversity loss, already 20 to 70 percent of the original habitat types is lost. Species extinction is estimated at one a day while genetic erosion is unrecorded. Indonesia has the longest list in the world of endangered species; they are 126 birds, 63 mammals and 21 reptiles. Some of the causes for this biodiversity loss are inappropriate economic policies and strategies, weak law enforcement, over-exploitation of natural resources, introduction of exotic species and inappropriate agricultural policies.

Capacity-Building, Education, Training and Awareness-Raising: Biodiversity as a subject has been integrated into school curricula, especially in natural sciences or biology.

Information: Bappenas and the State Ministry for Environment have set up a Biodiversity Management Unit with the task of performing a literature review. The Indonesian Institute of Sciences (LIPI) established the National Database on Biodiversity. The Indonesia Biodiversity Forum plans to set up Biodiversity Clearing House Mechanism (MBK Kehati) involving PHKA, the State Ministry of Environment, Bapedal, LIPI and NGOs.

Research and Technologies: LIPI, the research and development unit of the Ministry of Forestry, as well as the Ministry of Agriculture all have research programs focusing on biodiversity. Biodiversity is also on the research agenda of CIFOR as well as many university based research centres. Numerous researches have been carried out, including: Management of natural conservation areas (Development of criteria and indicators of biodiversity in production forests, Assessment of biophysical characteristics of conservation areas, Species identification of tropical rainforest trees in many regions of Indonesia); Conservation and rehabilitation of wildlife habitat(Bekantan (*Nasalis lavatus*) habitat in South Kalimantan, Banteng (*Bos sundaicus*) habitat in East Java); In-situ conservation of wild life(Population dynamics of rusa (*Cervus timorensis*) in West Nusa Tenggara); Ex-situ conservation of endangered wildlife (Breeding of rusa (*Cervus timorensis*), Breeding of bayam bird (*Eclerus oratorum cornelia*)); and Ex-situ conservation of potentially and/or rare tree species (Regeneration of ramin (*Gonosylus bancanus*), Regeneration of *Shorea sp*, Collection of bamboo species). The result of some of that research have helped decision makers to make recommendations on biological conservation.

Financing: For the budget year 1990-1991, PHPA spent approximately US\$5.6 million on the management of 16.02 million ha conservation areas. Additionally, Indonesia has been given donation for conservation area management from various international donor institutions. In 1991, it was recorded that some new internationally funded projects amounted to US\$5.275 million/year (www.menlh.go.id).

Cooperation: The World Bank has helped funded the Biodiversity Collections Project. The project would strengthen the institutional capacity of the Research and Development Centre for Biology in Indonesia.

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CHAPTER 16 AND 34: ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING

ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY

Decision-Making: The State Ministry of Research And Technology (SMRT) coordinates the management of biotechnology issues in Indonesia in cooperation with the Ministry of Agriculture and State Ministry of Environment. As the follow up on the Convention on Biodiversity, Indonesia has issued Law n° 5/1994, which stipulates the need for a protocol to regulate the issue of Living Modified Organism (LMO). MOU on Biosafety and the Safety of Genetically Modified Agricultural Products was released in September 1999 by Ministry of Agriculture, Ministry of Forestry, Ministry of Health and State Ministry of Food and Horticulture; followed by the ratification of Cartagena Protocol in May 2000.

Programmes and Projects: As mentioned in the National Agenda 21, the priorities of biotechnology development are given in 5 programme areas: agriculture, medicine, environment, development of biotechnology infrastructure, and biosafety procedures. SMRT has incorporated potential use of biotechnology in Strategic Policies of National Science and Technology Development (Jakstra Ipteknas) and National Primary Priorities on Research and Technology (PUNAS RISTEK). Further advancement of biotechnology is carried out through a variety of research programmes such as Integrated Advance Research (RUT), Collaborative Advance Research (RUK), and National Strategic Advance Research (RUSNAS).

Status: Biotechnology is a high priority area in the Indonesian science and technology development policy that accounts for 41,9% of the total research in 1995 RUT programme (www.ristek.go.id). In 2000, the State Ministry for Environment formed a “Team of Biosafety Protocol” involving government agencies and NGOs responsible for formulating measures and giving recommendations pertaining to biosafety issues. Currently, the Ministry of Agriculture is conducting examinations on potential application of transgenic seed of agricultural plants such as corn, cotton and soybeans. The Ministerial Decree number 107 of 2001 regarding the Limited Release of Transgenic Cotton Bt DP 5690B has been released ([Pikiran Rakyat Online](http://PikiranRakyatOnline), February 28, 2001). Protest emerged from the State Ministry for Environment and there is an on-going debate on the potential adverse impacts of transgenic cotton release to the environment and farmers. At present, a draft law on Biotechnology Products Resulted from Genetic Engineering is also being prepared (www.bapedal.go.id).

Capacity-Building, Education, Training and Awareness-Raising: A proposal of Increased Functional Financial Assistance for researchers, engineers, lecturers and technicians has been submitted by SMRT to the Minister of Finance in 2001.

Information: Several seminars regarding biosafety have been held by government institutions in cooperation with NGOs to inform the public of the risks of biotechnology application. SMRT is working together with the press office LKBN Antara in disseminating information and promoting the development and progress of science and technology to communities (www.ristek.go.id).

Research and Technologies: Government institutes engaged in the biotechnology research, for example, are the Research and Development Centre for Biotechnology (RDCB), (LIPI), the Agency for the Assessment and Application of Technology (BPPT), the Central Research Institute for Food Crops (CRIFD) and the Ministry of Agriculture. Other institutions involved are the Centre for Universities (PAU), the Indonesian Research Institute for Sugar and the Indonesian Central Research Institute for Palm Oil.

Financing: Data from National Planning Agency show that research in agricultural biotechnology has been allocated Rp 20 billion for 4 years under RUT programme and Rp 2.5 billion per year for University Research for

Graduate Program (URGE). However, expenditure of other institutes in biotechnology is not available (National Agenda 21).

Cooperation: According to National Agenda 21, international collaboration is carried out for infrastructure, project funding and joint research involving IARC (International Agriculture Research Centre), USAID, CGIAR (Consultative Group on International Agriculture Research) and BIFAD (Board on International Food and Agriculture Development).

TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING

Decision-Making: Although the State Ministry for Research and Technology (SMRT) is the administering body on technological issues, transfer of environmentally sound technology involves other government institutions like the State Ministry of Environment, the Ministry of Agriculture (MOA), the Ministry of Trade and Industry, and the Ministry of Energy and Mineral Resources.

Programmes and Projects: Indonesia ratified the UN-Framework on Climate Change through Law no. 6/1994 and Ministerial Decree no. 110 and 111/1998 released jointly by the Ministry of Trade and Industry and the State Ministry of Environment. This UN Framework emphasises the importance of the transfer of environmentally sound technologies in reducing green house gasses consumption.

Status: The amount of research in technologies for environmental protection under the RUT programme has increased noticeably from 0 % in 1995/1996 to 19.2% in 1999/2000 (Www.ristek.go.id). The Agency for the Assessment and Application of Technology (BPPT) has also developed alternative energy resources such as gasohol, corn and soybean as substitute for kerosene (Berita IPTEK, August 14, 2001). However, the research on the transfer of technology conducted by SMRT is focused on the agricultural sector.

Capacity-Building, Education, Training and Awareness-Raising: In 2000, Bapedal established an Education and Training Centre (PUSDIKLAT) to provide technical assistance and training in environmental management, including environmentally sound technologies (www.bapedal.go.id).

Information: The collaboration between SMRT, the State Ministry for Environment and NGOs has produced ERSI (Environmental Resource Sharing Information) with information on environmental science and technology, which has been disseminated through Warintek (www.ristek.go.id).

Research and Technologies: Each government body mentioned above conducts research in environmentally sound technologies, and so does the Institute for Research and Development in the Industry of Leather, Plastic, Rubber and Plastic and the Ministry of Regional Settlement and Infrastructure.

Financing: In 1999/2000, the Science and Technology budget amounted to 1.09% of the national expenditure, down from 2.37% in 1996/1997. Indonesia received US\$ 33.8 million from multilateral funds for technology transfer to reduce the use of ODS (Bali Post Online, May 13, 2001). Nevertheless, specific information concerning total expense in transfer of environmentally sound technology is not available.

Cooperation: the Government of Indonesia has worked together with the government of Japan and Germany in technology transfer. There is also collaboration with international institutions like UNDP, UNIDA, UNEP and the World Bank.

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CHAPTER 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS AND COASTAL AREAS AND THE PROTECTION RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

Decision-Making: Before 2000, there was no single institution with the sole responsibility and authority to coordinate the management of coastal and marine resources in Indonesia. Their management suffered from institutional ambiguities and overlaps. There were five dominant sectors that had interests in the coastal and marine regions, namely fishery, mining and energy, transportation, industry and tourism. Therefore, in 2000, the government set up the Ministry of Sea Exploration and Fishery, which later changed its name to the Ministry of Marine and Fishery. In 1982, The United Nations Convention on the Law of the Sea was ratified through Law n° 17/1985 and became legitimate international law on 16 November 1994. As a follow up, the government enacted Law no. 6/1996 on Indonesian waters, Law no. 9 on fisheries and Law no. 5 on ZEEI. In relation to marine pollution, Indonesia has ratified the International Convention on the Protection of Pollution from Ships by issuing the Presidential Decree no. 46/1986. These conventions and regulations still needs to be socialised especially at local level. However, community based coastal and marine resource management systems such as *sasi* in Maluku, *sake-sake* in North Sulawesi and *lebak-lebung* in South Sumatra have been inadequately or not at all accommodated by the government regulations on coastal and marine resource management. In order to achieve sustainable coastal zone management, the government is formulating a bill on coastal zone management. The process accommodates various public interests by developing national as well as local public consultation forums.

Programmes and Projects: The Ministry of Marine and Fishery is focusing its activities on sea and coastal zone management in four main programs, i.e. sustainable utilisation, conservation, promoting public participation and spatial planning. In addition, the Directorate for Controlling Coastal and Marine Ecosystem Degradation under Bapedal has launched an Integrated Sustainable Coastal and Marine programme with the objective of conserve the ecological functions of the coastal environment to support sustainable development. The project is centred on four types of environment: tourist destination beaches, harbours, mangrove forest and coral reefs. Various projects have been carried out by various institutions with a budget from APBN (State Budget) and foreign aid. Examples of such projects are: the Marine Resources Evaluation and Planning (MREP), the Marine Resources Evaluation Management and Planning (MAREMAP), the Coral Reef Rehabilitation and Management, the Marine and Coastal Resources Management Project, and the Development Of Sustainable Mangrove Management Project.

Status: Indonesia is the world's largest archipelago, comprising more than 17,000 islands and 81,000 km of coastline. The sea area belonging to Indonesia is 3.1 million km² (compare to 1.9 million km² of land) with an Exclusive Economic Zone (ZEE) of 2.7 million km². The country's coastal zone has numerous estuaries, mangroves, seagrass, coral reefs, and small island ecosystems. In 2000, the sea fish production increased by 4.4% compared the previous year (Republik Indonesia, 2001). Marine tourism could also be developed around Indonesia's coastal area. Until 2000, the Government of Indonesia has designated a total of 4,636,337.45 ha for marine conservation in the form of game preserves (7 locations; 208,780.45 ha), wildlife preserves (3 locations; 65,220.00 ha), recreation parks (14 locations; 679,382.00 ha) and national parks (6 locations; 3,682,955.00 ha) (Ministry of Forestry website). Marine degradation has several causes, like overfishing, physical habitat degradation and spatial use conflict. The high intensity of development and the over-exploitation of resources have caused pollution and environmental degradation in some regions, especially the northern coast of Java, the Straits of Maluku, South Sulawesi, and Bali. Nevertheless, there are many coastal and marine regions which have not suffered the same fate and where the environmental quality is still relatively good. These are the western coast of Sumatra, the southern coast of Java, the Indian Ocean, the Natuna Sea, the Sulawesi Sea up to Tomini Bay, the Banda Sea, the ZEE and the Pacific Ocean. However, the lack of monitoring, due to insufficient funding and equipment, has cause many illegal foreign fishing ships to operate in the ZEEI. Moreover, those foreign fishermen often use unsustainable fishing practices, such as using chemicals or bombs.

Capacity-Building, Education, Training and Awareness-Raising: The Coral Reef Rehabilitation and Management Project set up Coral Reef Information and Training Centres (CRITCs) in Jakarta. The Ministry of

Marine and Fisheries manages marine-training centres for instructor/trainers who have the responsibility to the awareness of the fishermen. There are also marine high schools and a Fishery Academy.

Information: The Ministry of Marine and Fishery is developing a homepage and an Integrated Marine and Fishery Development Information System (SIKPT). The Ministry also disseminates free map of fish catchment areas to fishermen.

Research and Technologies: The government is planning to use high technology like satellites, to monitor the Indonesian marine area especially in distant and remote areas.

Financing: In the 2001 State Budget, the Ministry of Marine and Fishery was allocated Rp.112,700 million with an additional Rp.685,084 million from foreign aid. However, conservation programmes were only granted Rp.2,000 million, compared to the Rp.85,900 million of fund for utilisation (RAPBN, 2001).

Cooperation: With three other coastal countries, namely Singapore, Malaysia and the Philippines, Indonesia held joint exercises in oil spill emergency response. In collaboration with the Philippines and Australia, Indonesia has conducted joint monitoring and research in the ZEEI area in the Sulawesi Sea.

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CHAPTER 18: PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES

Decision-Making: The State Ministry for Environment is the principal government body in charge with backing the Ministry of Forestry and the Ministry of Settlement and Regional Infrastructure. A number of laws, regulations and policies concerning effluent standards for types of activities, water pollution control and water resource management have been released. Their enforcement, however, remains challenging issues to be dealt with the Ramsar Convention on Wetlands. This convention came into force through the government regulation n° 27/1991 on Wetlands. Based on integrated approaches in watershed protection, a Ministerial Decree n° 20/2001 was on the rehabilitation of forest and land was issued by the Ministry of Forestry. This was followed by the recent release of government regulation n° 82/2001 on Water Quality Management and Water Pollution Control.

Programmes and Projects: Attempts to achieve better water resources management are concentrated on the provision of adequate and safe drinking water. Priority is also given to enhancing the efficiency of water use, improving the quality of water resources, balancing water resource availability and needs across regions, and developing an integrated water resource management (National Agenda 21). Among the major programme of water resource management are the Clean River Programmes (PROKASIH) launched in 1989 and the Programme for Pollution Control, Evaluation and Rating of PROKASIH (PROPER-PROKASIH) in 1995.

Status: Fresh water consumption is dominated by the agricultural sector, which uses 98% of Indonesia's water resources (National Agenda 21). In contrast, the clean water supplied by the Regional Drinking Water Company (PDAM) provides water to merely 20% of 200 million Indonesians is mostly used by the domestic sector (90,2%) (Kompas, July 8, 2000; BPS). It is projected that by the year 2015 water use for irrigation, domestic need, and industry will grow by as much as 6.67%, 6.7% and 12.5% respectively (National Agenda 21). This rapid growth of water consumption coupled with the decreasing quantity and quality of water resources has already created water scarcity problems. There are even cases of water use conflicts in some densely populated areas with intense development activities. Indeed there is a large disparity in the ratio of water needs to available water resources between regions. The highest ratio is in Bali (805,63%) and the lowest one in West Papua with 0.08% (National Agenda 21).

PROKASIH aims to improve water quality by seeking pollution reduction from industries. This has been carried out in 37 watersheds in 17 provinces in 1999, up from originally 15 watersheds in 8 provinces (Bapedal, 2000) and has involved in 1275 plants (World Bank). In the next phase of PROKASIH 2005, the program will use a more integrated approach encompassing all regions of watersheds from upstream to downstream. It will not only try to control pollution but also increase the measures to conserve water resources and rehabilitate the physical conditions of rivers. The implementation of the programme will give more authority to local government where the watershed is located. PROPER PROKASIH is aimed at promoting the industry's compliance to existing regulation and rewarding those whose performance exceeds regulatory standards through classification into five colour schemes. By July 1997, of 270 participants, 55.2% were fallen into middle categories (blue and green) but none had reached the top category (gold) (www.bapedal.go.id).

Capacity-Building, Education, Training and Awareness-Raising: The poor performance of PDAMs with a 40% coverage in urban areas and 92% of rural communities unserved is due to debt problems, lack of investment and management inefficiency (Tempo Interaktif). To tackle those problems, Indonesia's Water Enterprises Association (PERPAMSI) has undertaken programmes to increase its efficiency through a privatisation and rescue programme in collaboration with international institutions. The government has also conducted campaigns in water conservation to increase public awareness as well as to encourage a reduction in water use.

Information: The State Ministry for Environment and Bapedal disseminate information on water resources through websites, seminars, workshops and media campaigns.

Research and Technologies: Research on water resources have been conducted by research centres in universities, the Agency for Assessment and Application of Technology (BPPT), the Agency for Irrigation Research and Development (Puslitbang Pengairan), the Ministry of Settlement and Regional Infrastructures, PERPAMSI, etc.

Financing: There has been no specific data regarding budget allocation in water resource management. However, irrigation was allocated 4.2% of the total national expenditure in the fiscal year 1999/2000 down from 6.7% in 1996/1997. The technical assistance for PDAM's rescue programme from the ASEM Trust Funds amounted to a total of US\$ 396,000, while the government expects to spend between \$20-50 million for the implementation programme (World Bank).

Cooperation: Collaborations have been developed with other government institutions such as the Ministry of Energy and Mineral Resources, the Ministry of Foreign Affairs; public consultants; LP3ES; and international institutions like US-AEP, the World Bank, the Asian Development Bank, the Consultative Group on Indonesia, GTZ, OECF (Japan) and MD (Canada).

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CHAPTER 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN TOXIC AND DANGEROUS PRODUCTS

Decision-Making: The Government Regulation (PP) no. 74/2001 on hazardous substance management was issued in November 2001. Under this regulation, the State Ministry is the national focal point for hazardous substance management. Prior to that, the co-ordinating institution for hazardous substance management varied. The Ministry of Industry and Trade dealt with the import and export of hazardous substances. The Ministry of Agriculture regulated pesticides. The Ministry of Health managed hazardous substance for hospital purposes while the Ministry of Defence and Security controlled explosive materials. PP no. 74/2001 regulates the monitoring and reporting, storage, transportation, packaging, symbol and labelling, emergency response, as well as the efforts to raise public awareness. It provides registration and notification procedure for producers and importers of hazardous substances. Material Safety Data Sheets (MSDS) had to be attached to hazardous substance all the time. A hazardous Substance Committee (Komisi B3) will be established as an independent body to give advice and recommendation to the Government on hazardous substance management. Indonesia has signed the Rotterdam Convention on PIC as well as the Stockholm Convention on POPs (persistent organic pollutants) and actively attended workshops regarding those two conventions.

Programmes and Projects: The path to environmentally sound management of hazardous substances is still long and winding. The Hazardous Substance Section of Bapedal is only two years old and has focused on formulating the regulation for hazardous substance management. However, efforts to manage hazardous substances have been attempted, albeit sporadically by various institutions, government or private.

Status: The Ministry of Trade and Industry is the authorised body to issue permits to produce and import hazardous substance. Bapedal only gives recommendation. The Ministry should, therefore, have the obligation to monitor the distribution of hazardous substance. However, the importance to strictly monitor and control the distribution of hazardous substances has only recently been acknowledged. At the moment, the amount of hazardous substances that exists all over the country is much higher than the amount registered. This shows the existence of a black market in hazardous substances. Even banned hazardous substances can be found on the black market.

Capacity-Building, Education, Training and Awareness-Raising: Together with the UNEP, Bapedal has held several workshops on the management of hazardous substances for business communities and local government officers in several cities across Indonesia.

Information: A computer network for a hazardous substance database has been set up. Identification study and inventory of hazardous substance has started in the Greater Jakarta regions (Jabotabek).

Research and Technologies: The World Bank has supported research on PCBs that includes identification and distribution as well as the health risks of PCBs.

Financing: The financing for the implementation of PP no. 74/ 2001 will be provided from the State Budget and other sources such as loans and grants from bilateral or multilateral institutions. For example, GEF has supported the inventory of hazardous substances in various places.

Cooperation: International cooperation has been initiated in relation to the management of international traffic of hazardous substances.

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CHAPTER 20 TO 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID AND RADIOACTIVE WASTES

Decision-Making: Government Regulation (PP) no. 18/1999 revised by Government Regulation no. 85 of the same year acts as the basis for the management of hazardous wastes. This includes reduction, storage, collection, transportation, utilisation (recovery, reuse, recycle) and disposal of hazardous wastes. Every generator of hazardous waste is responsible of treating its waste using the best available technology. If the technology is not available domestically, the waste may be exported to countries with better technology. Bapedal is the authorised agency to issue permit for hazardous waste management, therefore Bapedal has the responsibility to monitor any facility that manages hazardous wastes. PP no. 18/1999 also regulates trans-boundary movement of hazardous waste including the case of illegally imported non-hazardous waste that is contaminated by hazardous waste. According to the regulation, importing hazardous waste is prohibited.

Programmes and Projects: Many industries have applied to Bapedal for a permit to manage hazardous waste in order to comply with ISO 14000 standard. However, some industries face difficulties in treating their wastes. Bapedal, therefore, introduced the "Waste Exchange Programme" acknowledging that waste from one industry may be used by another industry. In the Hazardous Waste Minimisation Programme, Bapedal carried out a pilot project to develop hazardous waste treatment technologies. Concerning international traffic in hazardous waste, a pilot project for the Monitoring and Control of Trans-boundary Movements of Hazardous Waste in the Asian Region was launched that involving Australia, China, Indonesia, Japan, Malaysia, The Netherlands, Singapore, Ceylon and Thailand.

Status: Bapedal has issued 292 permits to manage hazardous waste and 67 recommendations. One of the approved facilities to treat hazardous waste is the Centre of Industrial Waste Treatment (PPLI). PPLI is privately-owned and treats 26,000 tonnes of waste annually.

Capacity-Building, Education, Training and Awareness-Raising: In collaboration with the Chulabhorn Research Institute (Thailand) and the UNDP, Bapedal held training for the development of toxicology technology. Indonesia has already integrated hazardous waste treatment facilities and is therefore capable of hosting such a training session.

Information: Very comprehensive data and information on hazardous wastes is available for large-scale industries only. Most of the medium and small scale industries have not followed the rules of hazardous waste management because of limited knowledge and resources. Therefore they do not provide information on the hazardous wastes they generate. Moreover, Bapedal has limited funds to monitor all the generators of hazardous waste. Information exchange on hazardous waste treatment technology and its monitoring system has been initiated.

Research and Technologies: Studies to prepare the formulation of hospital waste management policy have been initiated.

Financing: Hazardous waste management require a lot of funds, for example for the research on sophisticated hazardous waste treatment facilities as well as for the monitoring of industries that generate hazardous wastes. Besides relying on State Budget, Bapedal is also supported by international donor agencies.

Cooperation: To perform its task in hazardous waste management as well as to prevent international traffic in hazardous waste, Bapedal has to coordinate with other technical agencies such as the Ministry of Transportation, the Ministry of Mining, the Ministry of Trade and Industry, Custom offices and the police.

ENVIRONMENTALLY SOUND MANAGEMENT OF SOLID WASTES AND SEWAGE-RELATED ISSUES

Decision-Making: Solid wastes include all domestic refuse and non-hazardous wastes in solid form. According to government regulation no. 18/1999 revised by governmental regulation no. 85/1999 on the management of hazardous waste, the wastes not classified as hazardous need to also be managed properly. The formulation of regulation specifically relating to solid waste is still under preparation. However, technical guidelines for solid waste treatment with incinerator, landfill, or solid waste utilisation, as the basic materials for the regulation, are available from Bapedal. A comprehensive regulation on solid waste management has not yet been developed. Therefore, efforts to manage those wastes are carried out sporadically and without coordination. The State Ministry for the Environment has not had the authority to implement the guidelines of solid waste management yet. Other institutions involved in solid waste management are the Ministry of Kimpraswil and local governments.

Programmes and Projects: "Adipura" was one of the central government's programmes that had a positive impact on cities all over Indonesia. Adipura was an award given to cities that have successfully managed their own solid wastes. The programme brought about a sense of competitiveness among cities. However, the programme had been postponed and a new program entitled "Clean City" has been prepared to replace it. In the new programme, other environmental criteria than solid waste management will be included and the city's inhabitants will have a chance to give their judgements. The trial for this programme started in 2002.

Status: Solid wastes have become a major problem especially in big cities such as Jakarta. According to a study by BPPT, Jakarta generates 7 million tonnes of solid wastes annually, or 20,000 tonnes daily. Jakarta has currently adopted a solid waste management programme that involves collecting, transporting and disposal. Solid wastes from Jakarta are disposed conventionally in an open dumping area located approximately 40 km from the city centre without being treated.

Capacity-Building, Education, Training and Awareness-Raising: Bapedal initiated partnership with industries to give advice and consultation on solid waste management. Bapedal has the task to socialise its policy and programs to the general public while promoting sustainable solid waste management by adopting the principle of reduce, reuse and recycle.

Indonesia has jointly held training to monitor international traffic of solid waste with other countries in the Asia Pacific region.

Information: Bapedal has started the inventory of solid waste generators, including data on the amount and characteristics of the wastes. Moreover, Bapedal also keeps data on the facilities that further use solid wastes for reuse and recovery as well as facilities to treat solid waste. Being the authorised institution to issue permit for solid waste management, Bapedal automatically keeps data on them.

Research and Technologies: To give inputs to the formulation of regulations, Bapedal works together with various research centres to carry out research on solid waste management. With the Bandung Institute of Technology (ITB), a comprehensive study on solid waste management in general has been completed. Research on the reuse and recycle of solid wastes as well as on waste identification were conducted with the Bogor Institute of Agriculture (IPB). Furthermore, Indonesia has been exchanging information on the latest solid waste utilisation and treatment technologies with other countries. Additionally, Bapedal, collaborated with the Ministry of Kimpraswil and WCMEP and plans to carry out a research on composting that involve 60 pilot projects all over Indonesia. BPPT has researched solid waste management and its treatment technologies for about 20 years and it has come up with an integrated solid waste management system. The approach combines various solid waste utilisation, treatment and disposal technologies while keeping in mind that wastes can also be useful resources. Some technologies under consideration are composting (for organic waste), plastic crusher, recycling (for paper) and incinerator. The program also considers other non-technical aspects such as how to promote active participation from public, co-operatives, and private institution.

Financing: Bapedal and BPPT receive financing from the State Budget and are also supported by international institutions, such as GTZ, JICA, the World Bank, UNESCO, etc.

Cooperation: Indonesia has enhanced its cooperation with other members of the Basel Convention to monitor the international traffic of solid waste.

SAFE AND ENVIRONMENTALLY SOUND MANAGEMENT OF RADIOACTIVE WASTES

Decision-Making: Law no. 10/1997 on nuclear power became the basic policy in the management of radioactive waste. Wastes produced by radiation sources should be utilised and managed properly to reduce the risk to human health and environment. The management of radioactive waste is adopting the Radioactive Waste Safety Standards (RADWASS) of the International Atomic Energy Association (IAEA). Government Regulation 63/2000 further regulates radioactive waste in more details. It requires frequent monitoring and assessment of the safety of radiation workers and the environment in the area of every Nuclear Technology Research Centre in Indonesia. The Nuclear Safety Technology Development Centre and the National Nuclear Power Agency (P2TKN - BATAN) have the task to coordinate the culture of safety development in Indonesia, by referring to IAEA Safety Series Document No. 75/1991. At the regional level, BATAN is a member of the Forum for Nuclear Cooperation in Asia (FNCA) which holds annual meeting on the development of nuclear safety culture.

Programmes and Projects: BATAN has planned to develop sustainable waste disposals to prepare for future development of nuclear power. In 1994, regarding low to medium level of radioactive waste, BATAN suggested a project to construct shallow land burial/near surface disposal as an experiment facility. However, due to insufficient funding, the construction has been postponed until to now while the project activity is limited only to carrying out studies.

Status: In Indonesia, the utilisation of radioactive substances is limited to research purposes only. In the 1990s, Indonesia planned to build a nuclear power station in Jepara to anticipate future energy crisis. BATAN, in corporation with NEWJEC carried out a suitability study on the area. However, the plan was heavily opposed by the community as well as NGOs, forcing the government to postpone it.

Capacity-Building, Education, Training and Awareness-Raising: To anticipate development in the management of radioactive wastes for present or future needs (nuclear power station), BATAN has established collaboration with IAEA, France, Canada, India, Japan, etc. in the form of training, scientist visits, seminars and technical assistance from international experts. Various seminars and training have been held by BATAN supported by the Government of France (1984-1986) and NEWJEC (1990-1999) to educate the public about nuclear power.

Information: Being the only national agency dealing with radioactive substances, BATAN owns all the data and information concerning the use of nuclear power. In 2001, it established a unit on radioecology and marine environment to anticipate marine safety issues. However, the data and information collection on those two topics was conducted in 1999 for the preparation of the future site of a nuclear power station in Muria Cape, Jepara.

Research and Technologies: There are four nuclear technology research centres in Indonesia, in Serpong, Pasar Jum'at (Jakarta), Bandung and Yogyakarta.

Financing: No information is available.

Cooperation: BATAN has established collaboration with IAEA, France, Canada, India, Japan, etc.

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CHAPTER 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

Women: Decision-Making: Indonesia's national legislation states that both women and men have an essential role to play in the development of sustainable and ecologically sound consumption and production patterns, as well as in natural resource management. Presidential Instruction No. 9/2000 instructs all ministries to implement gender mainstreaming in their development policies and plans. Despite these legal commitments, bias against women still exists and needs to be overcome. At the legislative level, the People Representative Assembly (DPR) has begun to actively use its initiative right in the formulation of laws. DPR has a legislative body and a Women's Caucus. These bodies have been given the opportunity to propose new bills (RUU). For example, here is the bill on domestic violence and the bill on witness protection including family. At the Supreme Court (MA) level, gender issues have attracted wide attention through a Supreme Court Regulation number 1/2000 which states that a rapist should get a just punishment and appropriate fairness in society.

In July 1998 the National Commission on Violence against Women was set up to promote protection of human rights. The Commission was instituted in response to heavy protests from woman activists and organizations against the government's passive attitude towards sexual violence during the May 1998 riots as well as human rights violation during the New Order. The Commission was established based on the Presidential Decree number 181/1998 that refers to the Convention on the Elimination of All Forms of Discrimination Against Women/CEDAW as well as the Declaration on the Elimination of Violence Against Women. However, the role of the Commission is not yet optimal in pushing policy at legislative and government levels. Indonesia signed CEDAW on July 29, 1980 and ratified it in September 1984. The government has planned to ratify optional protocols of CEDAW and support the bill on Domestic Anti-violence. The Ministry of Women Empowerment and the Department of Worker and Transmigration has begun to pay thorough attention towards woman trafficking issues and women workers. Programs and Projects: The Indonesian government stated its commitment to progress and protect women rights in the 1998 – 2003 National Action Plan for human rights. The plan included a legislative agenda for National Laws on articles within CEDAW. Some programs conducted by the Ministry of Women Empowerment include family planning programme, youth reproduction health program, women empowerment policy program, gender mainstreaming institutional program, etc. Some programs funded by USAID support the involvement of women in the development of micro, small and medium scale enterprise throughout Indonesia. Others address the problem of Indonesian women migrant workers, or promote leadership programs for women in unions as well as promoting women's access to education and the enforcement of legislation against discrimination.

ADB gave funds amounting to US\$300 million for the Health and Nutrition Sector Development Programme that focused on ensuring continued availability of basic health, nutrition and family planning services to those most at risk; pregnant women, new mothers, infants and young children. One of the good practices in gender mainstreaming and as an implementation of the Beijing platform for action is the Cendrawasih Coastal Area Development Project funded by UNDP. The executive agencies of the project are the Directorate General BANGDA and the Ministry of Home Affairs with FAO as the cooperating agency. The village programme involving women received very strong support from district and village level authorities. The Gender Sensitivity Training Workshops was attended by a total of 54 persons, coming from various levels of local government, aid agencies, NGOs, Cooperative Management Units and groups connected to government. The women participants undertook sustainable productive activities, with the involvement of local community groups, leading to the improvement of their living standards. As a result 469 saving accounts were created in the project villages. Out of these accounts, 48% were held by women. Status: Female representation in government consists of about 9% in DPR and less than 5% in Local Representative (DPRD). There is also one president, two ministers and six regents. About 4.3% women are at first echelon. Nationally there is a low female participation in public sector and education (particularly higher education). Indonesian's Gender Development Index (GDI) rank 57th in 1997, but lowered to 102nd rank in 2001. Capacity-Building, Education, Training and Awareness-Raising: The United Nations Development Fund for Women (UNIFEM) with the National Planning Board (BAPPENAS) and the University of Indonesia has held training, seminars and workshops on the role of women in development; gender

concepts, theories and strategies; gender research management; the development of research proposals from a woman's view point; and women and health. **Information:** UNIFEM with the National Planning Board (BAPPENAS) and the University of Indonesia catalogues 368 library books on gender related topics. **Research and Technologies:** Research relating to women problems include: Status of the education of women in Indonesia; the Indonesian family life survey; and the situation of children and women in Indonesia in 1995. **Financing:** Women increasingly have the opportunity to propose programs for victims of violence. These programs should be conducted by the government under the umbrella of the women empowerment programme using the state budget (APBN) and the regional budget (APBD). The Ministry of Women Empowering allocated 179,800 million from the 2001 state budget for programmes supporting women empowering and gender mainstreaming. **Cooperation:** No information available.

Children and Youth: **Decision-Making:** Under the current government, children and youth protection and welfare are supervised by the Deputy on the Welfare and Protection of Children under the Ministry of Women Empowerment. The Deputy has the task of formulating policies and coordinating activities related to the welfare and protection of children. The government is also formulating a National Action Plan on the Elimination of Commercial Child Sexual Exploitation. Indonesia has ratified the Convention on the Rights of the Child in 1990 and in 2001, it signed two optional protocols to the convention, one on the involvement of children in armed conflict and the other on the sale of children, child prostitution and child pornography. During the reformation era, the National Commission on Protection of Children (Komnas PA) was established after heavy pressures from NGOs to set up an independent institute. Komnas PA coordinates action for the protection of children (LPA) at regional level. Indonesia has issued several legislative products relating to children. However, their interpretation depends on the bureaucrats who implement them. In 1999, the government issued Law no. 3 on children's courts but a year later it was reported that 5882 children had been brought to court without a lawyer. In 2000, Indonesia signed the ILO Convention no. 182 on the elimination of the worst types of work for children and ratified it by issuing Law no. 1/2000. As a follow up, the National Action Committee was given the task to monitor the implementation of the convention. Unfortunately however, children can still be found doing jobs they should not be doing. Indonesia is currently preparing the long awaited bill on the protection of children (RUU Perlindungan Anak). **Programs and Projects:** The Youth Participation Enhancement Programme initiated by the government aims to give better opportunities for young people of participating actively in the development process. The activities of the programmes fall into three categories, namely economics, religion and socio-cultural. Besides encouraging youth to actively engage in commerce, the economic group activities also include training on environmental management and natural resource conservation. In 2000, the government tried to give social services to approximately 130,000 abandoned children, by, for example, providing funding to orphanages. In cooperation with various NGOs, the government has established shelter houses for street children. Around 31,000 street children were given access to social services, such as health consultation, scholarships, training, etc (Republik Indonesia, 2001). Besides the Government, some NGOs have an important role to play in preventing the spread of HIV/AIDS. Pelita Ilmu Foundation (YPI) is one of them. YPI provides services such as medicine aids, training for volunteers, expert consultation, paramedics, psychologist, etc. As a part of their public-awareness campaign, YPI published monthly bulletin and has set up a homepage supported by the Ford Foundation. **Status:** In 2000, it was estimated that the youth population (i.e. those between 15 to 35 years old) made up 36% of the total population or amounted to 74.1 million (Republik Indonesia 2001). However, their education level is worrying. According to BPS calculation, in 1998, 36.93% of young people only graduated from primary school. Sexually transmitted diseases, including HIV/AIDS, have become the problem of youth. From October to December 2001, 262 new cases of HIV/AIDS were reported (www.pelita-ilmu.or.id). Of those, one case belonged to the 15 to 19 years old age group while 25 cases were found in 20 to 29 years old age group. 43 cases of HIV and 21 cases of AIDS were transmitted through drugs. Drugs and alcohol abuse is also a serious threat to young people. The cases of drug and alcohol abuse have significantly increased in recent years. According to BPS data, approximately 3.2 million children were abandoned in 2000. In 1998, a street children census conducted in 12 big cities showed there were about 40,000 street children. 48% of them had just become street children that same year. This was related to the fact that Indonesia had just been hit by the economic crisis of 1998. Besides becoming street peddlers, some children are forced to become labourers or even sex workers. According to UNDP, 30% of sex workers in Indonesia are categorised as children (www.geocities.com/sanggarakar). In 1998, BPS reported that 4000 children under 16

years old were involved in criminal cases ranging from harassment, to fighting, robbery, stealing, blackmailing and even rape and sexual abuse. In 1999, UNDP stated that 31.4% of prisoners in Indonesia were children. Children are also victims of violence. In 6 months, 33 children age 3 to 13 were raped or sexually abused in the Greater Jakarta area (www.geocities.com/sanggarakar).

Children trafficking is a new issue in Indonesia although it has actually been happening for a long time. Children are bought and sold to become cheap labourers, beggars, even sex workers. The children being trafficked are usually from under-developed areas of Indonesia. While the acceptor countries are Singapore, Malaysia, Thailand, Hong Kong, Saudi Arabia, Taiwan and Australia (www.menegpp.go.id). The conflicts that have been going on in several areas of Indonesia these recent years have forced 1.5 million people to take refuge. 40% of them are children under 15 years of age. In Atambua, Aceh and Maluku, more than 25,000 children have lost their families (www.geocities.com/sanggarakar). Capacity-Building, Education, Training and Awareness-Raising: The West Java Institute for the protection of Children (LPA Jabar), supported by UNICEF, has held training sessions to enhance the skills for hotline services and investigation on child abuse cases. The sessions were attended by about 15 organizations from all over Indonesia. It was hoped that a network would be established to follow up on the action plans drawn up during training. Some children do not have the opportunity to attend formal school, either because their parents cannot afford it or because their daily lives rule out the possibility. Several NGOs have initiated alternative education. Sanggar Akar is one of them. It is a place where marginalized children can study and play. Sanggar Akar provides educational activities, from the development of basic learning skills to networking with the surrounding community. Information: The Indonesian Foundation for Children Welfare (YKAI) provides a library and a data bank service with information relating to children welfare issues. Research and Technologies: The government, academic institutions as well as NGOs have conducted many studies on children and youth issues. The Government has initiated studies on the existing policies and regulations that may encourage or discourage youth empowerment. The results from the study will be used as inputs for formulating the right strategy and policy on youth development. Financing: The state budget allocated only around 5% of the total budget for social affairs, health, women, children and adolescents during the fiscal years 1999/2000. Cooperation: Programmes to protect and enhance the welfare of children and youth have been conducted under cooperation schemes with UNICEF, UNDP, etc.

Indigenous People: Decision-Making: Indigenous peoples have lost the authority and control over their territory and community for 32 years. When the New Order regime fell in May 1998 and reform emerged in all sectors, the government issued some policies that acknowledged the role of local/indigenous people in sustainable forest management. These were:

- Ministerial Decree number 677/98 on the granting of 35-year leases of forestland to local communities, and number 47/98 on the commercial harvesting of forest products by local communities, both issued by the Indonesian Ministry of Forestry and Estate Crops;
- Ministerial Decree number 5/99 (*Permen Agraria Hak Ulayat Adat*) issued by the Ministry of Agrarian Affairs, providing for the delineation and registration of community based customary/*adat* rights in some forested areas;
- TAP MPR number IX/2001 acknowledging *adat* rights; and
- A forestry regulation that would authorise the demarcation of indigenous territories within areas designated as state forestland is currently under review within the Ministry of Forestry.

Programs and Projects: The British government and the Indonesian government have agreed to conduct a project called the Multi stakeholders Forestry Programme (MFP). The indigenous community is one stakeholders involved in the process. The programme focuses on empowering the indigenous people as forest resource managers, developing management capacity in indigenous people, strengthening the indigenous people in their communities and so on. USAID through the Natural Resources Management Programme (NRM) promotes an improved and decentralized management of forest resources and encourages multi stakeholders dialogue. This project is collaboration between the International Resources Group, the Biodiversity Support Programme (BSP), the World Wildlife Fund Indonesia and the Nature Conservancy. The Biodiversity Support Programme, in cooperation with KEMALA (an association of Indonesian NGOs), helps develop the institutional skills of Indonesian non-governmental organizations working on natural resources issues. The programme supports dialogue between indigenous people and government officials on issues such as the commercial use of public lands, the use of community mapping to show the intersections of the groups' traditional territories and public lands. The Non

Timber Forest Products (NTFP) Exchange Program for South and Southeast Asia was supported by both ENDS, NC-IUCN and ProFound. This project aims to facilitate the exchange of information and experiences relating to NTFP management between local NGOs and the communities in South and Southeast Asia countries. Local and regional NGOs participating in the project include NATRIPAL, UNAC (Philippines), PLASMA (Kalimantan, Indonesia), BRIMAS (Sarawak, Malaysia), Keystone (Western Ghats, India), Neo Synthesis Research Center (NSRC, Sri Lanka), TEW/CIRD (Vietnam). CIEL, in collaboration with Indonesian public interest law organizations and working on the connection between national and local-level environmental issues, conducted the Law and Communities (the L&C) Programme. Indonesian organizations involved in this programme include the Institute for Policy Research and Advocacy (ELSAM), the Indonesian Centre for Environmental Law (ICEL), the Institute for Research and Advocacy (LRA) as well as rural and natural resource-dependent communities. Special attention is given to identifying and analysing regulatory and economic conditions that encourage or hinder Community Based Natural Resources Management (CBNRM), and to promote legal reforms that will contribute to sustainable and equitable CBNRM. The Programme also assists ongoing efforts to improve and increase site-specific opportunities for sustainable CBNRM, particularly by indigenous communities. Status: Previous, and sometimes existing, policies and programmes on forest management have been responsible for the extinction of sustainable *adapt*-based natural resource management systems as well as the destruction of the economic systems and prosperity of indigenous people. For hundreds of years, the indigenous people have been dependent on the forest for their subsistence as well as cultural and spiritual fulfilment. In addition, forest management has led to high rate of deforestation, biodiversity loss and degradation of the ecological and hydrological function of forests. The emerging political will prompting the new policies is partly due to the growing influence of civil society in regulatory and policy-making processes. Examples of important new civil society initiatives include the Communications' Forum on Community Forestry (FKKM), the national seminar on forestry reform in June 1998 and the Congress of Indigenous Peoples of the Archipelago in March 1999 which resulted in the establishment of a broad coalition of local indigenous organizations (AMAN). Capacity-Building, Education, Training and Awareness-Raising: Many indigenous communities have set up institutions to maintain the wisdom of indigenous natural resource management and to empower local *adat* laws. These institutions are Lembaga Bela Banua Talino (LBBT) and the Institute for Dayakology Research and Development (IDRD) in Kalimantan, Yayasan Tanah Merdeka (YTM) and Yayasan Bantuan Hukum Bantaya (YBH Bantaya) in Sulawesi. Information: Telapak, is an NGO that supports and conducts research for local communities. It specialises in facilitating information and data exchange as well as enhancing the information database and access to information. This is important for communities working on the indigenous rights to natural resources to enable them to work synergistically and effectively towards sustainable and equitable forest management systems. The NGOs' involvement in indigenous people issues has far exceeded the government's role. However, Bapedal has initiated an inventory of indigenous laws and wisdom in natural resource management. Research and Technologies: Some research on the key role of indigenous people in environmental management include the Kayan Mentarang Project. This project, deals with the capacity of the Dayak people to take responsibility for their own development and conservation activities. Others project include a project non-timber forest products (NTFP) conducted by the Centre for International Forestry Research (CIFOR) and one research on the readiness of local government to face local forest management conducted by ARUPA (volunteers alliance for saving nature). Financing: Financing for development of this particular issue has been received from many international organisations. For example, the Kayan Mentarang project mentioned above is financed by Danida and implemented with the support of the World Wild Fund for Nature (WWF). Cooperation: Cooperation with international organisations such as USAID, The Nature Conservancy, WWF, etc, has been established. Besides AMAN, other NGOs networks related to indigenous people are the Supporting Consortium for Community-based Forest Management System (KP-SHK) and the Network for Participatory Mapping (JKPP).

Non-governmental Organizations: Decision-making: The standard mechanism for NGOs to be involved in the decision making process has not yet been established. However, an NGO coalition in Jakarta has been conducting advocacy and campaigns to involve civil society in the legal drafting process. The coalition insists that the legal drafting process must be conducted openly and communicated to civil society. Some bills relating to NGOs, have been criticised by the coalition, such as the bill on freedom of information, the bill on witness protection and the bill on truth and reconciliation. Some evidence of NGO contribution in policy-making include the enactment of

Law n° 8/1999 on consumers. The Indonesia Consumer Group Foundation (YLKI) had struggled with it for 20 years. The NGO coalition also played a role in advocating Law n° 16/2001 on the status of foundations. Programs and Projects: Environmental movements have emerged in Indonesia as a reaction to environmental damages caused by natural resources exploitations and condemnation of traditional community in their home land. It has caused many NGOs to emerge and carry out advocacy activities on forest and traditional community. In the last few years, other types of environmental movements have come about on fishery, organic agriculture, environmental education and eco-tourism programmes. Their activities range from advocating grass root community action to promoting policy at the national and international level. However, not many NGOs are willing to carry out advocacy on the impacts of industrial pollution on the community. The Consumer Group has been focusing in industrial products and consumer interests. Status: Recently, an “NGO boom” has occurred with the birth of many NGOs in a very short period of time. Some of them are idealists aiming to defend people’s rights. However, many of them were actually established with the objective of making money. This situation has come about because most funding agencies required NGOs to be involved in all projects and at the time, the number of NGOs was very limited. The Law on the status of foundations that will be implemented in August 2002 will have some impacts on the existence of NGOs as most of them are registered under that name. Foundations that have registered and are related to a government institution will have five years to implement the law. Foundations that have not registered will not have an adjustment period. As a result, the government might dismiss them. However, the law on charities will also have a positive impact, as it will encourage NGO transparency and accountability. Some development agencies, for example the World Bank, usually undertake programme consultation with civil society. In a consultation forum, NGOs have the opportunity to propose programmes that should be conducted by government. Capacity-Building, Education, Training and Awareness-Raising: Training and workshops have been conducted to improve the role of NGOs in sustainable development policies. Such training include preparation for participatory mapping, training for community organisers, strategic planning for community based natural resources management programmes, workshop on law and the environment and conflict resolution relating to natural resources conflict. Information: Each NGO usually manages its information, although it is usually incomprehensive. Some NGOs manage a database related to their program, like the Network of Mining Advocacy (JATAM) for mining exploitation cases, the Human Rights NGO Coalition for investigation of Aceh Cases, the Indonesian Corruption Watch (ICW) for corruption cases, etc. Research and Technologies: No information available. Financing: The Ford Foundation has generously funded NGOs. Since 1995, the UNDP-Small Grants Program has been channelling funds from the Global Environment Facility to small-scale community-based projects (up to US\$50,000) that have local and global environmental impacts. Cooperation: The positive support from government, related institutions, universities, funding agencies as well as from civil society for the various programs implemented and developed by NGOs is a strength for their development. The money from the funding agencies allows NGOs to conduct activities relating to Capacity-Building, such as training and education of staff. NGOs have also developed an extensive network of partners at the local, national and international level. Many NGO coalitions were established with the aim of gaining wide support to put pressure on the government. Examples of such coalitions are the NGOs coalition for the law on the status of foundations, the NGOs coalition for solidarity of the Aceh’s case (FORSOLA), the women’s coalition, the NGOs coalition for participatory policy and so on. At the international level, the Indonesian NGOs also built networks with NGOs from other countries, for example with the International NGO Forum (INFID). Some regions also have NGO forum like the Aceh NGO Forum, the Communication and Information Forum for Southern Sulawesi and the Irian Jaya NGO Cooperation Forum.

Workers and Their Trade Unions: Decision-Making: Up until August 1999, Indonesia ratified 14 ILO Convention. The Convention No. 87 concerning Freedom of Association and the Protection of Rights to Organise was ratified through the Presidential Decree No. 83 of 1998. In 2000, Law No. 21/2000 concerning Labour Union was approved. Programmes and Projects: In 2001, the government through the Ministry of Manpower and Transmigration planned a program to protect and develop labour’s institution. The objective of the program is to create good industrial relationship between workers and employers. The project aims to, among other things facilitate dispute settlement through early detection in companies, organise training on industrial relationship and occupational health and safety, etc (RAPBN 2001). Initiatives from workers also have to be encouraged and facilitated. Status: In the past, the government controlled the Indonesian Labour Union (SPSI). Following the

ratification of the ILO Convention No. 87, the ban on the independent national union centre (The Indonesian Prosperous Labour Association/SBSI) was lifted in May 1998 (ILU website). Several workers associations have emerged since then, but some of the founders do not have adequate understanding of union and solidarity (Kompas, January 3, 2002). Disputes and strikes continue to occur across the country especially concerning wages and other workers' rights. Capacity-Building, Education, Training and Awareness Raising: More than 30 years of repression have created an enormous need for education on democratic trade unionism and its methods, structures, and goals. As an example, The International Union of Food, Agriculture, Hotel, Restaurant, Catering, Tobacco and the Allied Workers' Association (IUF) have launched a trade union education programme in Indonesia that includes basic education on democratic union structures as well as collective bargaining in the Hotel, Restaurant, Catering, Tobacco (HRCT) sector (www.iuf.org). An arrangement on cooperation has been made between the Government of Australia, the ILO and The Indonesian Labour Foundation (YTKI) on worker's education in Indonesia. Information: No information available. Research and Technologies: No information available. Financing: No information available. Cooperation: Dispute settlement mechanisms need to be developed through cooperation between the government, the employers and the workers' union.

Business and Industry: Decision-Making: The State Minister of Environment and particularly the Environmental Impact Management Agency (BAPEDAL) play a major role in encouraging more responsible business and industry activities. Some regulations on pollution prevention, waste minimisation, cleaner production, and increased production efficiency have been released by the Government of Indonesia (GOI). Better coordination between ministries is exemplified by the involvement of the Ministry of Trade and Industry and the Ministry of Energy and Mineral Resources in the policy on the phasing out of leaded gasoline. In 1995, GOI made a national commitment to minimise waste through the implementation of cleaner production principles. Programmes and Projects: several programmes were launched by Bapedal to promote voluntary environmental management measures by business and industry. These include PROKASIH and PROPER PROKASIH (see chapter 18), the Blue Sky programme (Programme Langit Biru), the Cleaner Production programmes, the Environmental Management System (EMS), and eco-labelling. Bapedal has attempted to strengthen the role of industry and business through the introduction of economic incentives. Status: The Indonesian Business Council for Sustainable Development (MUIPB) was established in 1993. It has organised seminars and discussions for the business community on the benefits of environmental management and how the industry can comply with environmental laws. Regarding land, bush and forest fires, the MUIPB meeting in 1997 agreed to stop all land clearing activities for some time (State Minister for Environment, 1997). The industry's involvement in PROKASIH, PROPER PROKASIH and Blue Sky programme indicate goodwill in taking part in sustainable development.. By 1997, 54 industries located in 4 provinces participated in the Blue Sky programme. This achieved little success (www.bapedal.go.id). Until 1999 and in the context of environmental management systems in business and industry, five standards of ISO 14000 were adopted as Indonesian National Standard (SNI), namely ISO 14001, ISO 14004, ISO 14011 and ISO 14012 (Lampiran Pidato Presiden, 2000). During 1997-2001, 151 companies held ISO 14001 certificates with one third of it in electronics and machinery industries. 20 companies are currently preparing for EMS ISO 14001 (Nazech, 2001). The government of Indonesia has conducted scores of cleaner production programmes in collaborations with many international institutions. For instance, the Indonesia Cleaner Industrial Production (ICIP) Program co-sponsored by USAID was launched in 1995 and focused on technological transfer and information dissemination to industry, trade, government institutions and other public interest groups. Bapedal has also accomplished some pilot projects with relatively good results. It developed technical guidelines on cleaner production for specific industries, established Standard Operating Procedures for Cleaner Production Audit, and is currently developing a Cleaner Production Award and testing methods to encourage industry to adopt cleaner production approach (Nazech, 2001). In 1997, a Roundtable Conference on Production Efficiency through Pollution Prevention was organised for the first time. 200 people participated. 50% of those came from the manufacturing sector, 15% from NGOs, 8% from consultancies and R&D institutes, and 22 % from government agencies (RC-PEPP website). The last National Pollution Prevention Roundtable Conference was held in April 2001 to support and promote cleaner production activities (Nazech, 2001). Capacity-Building, Education, Training and Awareness-Raising: Several training, technical assistance, demonstration projects and workshops relating to cleaner production, environmental management system, environmental awareness and public relations have been conducted in cooperation with international institutions. JAICA and Bapedal are providing an environmental monitoring database and training

service through the Advancement of Environmental Management Centre (Ohta, 1996). Information: Bapedal has published two editions of its Cleaner Production Newsletter and is developing an ecolabelling information service. In 2001, there was an Indowater Expo & Forum entitled "International Water, Wastewater and Recycling Industry Exhibition". 150 establishments from 18 countries participated. Cleaner production technology and information could be dealt with in the Centre for Data and Information Service (PUSDATA) of the Ministry of Trade and Industry (MoIT). More intensive activities in information dissemination are urgently needed since the Indonesian Agenda 21 is still not recognized by a large part of industries (Nazeck, 2001). Research and Technologies: Research on cleaner productions are carried out by numerous institutions, namely universities; research and development centres, infrastructures, Industrial Zone of MoIT; Technology Assessment and Application Agency (BPPT), Bapedal, etc. Research is focused on the application of cleaner production in specific industries, such as paint, textile, food, plastic, and pulp and paper industries. Financing: There has not been data on overall budget for the strengthening of business and industries role. Information is only available on the funding of particular projects. For instance, the budget for the Cleaner Production Demonstration Projects in sugar and fertilizer industry amounts to AUS\$ 21.8 million (Nazeck, 2001). OECF provided a loan of US\$ 120 million. Indonesian national bank offered a soft loan for the private sectors to install pollution control equipment (Ohta, 1996). The Government of Norway also agreed to provide NOK 20 million for cooperation in biodiversity, climate change and cleaner production. Cooperation: Collaboration with GTZ, USAID, US-AEP, CIDA, AusAID, JICA, SwissContact, the Global Compact, IBCIG, UNIDO, the Joint Working Group on Environment (IAMF), OECF, and the government of Norway is underway in issues such as cleaner production programmes, strengthening of small and medium enterprises capacities in pollution control, environmental audit, EMS, and ISO 14000.

Scientific and Technological Community: Decision-Making: The State Ministry of Research and Technology (SMRT) and the Ministry of National Education are the main actors in furthering the development of the scientific and technological community. The Indonesian Institute of Science (LIPI) is the core organisation in strengthening the role of the scientific community. The National Programme on Science and Technology has been included in the National Development Programme (PROPENAS) in Law number 25/2000. This law deals with the sharing between Centre and Local Government Authority. This was followed by Ministerial Decree number 2/2000 on Strategic Policy in National Science and Technology Development (JAKSTRA IPTEKNAS). The increased coordination in the use of appropriate technologies is addressed in an MOU between the Ministry of Internal Affairs, the Ministry of Trade and Industry, the Ministry of Agriculture, the Ministry of Forestry, the Ministry of National Education, the Ministry of Settlement and Regional Development, and the State Ministry of Research and Technology. Programmes and Projects: According to the Deputy Minister for the Use and Socialization of Science and Technology, SMRT has 2 main programmes in his sub department. These are: 1) programme development of capacity in innovation absorption and science and technology diffusion through establishment of Science and Technology Promotion and Marketing Centre (Sentra PROMPTEK), and 2) culture of science and technology programme. Status: In the year 2001, SMRT has initiated the establishment of 5 Sentra PROMPTEK in Bandung, Surabaya and Pekanbaru by providing incentives to non-governmental department research centres, universities, local governments, and NGOs engaged in the promotion and marketing of research results to public and industries. The local Research Council is one institutional infrastructure in the development of local science and technology capacity that is responsible for

providing recommendations on policy directions and objectives in developing science and technology adapted to local needs. Contribution of science and technology in the decision making process, particularly for determining the priorities and the direction of development, is achieved through science and technological needs mapping programmes. Policy assessment to support the decision making process has been carried out mainly for development of the agricultural sector, development of technological based industries, and technology transfer for strengthening of Small and Medium Enterprises (SMEs). Development of partnership among research, science and technology actors, the private sector and local governments is conducted through incentive programmes, such as the strengthening of SMEs' technology and management (SIPTekman) and Technological Insurance (Astekno). So far there have not been concerted attempts towards the promotion of codes and guidelines relating to science and technologies. In general, professional associations/organizations in various fields have their own codes of practice. However, The Code of Practice for Indonesian Scientists has been established with 106 professional organizations participants. Capacity-Building, Education, Training and Awareness-Raising: The evaluation of the Indonesian

Science Research and Technology Landscape (PERISKOP) is underway with the support of German Ministry for Research and Education (BMBF). Information: Dissemination of information pertaining to science and technology is carried out through the Information Technology Kiosk (WARINTEK) programme launched in 2000. Several other programs in information dissemination have also been conducted, like the digital library (PUSTAL) and information resource sharing regarding environmental and biodiversity data. Research and Technologies: as stated in JAKSTRA IPTEKNAS, research is in the field of socio-culture; development of sector, national and local system; food and agriculture; health; environment; marine sector; transportation and logistics; manufacture; and information and microelectronics. Financing: In 2002, the promotion and Socialization of science and technology by MSRT was allocated Rp 1.2 billion (www.ristek.go.id). The Technological and Professional Skills Development Programme to develop a high quality workforce was allocated US\$ 250 million. 72% of it was funded by ADB and the programme will run until 2005. (ADB website, 2000). Cooperation: Cooperation is going on with internal institutions like LKBN Antara, the private sector, universities, other ministries, as well as countries like France, Germany, Netherlands, China, and international institutions like ADB and IBRD.

Farmers: Decision-Making: Law no 5/1960 regarding the Agrarian Principle Law states that the national agrarian law should be considered a tool to bring prosperity, well-being and justice for the country and its people and especially farmers. Studies, however, reveal that many laws and regulations issued afterwards have actually worsened the socio-economic position of Indonesian farmers (Bey, 2002). There is an Indonesian Farmers Association (HKTI) but its roots and effectiveness in channelling the farmers' aspiration in the decision-making process need to be evaluated and improved. Programmes and Projects: The government constantly strives to increase the farmers' participation in agricultural development through the extension of farmer groups in the form of co-operatives. In March 1998 there were 366,085 farmer groups nationally (Republik Indonesia, 1998). The ministry of agriculture has launched the P4K program to increase the income of small-income farmers and fishermen. The program strives to extend the number of Small Farmer Groups from around 40,000 in 1998 to around 80,000 in 2003. By 2005, the standard of living of the groups should be above the poverty line. Additionally, P4K would like to see more female farmer groups (at least 45%) (www.deptan.go.id). Status: Despite the efforts to strengthen the role of farmers, the number of agricultural-employee households (those who do not own land) has increased to almost 20 millions in 2001 (Bey, 2001). With average wage below the regional minimum wage (Bey, 2001), these households are the lowest income group in Indonesian society (BPS, 2001a). This reflects the structural inappropriate management of agriculture in the country. Small farmers are trapped in a vicious circle: with such a low income, they cannot afford good education, and therefore lack access to the possibility of improving their livelihood. Capacity-Building, Education, Training and Awareness Raising: The Agricultural Training Centre (BPP) which serves as a training centre to empower farmers had set up 3,913 units nationally by March 1998. To enhance the quality of human resources, agricultural schools and academies were established (Republik Indonesia, 1998). Information: Until March 1998, 289 units of Agricultural Training and Information Centre (BIPP) were formed nationally at the sub-provincial level (Republik Indonesia, 1998). Research and Technologies: Several agencies like SMERU and CAPS are involved in research to empower farmers. Financing: The government's policy on credit for farming has undergone several changes. As a result of defaults in the Community Assistance (BIMAS/INMAS) loans and credit, in 1985, the government replaced the BIMAS/INMAS program with the Farmer Credit Program (Kredit Usaha Tani, KUT). This employed a group approach to credit. Unfortunately, the KUT program also experienced serious problems. Thus, in 1998 the government introduced a new credit scheme and drastically increased the amount of funds for distribution to Rp 8.4 trillion. In October 2000, the government released a new credit program to replace KUT, known as the Food Security Credit Program (KKP). Unlike the previous farming credit programs, the KKP loans are provided by banks which act as executing agents. However, by March, 2001, only Rp 38.5 billion in credit, or approximately 1.57% of the available fund, had been distributed. The delay in the distribution of KKP loans has resulted in criticism from various quarters (www.smeru.or.id). Cooperation: The P4K programme mentioned above is carried out by the Ministry of Agriculture, a state-owned bank (BRI), the Asian Development Bank (ADB) and the International Fund for Agricultural Development (IFAD). In the late 1990s, farmers in Sumatera and Kalimantan, with the help of Yayasan Duta Awam (YDA) and Pesticide Action Network North America (PANNA) monitored a multi-million dollar World Bank project known as the Integrated Swamp Development (ISDP). The ISDP aimed to alleviate poverty in swamp area transmigration sites. After three years of participatory monitoring, YDA and the

farmers in the project area achieved concrete results. These include training in integrated pest management (IPM) in 2000, hiring and placement of "community organisers" to respond to farmers' concerns, and the elimination of many of the corrupt practices by local agricultural extension workers (www.panna.org).

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CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

Indonesia has limited resources for sustainable development efforts. The multidimensional effect of the 1997 financial crisis has lead to the reprioritising of funds for poverty alleviation and the social safety net. Environmental sector was only allocated approximately 1% of total state budget of 1999/2000 fiscal year.

Overseas Development Assistance (ODA) and Foreign Direct Investment (FDI) are the most important additional financing resources for the implementation of Agenda 21. The substantial decline of ODA flows since UNCED is regrettable. By the end of 2000, only 5 countries (Denmark, Luxembourg, the Netherlands, Norway and Sweden) had met or exceeded the target of allocating 0.7% of gross national product to development assistance. Concerning FDI flow, 75% of it is concentrated between developed countries. (See other chapters for examples of foreign assistance and investment in the implementation of Agenda 21).

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CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: National science and technology is coordinated under The State Ministry of Research and Technology (SMRT) with the aim of establishing a wealthy Indonesian Society through human science and technology. The 2000-2004 Indonesian Science and Technology Strategic Policy (*Jakstra Ipteknas 2000-2004*) is a guideline for the utilisation, development, and mastery of science and technology to support national development. The policy is aimed at opening opportunities for using new devices in the development of science and technology in Indonesia. *The Jakstra Ipteknas (2000-2004)* focuses on human resources development; utilisation, development and mastery of science and technology; and promotion of research, development and engineering activities to support national development especially the partnership and empowerment of small and medium enterprises.

Programmes and Projects: Some achievements in 1999/2000 include the implementation of appropriate technologies in agriculture. These technologies are aimed at the utilisation of local potential and resources to increase the capacities of small and medium enterprises and co-operatives. Some examples are the use of organic fertilisers in marginal land in Central Java, milk sterilisation technology, technology for traditional herbs in East Java and so on. Research has also been done in wind energy technology, monitoring of vulnerable areas via satellite and so on. For 2001/2002, several environmental research projects were proposed to:

- increase community wisdom around the biodiversity conservation areas in Papua and Eastern Indonesia;
- Manage coral reefs and coastal areas; and
- develop solid waste treatment technology, etc (Republik Indonesia, 2000).

Information: The Indonesian Institute of Sciences (LIPI) has developed a literature-based scientific information system through the Centre of Scientific Documentation and Information (PDII). There is a database to access overseas literature and a database on library collections in research centres and universities across the country. The system needs to be enhanced and made more accessible to public.

Financing: Financing for science and technology comes from domestic and foreign sources. Besides research and development coordinated by the SMRT, each other ministries have their own budgeting for research and development.

Cooperation: The SMRT coordinates and improves integrating measures in science, research and technology planning and program design undertaken by government departments, agencies, universities and the private sector, including industries. The following governmental research and technology agencies are coordinated under the Ministry: LIPI, the National Nuclear Energy Agency (BATAN), the Agency for the Assessment and Application of Technology (BPPT), the National Institute of Aeronautics and Space, the National Coordination Agency for Survey and Mapping (BAKOSURTANAL), the National Standardisation Agency of Indonesia and the Nuclear Energy Control Board. These agencies have established cooperation with numerous overseas research agencies to enhance their research capacities. The Indonesian Institute of Sciences, for example, is currently doing collaborative research with the International Cooperation for Application of Solar Energy (CASE) under an AusAID scheme with Australia. In 1986-1997, the National Coordination Agency for Survey and Mapping developed a Land Resources Evaluation and Planning under an international cooperation scheme.

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CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: The basic education policy is stated in Law no.2/1989. Indonesia's Basic Education policy obliges parents to send their children to school until grade 9 (primary and junior secondary education). The enactment of Law No.22/1999 on Regional Governance and Government Regulation number 25/2000 on Government and Provincial Authority require more authority being transferred to local governments and more people participation in policy making as well more funding. Therefore, Law no.2/1989 needs to be evaluated and revised. This is the task of the Committee on Education Reforms.

Programmes and Projects: Government programs were launched in the early-mid 1990s in support of the 9 years compulsory education. In addition, non-conventional programs such as the open secondary school (SMP Terbuka) as well as Paket A and Paket B courses have been provided. Paket A and Paket B are the primary and secondary school equivalent courses catering to those who have not had access to or cannot pay for regular schools. With the Community Based Education Project, the World Bank supported community-learning centres in districts that provided Paket B. The project supported Capacity-Building for local government and local educational offices. To encourage more people participation, the Ministry of Education introduced and socialised the establishment of Education Board/School Board at regency/city level. It also strengthened the School Committee at school level. They are expected to be able to plan, direct and determine education policy while also monitor education activities in every school in their own area. Besides evaluating the current education law, the Committee on Education Reforms is also developing a national curriculum. So far, environmental education has not formally been included in the national curriculum. However, some schools have taken the initiative to give more attention to environmental education and have been supported in their efforts by various NGOs. The Environmental Education Network (JPL) is a cooperation network of NGOs as well as individuals who have interest and/or run environmental education program in Indonesia. By 2000, almost 60 NGOs and individual had joined JPL

Status: The Ministry of Education's 1999/2000 data states that gross enrolment rate was 119.99% for primary school and 71.87% for secondary school. However, the economic crisis has increased the dropout rate particularly at primary and secondary school level. According to the 1999/2000 data, 3.38% of primary school students dropped out while 19.31% of them were not able to continue their education to a higher level (Republik Indonesia, 2001). Dropout rate for secondary school students was 4.04%. Illiteracy rate in Indonesia is still quite high. 16% females and 7.1% males over 10 years old cannot read or write (BPS, 2000b). During the school year 2000/01, 13.400 illiterate people became literate through non-formal education. One education problem in Indonesia is the big gap in education facilities, not to mention quality, between rural and urban. According to data from the Central Bureau of Statistic, in 2000, the percentage of people having graduated from secondary or higher education was 50.4% in urban areas and 21.0% in the countryside. (BPS, 2000b).

Capacity-Building, Education, Training and Awareness-Raising: To enhance the quality of teachers, the Ministry of National Education has special training programs for primary and secondary school teachers. The World Bank had also supported teacher education projects.

Information: Data and information concerning education is available from the Research and Development Division of the Ministry of National Education as well as from the Central Bureau of Statistic.

Research and Technologies: Much research on how to improve the quality of education has been conducted by the Ministry of Education and academic institutions.

Financing: With the onset of the financial crisis, additional support was provided for primary and secondary school students through scholarship programmes. In addition, ADB and the World Bank have provided supplementary block grants to schools in the poorest communities to compensate for reductions in the parental contributions. Education has not been given priority by the government as the figures for budget allocation testify. The education

sector only receives approximately 10% of the total 1999/2000 state budget (APBN). Additional fund has been made available, as subsidies for petrol have been partly removed.

Cooperation: Indonesia's efforts towards a better education system have been supported by many international organisations such as ADB and the World Bank.

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CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR CAPACITY-BUILDING

Decision-Making: With the enactment of Indonesia's Regional Autonomy Act (Law No.22 and 25/1999), more environmental management powers go to the district level. In future, this entails a major shift in focus from national capacities to local capacities.

Programmes and Projects: Post UNCED Planning and Capacity-Building Activities were designed by UNDP. The aim was to support the government in formulating a strategy for sustainable development consistent with the Global Agenda 21 and other international conventions and agreements signed by the Government of Indonesia with respect to climate change, conservation of biodiversity and tropical forestry. The result was the National Agenda 21, which addressed environmental priority issues and provided detailed strategies for the implementation of sustainable development and human resources Capacity-Building in Indonesia. The Sectoral Agenda 21 came out in 2000, consisting of 4 sectors: human settlement, industry, tourism and energy. US-AID designed the Capacity-Building for Decentralization in Indonesia (C.B.D.I.) Project to assist the Indonesia in implementing legislation for government decentralization by strengthening the capacity of local governments (<http://www-rcf.usc.edu/~cbdi/>). Ten local governments participated in CBDI during the first cycle (year 2000).

Status: For 2001-2004, BAPPENAS had prepared a PROPENAS (National Development Program) with 5 priorities, regional development being one of them. Within the agenda for Regional Development, one of the priority is Capacity-Building. Capacity-Building in relation to decentralisation has the objective to make sure that the new system for decentralised government in the regions can function. In other words, the necessary regulatory framework has to be in place, stakeholders on the local level have to be aware of their respective roles and functions, and working mechanisms for local policy decisions need to be developed. The merging of central government and local government institutions has to be brought about, and a new system for local resource management has to be put in place. Under the decentralised system of government, the role of the central government focuses on policy and on monitoring the performance of regional governments to ensure that public services are appropriately delivered.

Capacity-Building, Education, Training and Awareness Raising:, the central government training institutions (like LAN, *Badan Diklat* of the Ministry of Home Affairs and Regional Autonomy) need to be reviewed.

Information: Information exchange systems, databases and other means of information sharing are needed for local governments to be able to comparatively assess their performance.

Research and Technologies: No information is available.

Financing: Each province receives financing from the central government on top of their original revenue (PAD).

Cooperation: The Government of Indonesia receives cooperation and support for Capacity-Building from many international organisations, such as UNDP, USAID, the World Bank, Asian Development Bank, etc. The BAPPENAS database on “Technical Assistance to Support Decentralisation” is an important tool for managing donor activities.

For this chapter please refer also to all other chapters, under “Capacity-Building” sub-heading.

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CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS

This issue deals mainly with activities undertaken by the UN System.

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CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS

Not at country level.

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CHAPTER 40: INFORMATION FOR DECISION-MAKING

For this chapter please refer also to all other chapters, under “information” sub-heading.

Decision-Making: Each ministry has the responsibility to develop and manage information systems in their field. National statistics are coordinated and presented by the Central Bureau of Statistics (BPS). The State Ministry of Science and Technology (SMRT) is responsible for strengthening the national information infrastructure to promote information exchange on science and technology and to utilise the development of global information infrastructure. To make computer systems more accessible, the Presidential Instruction No. 2/ 2001 made the use of Bahasa Indonesia compulsory for computer application. The Presidential Instruction No. 6/2001 backs the development and use of telematics.

Programmes and Projects: The SMRT has developed the National Bank Data for Science and Technology Information, training centres for manpower on IT, multipurpose community telecenters (WARINTEK) and a digital library.

Status: No information available.

Capacity-Building, Education, Training and Awareness Raising: The SMRT is in the process of identifying a set of indicators that could be used to report on environmental progress. It is also establishing a mechanism to bring together the compilers of global assessment on sustainable development and key actors in the production and dissemination of the required data. SMRT provides the institutional technical and other resources needed to improve monitoring and data collection standards. Resource sharing and linkage among institution are encouraged for the above program.

Information: No information available.

Research and Technologies: The SMRT is engaged in information research.

Financing: Each ministry has their own budget to develop and manage information systems in their field.

Cooperation: No information available.

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CHAPTER: INDUSTRY

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: No information available.

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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CHAPTER: SUSTAINABLE TOURISM

Decision-Making: No information available.

Programmes and Projects: No information available.

Status: No information available.

Capacity-Building, Education, Training and Awareness-Raising: No information available.

Information: No information available.

Research and Technologies: No information available.

Financing: No information available.

Cooperation: No information available.

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