

Nusa Tenggara	<ul style="list-style-type: none"> • Danau Segara Anakan, adjacent to Rinjani Mt., has unique flora and fauna • Panjang Island, habitat of many water fowls • Danau Ranu Mese and Kelimutu NP, lake in arid area • Ira Lalaro and Usipako-Undun lakes, habitat for endemic water fowl, resting site of water fowls and Pelican (<i>Pelecanus conspicillatus</i>) 	<p>Mammal – 25 species Water fowl – 89 species Freshwater fish – 14 species Komodo – endemic reptile</p> <p>Flora: <i>Rhizophora</i> sp. <i>Avicenia</i> sp. <i>Bruguiera</i> sp. And associated species. <i>Casuarina equisetifolia</i></p>
Sulawesi	<p>24 important wetland areas, among others:</p> <ul style="list-style-type: none"> • Mangrove Lantung • Tondano Lake • Pulau Dolongan Game Reserve • Lore Lindu NP • Morowali NR • Poso Lake • Rawa Aopa-Watumohai (proposed Ramsar Site) • 43 sites recorded as resting area of water fowls; about 54 bird species periodically visit these areas, 23 of which area threatened 	<p>Endemic mammal – 79 species Endemic fish – 67 species Reptile – 111 species (31) Amphibian – 29 species (14) Migration birds – 54 species Endemic freshwater fish – 26 species</p> <p>Flora: 155 species, including angiosperms, savannah, aquatic plants, mangrove</p>
Papua	<ul style="list-style-type: none"> • 24 wetland areas, from coastal to mountain areas, part of which are peat swamp forests, from Lorentz NP to Digul Lake and the southern coast of Papua • Important peat swamp forests are Kais River, Mamberamo-Foja NR (proposed Heritage World), Lorentz NP, Wasur NP (proposed Ramsar Site) • 9 big rivers formed from limestone areas (such as Anggi, Sentani, Ayamaru lakes) • Priority conservation areas: Supiori NR, Ayamaru Lake, Bintuni Bay, Cendrawasih Bay marine protected areas, Digul River and Kimaam Island. 	<p>Mammal – 164 species Bird – 249 species Fish – 226 species, 96 species freshwater fish Reptile – 23 species Amphibian – 4 endemic species</p> <p>Flora: Mangrove and associated species such as <i>Casuarina equisetifolia</i>, <i>Barringtonia asiatica</i> and <i>Terminalia catappa</i>. Various other aquatic plant species</p>

Adapted from various sources: Wetland-IP (1997), Kottelat et al. (1993), Monk et al. (2000), Wibowo and Suyatno (1997).

APPENDIX 4. Agro-ecosystem.**Table 1. Food crop genetic resources (germplasm) collection, Balitbioplas, Bogor in 2001.**

Crop	Accession
Rice	
□ Cultivated	3500
□ Wild	38
Corn	875
Sorghum	208
Wheat	75
Soybean	900
Groundnut	1194
Green beans	1025
Other beans (Tunggak, Gude, Koro, Komak)	164
Sweet potato	1200
Cassava	550
Taro	146
<i>Balitung</i>	16
<i>Ganyong</i>	26
<i>Garut</i>	14
<i>Ubi Kelapa</i>	50
<i>Suweg</i>	16
<i>Gembili</i>	30
<i>Gadung</i>	15
Total	10,042

Table 2. Fruit crop germplasm collection, IPPTP Cipaku Bogor.

Crop	<i>Acc.</i>	Crop	<i>Accession</i>
Star fruit	15	Mango	10
Duku	4	Mangosteen	6
Durian	42	Matoa	2
Jambu air	8	Melinjo	2
Guava	4	Jackfruit	4
Orange	12	Banana	57
Kedondong	2	Rambutan	24
Lychee	2	Chiku	2
Lengkeng	3	Sirsak	2

Table 3. Ornamental plant collection at Balithi, Cipanas.

Item	<i>Accession</i>	Item	<i>Accession</i>
Rose	84	Maranthaceae	8
Jasmine	43	Puring	28
Anthurium	60	Soka	8
Araceae	150	Hibiscus	8
Costaceae	10	Others	40

Table 4. Cash crop collection, Balittas, Malang in 2001.

Item	Accession
Tobacco	1325
Cotton	600
Kapok	1800
Kenaf, Yute and Rosella	1527
Hemp	101
Abaca	54
Agave	22
Linum	28
Castor	194
Sesame	58
Total	5709

Table 5. Sugarcane germplasm collection, P3GI in 2000.

Item	Accession/clone
Cultivated sugarcane: <i>Saccharum officinarum</i>	270
Wild sugarcane:	
<i>S. barberi</i>	24
<i>S. sinense</i>	29
<i>S. spontaneum</i>	126
<i>Erianthus</i> sp.	158
<i>E. ravaneae</i>	1
<i>S. robustum</i>	70
<i>Miscanthus</i> sp.	2
<i>S. edule</i>	3
Unclassified	12
Have not been classified	61
Novel (new)	
POJ variety	494
PS variety	109
Introduced sugarcane	372
Serial Number	4220
Total	5951

Table 6. Spices and medicinal plants germplasm collection, Balitro documented* in 2000.

Item	Accession	Item	Accession	Item	Accession
Vanilla		Pepper		<i>Kumis Kucing</i>	3
• Cultivated	16	• Cultivated	52	<i>Bangle</i>	1
• Wild	14	• Wild	5	<i>Purwoceng</i>	1
Mentha	5	Pyrethrum	32	<i>Zingiber</i>	18
Coriander	4	Hemp	29	<i>Meniran</i>	1
Turmeric	51	Nilam	2	<i>Temu Putih</i>	1
Kencur	50	Rauwolfia	1	<i>Inggau</i>	1
Curcuma	20	Cashewnut	59	<i>Pegagan</i>	1
				Total	367

* 310 species have been computerised.

Table 7. Bacteria and fungi isolates at Badan Litbang Pertanian

Unit	Bacteria	Fungi
1. Food crop	19	95
2. Estate Crop	2	76
3. Industrial crop	394	84
4. Horticulture	62	38
5. Fisheries	29	-
6. Animal husbandry	6	2
7. Veterinary	1589	273
Total	2101	568

Sources: Dewi and Iskandar 2001; Sulyo 2002; Plasma Nutfah Bulletin 1999-2001, Bermawie et al. 2003.

Note:

Balithi: Balai Penelitian Tanaman Hias (Research Center for Ornamental Plants)

Balitas: Balai Penelitian Tanaman Serat (Research Center for Fiber Plants)

APPENDIX 5. Threatened species based on taxonomic group class (Redlist, 2002).

Threatened animal category	
Extinct-E	3 species
Extinct in the wild-EW	0 species
Critically endangered-CR	44 species
Endangered-EN	102 species
Vulnerable-VU	242 species
Lower risk, conservation dependent-LR/cd	11 species
Lower risk, near threatened-LR/nt	294 species
Data Deficient-DD	93 species
TOTAL	789 species

Threatened plant category	
Extinct-E	2 species
Extinct in the wild-EW	1 species
Critically endangered-CR	114 species
Endangered-EN	67 species
Vulnerable-VU	203 species
Lower risk, conservation dependent-LR/cd	9 species
Lower risk, near threatened-LR/nt	72 species
Data Deficient-DD	40 species
TOTAL	508 species

Source: Primack, R.B. et al. 1998.

APPENDIX 6. Medicinal plants classified as rare in Indonesia.

No	Local/ trade name	Scientific name	Part of plant used
1	Kayu rapet	<i>Parameria laevigata</i>	Bark
2	Pulasari	<i>Alyxia halmaheira</i>	Root
3	Pulasari	<i>A. reinwardtii</i>	Root
4	Secang	<i>Caesalpinia sappan</i>	Wood
5	Kedawung	<i>Parkia roxburghii</i>	Seed
6	Mesoyi	<i>Cryptocaria massoia</i>	Bark
7	Kemukus	<i>Piper cubeba</i>	Fruit
8	Rasuk angin	<i>Usnea misaminensis</i>	Leaf
9	Jambe	<i>Areca catechu</i>	Plant cells.
10	Pasak bumi	<i>Eurycoma longifolia</i>	Root
11	Sidowayah	<i>Woodfordia floribunda</i>	Flower
12	Kunci pepet	<i>Kaempferia angustifolia</i>	Rhizome
13	Nagasari	<i>Mesua ferrea</i>	Flower
14	Purwoceng	<i>Pimpinella pruatjan</i>	Root
15	Sukmodiluwih	<i>Gunnera macrophylla</i>	Flower
16	Sintok lekat	<i>Cinnamomum sintoc</i>	Bark
17	Bidara laut	<i>Strychnos ligustrina</i>	Wood
18	Pulai	<i>Alstonia scholaris</i>	Bark
19	Kayu ules	<i>Helicteres isora</i>	Leaf
20	Joholawe	<i>Terminalia balerica</i>	Fruit
21	Pranajiwo	<i>Euchresta horsfeldii</i>	
22	Bidara upas	<i>Merremia mammosa</i>	Tuber
23	Patmosari	<i>Rafflesia padma</i>	Flower
24	Padma	<i>R. zollingerii</i>	Flower
25	Pelir Musang	<i>Anaxagorea javanica</i>	
26	Gaharu	<i>Aquilaria beccariana</i>	Wood
27	Gaharu	<i>A. malaccensis</i>	Wood
28	Paku simpai	<i>Cibotium barometz</i>	
29	Kulit Lawang	<i>Cinnamomum culilaban</i>	Bark
30	Temu putri	<i>Curcuma petiolata</i>	Rhizome
31	Puar Tenganau	<i>Elletyariopsis sumatrana</i>	
32	Ki Lembur	<i>Kadsura scandens</i>	
33	Kayu Pedang	<i>Oroxylum indicum</i>	
34	Petir	<i>Parkia intermedia</i>	
35	Perlukan	<i>Scutellaria javanica</i>	
36	Cetek	<i>Stychnos ignatii</i>	
37	Ki Sariawan	<i>Symplocos odoratissima</i>	
38	Hamperu bebek	<i>Voacanga grandifolia</i>	
39	Sanrego	<i>Lunasia amara</i>	
40	Pule pandak	<i>Rauvolfia serpentina</i>	Root
41	Kemuning	<i>Murayya paniculata</i>	Leaf, flower
42	Tabat barito	<i>Ficus deltoidea</i>	Root
43	Asem Gelugur	<i>Tamarindus indicus</i>	Fruit
44	Kluwek	<i>Pangium edule</i>	Fruit

Sources: Rifai et al. 1992; Zuhud et al. 2001.

APPENDIX 7. Selected policies related biodiversity management in Indonesia.

I. General

No.	Regulation/Policy/Institution	Biodiversity aspects
1.	Act No.5/1990 on Conservation of natural resources and ecosystem and Government Regulation No.7/1999 on Preservation of Plant and Animal Species.	<ul style="list-style-type: none"> • Emphasis on protection efforts such as protection of buffer zone system, preservation of species diversity, what activities are not allowed and the penalties. This Act also defines Natural Reserve areas, Protected Areas and the role of community. Emphasis is on terrestrial conservation areas. • Does not have provisions on genetic diversity.
2.	Act No.24/1992 on Spatial Planning and Presidential Decree No.32/1990 on protected area.	<ul style="list-style-type: none"> • Management of protected area, production area and conversion. • Management of protected area. • Presidential Decree 32/1990 delegates authority to Regional Government to determine protected area, but not to manage it.
3.	Act No.5/1994 on the Ratification of <i>United Nations Convention on Biological Diversity</i> .	<ul style="list-style-type: none"> • Regulates conservation and sustainable use, equitable sharing of benefits and technology transfer. • Regulates protection of traditional knowledge and biosafety. • There are principles to regulate Access to Genetic resources (Article 15) and access to Technology and Technology transfer (Article 16). The 'Prior Informed Consent' (PIC) is also to be applied, that is a principle which obligates parties to provide prior information before getting access to genetic resources, especially to countries having those resources.
4.	Act No.23/1997 on Environmental Management.	<ul style="list-style-type: none"> • Regulates the principle, objectives and goals of environmental management in Indonesia, rights, obligations and the role of communities; authority in environmental management, conservation of environmental functions, conditions for environmental management, supervision, administrative sanctions, environmental audit, resolution of environmental disputes. • Article 8 provides for environmental policies and management related to natural and human made resources, including genetic resources. • Article 37 provides rights to communities to file a class action to the court and provides the legal basis for environmental organisations to file a law suit on behalf of environmental protection.

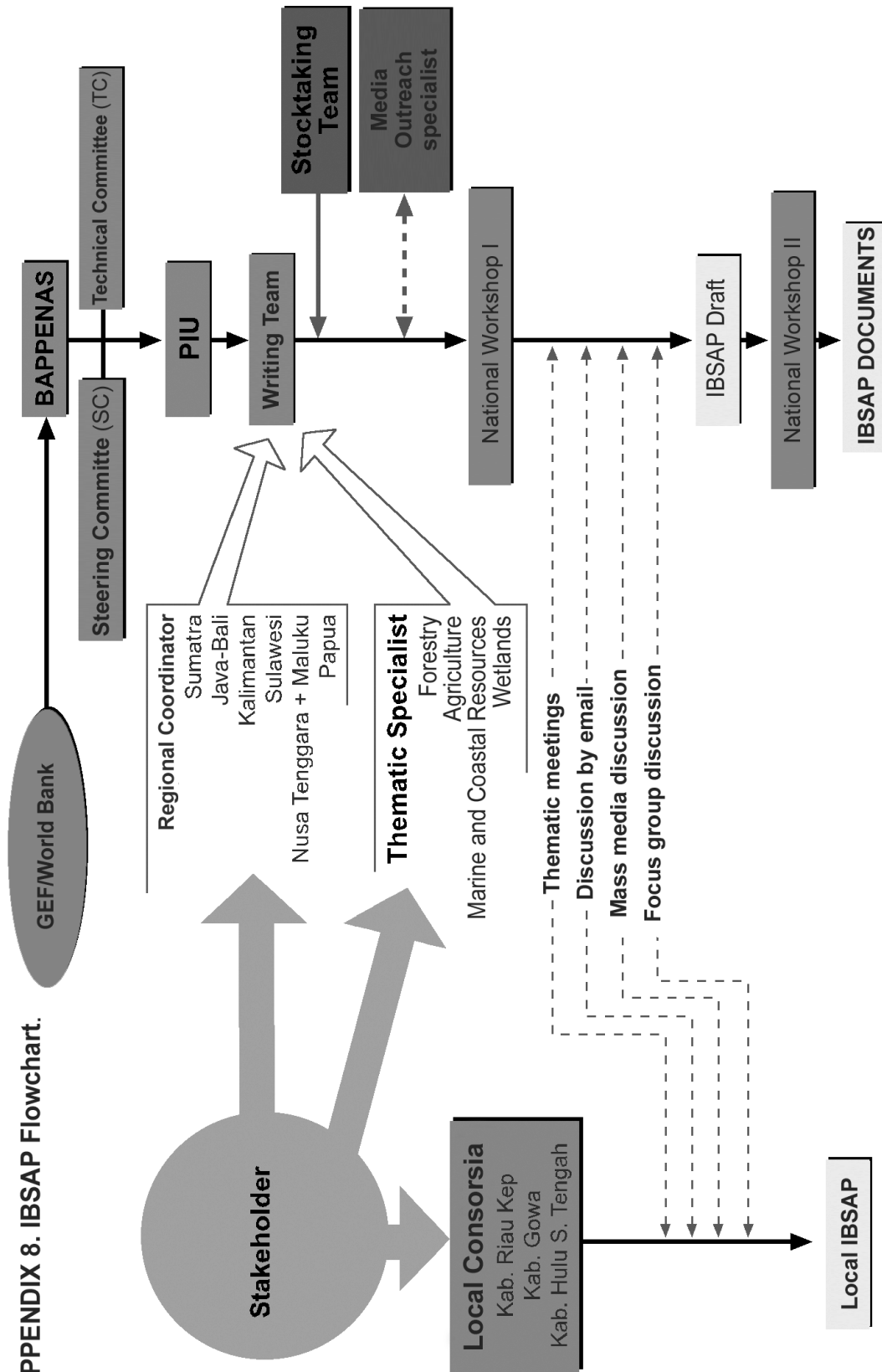
5.	Act No. 25/2000 on National Development Program (PROPENAS 2000-2004).	<ul style="list-style-type: none"> Covers management plan for various ecosystems but does not mention biodiversity specifically.
6.	MPR Decree No. IX/MPR/2001 on Agrarian Reform and Natural Resource Management.	<ul style="list-style-type: none"> Provides the basis for regulations on agrarian reform and natural resources management. Gives a mandate to review all regulations on agrarian affairs/natural resources management. Charged the House of Representatives and the President to arrange further regulations on agrarian and natural resources management, and to revoke, revise and/or change all laws and implementing regulations that do not conform with this MPR Decree (Article 6). Strengthens the vision that natural resources management on land, marine and air be conducted in an optimum, equitable, sustainable and environmentally sound manner. Natural resources management shall be conducted in a coordinated and integrated manner, and accommodate the dynamics, aspirations and role of communities, as well as resolve conflicts. Recognition of indigenous communities and local cultures, equitable across generation and gender, public participation, sectoral coordination and integration, decentralization, respect for human rights, etc.
7.	Act No. 22/1999 on Regional Government and Act No. 25/1999 on Fiscal Balance between the Central and the Regional.	<ul style="list-style-type: none"> Regulates decentralization of authority to regional government, including in natural resources management. Regulates sharing of development funds between the national and regional level, including revenue from the utilization of natural resources.
8.	Act No. 14/2000 on Patents.	<ul style="list-style-type: none"> Regulates patent rights, including on biological materials/life forms. Patent protection is exempted if patent object is contrary to environmental principles and morality.
9.	National Agenda 21, 1997 MoE, through a limited consultation process.	<ul style="list-style-type: none"> Chapter 16 deals with biodiversity management.
10.	Initiative to formulate a bill on Natural resources management (RUU PSDA).	<ul style="list-style-type: none"> Proposal to regulate the management of all natural resources under one umbrella law, as implementation of the MPR Decree No.IX/2001 Process involves Public Consultation Mechanism (MKP).

II. Sectoral

No.	Regulation/Policy/Institution	Biodiversity related aspects
1.	Act No. 41/1999 on Forestry.	<ul style="list-style-type: none"> • Regulates the function, planning and management of forests, including the role of adat communities and the general public. • Regulates forest protection more as a working unit or area rather than ecosystem.
2.	Presidential Decree No. 43/1978, on Ratification of CITES. Institution: MoF as management authority; LIPI as scientific authority	<ul style="list-style-type: none"> • Restriction, ban and monitoring of flora and fauna trade, particularly those threatened with extinction. • Appendix I contains species categorized as threatened, most probably due to trade. Trade on species in Appendix I may only be conducted through rigorous permit. • Appendix II contains all species which are not all categorised as threatened, but will be threatened if trade is not tightly controlled. • Appendix III contains species which a particular country considers need to be regulated within its jurisdiction, with the objective to prevent or limit exploitation, and need the cooperation of other CITES members to monitor trade in those species.
3.	Presidential Decree No. 48/1991 on Ratification of the Ramsar Convention on Wetlands. Institution: MoF and MoE	<ul style="list-style-type: none"> • Provisions on wetland conservation. • Determines wetland sites with international importance.
4.	Act No. 12/1992 on Plant Cultivation System. Institution: MoA	<ul style="list-style-type: none"> • Regulates the use of seeds and pesticides, collection and storage of agricultural food crop varieties, distribution of new agricultural crop varieties.
5.	Act No. 29/2000 on Plant Variety Protection.	<ul style="list-style-type: none"> • Regulates the protection of plant breeders' rights and the use of plant varieties protected by intellectual property rights.
6.	Initiative to formulate bill on Conservation and Utilisation of genetic resources.	<ul style="list-style-type: none"> • An attempt to regulate access to genetic resources and equitable sharing of benefits derived from the use of genetic resources. • Derived from the Act No.5/1994 on CBD ratification.

Note: The list above is far from comprehensive; it contains only several policies to provide a picture on the complexity and diverse national policies on biodiversity management in Indonesia.

APPENDIX 8. IBSAP Flowchart.



APPENDIX 9. Regional workshop process.

SUMATRA

The IBSAP process in the Sumatra bioregion consisted of main and supporting activities. The main activities consist of socialization, discussion, dialogue with the mass media, and regional workshop. There are four supporting activities: publication of simple brochure, exhibition on biodiversity management, intensive publication in the media and discussion on the formulation of campaign strategies to save Sumatra's lowland forest. Each of these is briefly described below:

Main activities

Socialization

Yayasan WARSI conducted this after a coordinating meeting on the regional process of IBSAP formulation at BAPPENAS on 25 March 2002; this meeting discussed, among others, the tasks and responsibilities of the Regional Coordinators. The first step taken was to communicate with the various stakeholders, which have been involved in biodiversity management in Sumatra. The first stakeholder group that could be easily accessed was NGOs who are participants of the WARSI network in four provinces, i.e. Jambi, West Sumatra, South Sumatra, and Bengkulu as well as NGOs in all the provinces of Sumatra. The next groups were from the private sector, regional government, National Park/conservation area managers, adat/indigenous communities, and other communities that rely on natural resources. This activity started in the beginning of April 2002.

The socialization of IBSAP right at the initial stage of the process is also useful for identifying which other parties or groups need to be involved further and which parties have not as yet been involved and therefore need to be involved in the next process.

Questionnaire distribution

Facilitated by the regional coordinator, this is considered an important process in the regions. In Sumatra, the questionnaire was first distributed to those who already know the IBSAP process through socialization activities. These respondents, mostly NGOs, then recommended other institutions or community groups that need to be involved in the IBSAP process. Questionnaires were then distributed as well to the new list of contacts.

Questionnaires were distributed in several ways, through e-mail, fax or mails depending on the facilities available to the respondents. Only a small number of the questionnaires were returned, due to the following reasons:

- Time and information materials for socialization were limited.
- Respondents have little understanding or do not know at all about the BAPI document and the IBSAP process. This is reflected from the fact that only the first page of the questionnaire was filled, in which they said they could not answer further questions because they have no knowledge of the matter.
- Trouble in Warsi's e-mail system due to virus and so some questionnaires that were returned were lost before they could be transferred.
- The delays in the postal system, thus some questionnaires were returned during the regional workshop.
- Perhaps the list of questions was considered too long so respondents were reluctant to answer them.

Discussions in provinces

The next step was to develop discussions on biodiversity management issues in Sumatra among the stakeholders. Initial discussion was held with 13 NGOs, who are WARSI participants in four provinces in Sumatra. This was then expanded to include other parties such as research institutions, regional government, other NGOs, universities, and the private sector. The main objective of the discussion was to identify and elaborate on the strategic biodiversity issues in each province and the preparation of those provinces in participating in the regional workshop.

The discussion in Padang and Jambi (two provincial capital cities most easily accessible) was more intensive because it was agreed that these two provinces would strategically be the basis to access other areas. Jambi would become the basis to reach the Southern part of Sumatra (Lampung, Bangka Belitung, South Sumatra, Bengkulu, and Jambi). West Sumatra would be the basis for the Northern part of Sumatra (Nanggroe Aceh Darussalam, North Sumatra, Riau, and West Sumatra).

The series of discussions were held as part of the socialization process and preparation for the Sumatra regional workshop. They were held from mid April 2002 until 21-22 May 2002 when the regional workshop was held. After the workshop, Yayasan WARSI, as the Sumatra regional coordinator, continued the discussions in a different format, particularly in terms of the participants and the strategy.

Dialog with journalists

This activity is needed because knowledge about biodiversity management issues is very limited among members of the public. For example, there is very little awareness about the existence of BAPI 1993 document (Biodiversity Action Plan for Indonesia).

This is due to limited socialization of the document. On the other hand many efforts have also been undertaken in the area of natural resource conservation. But such activities are often not well communicated to the wider public because the relationship between conservation actors and the media is not intensive. Therefore a more intensive dialog with electronic and print media is needed. The dialog with journalists is thus an important element in the process of IBSAP formulation, as well as for activities on the conservation of Sumatra's biodiversity in the long term.

The dialog was held one day before the regional workshop, on 20 May 2002 at WARSI office. The objectives were:

- To share knowledge and build common understanding about local/regional environmental issues.
- To expand the socialisation for IBSAP formulation.
- To get ideas an input for the IBSAP process.
- To share knowledge about environmental journalism.
- To develop common motivation to provide more coverage of environmental news in mass media.
- To foster relationship with the media.
- To prepare regional journalists to cover the regional workshop.

Initially the activity was supposed to involve journalists from all over Sumatra. However, due to limited funding, the dialog was attended only ten by journalists in Jambi, who represented local and national media. Despite this, the dialog was relatively successful in helping to disseminate information about the IBSAP process and the problems faced by Sumatra's biodiversity. Some media published reports on IBSAP regional workshop in Sumatra. In fact, other media also published information on the workshop results a few months after the event.

Regional workshop

Organized by Yayasan WARSI, on 21-22 May 2002 at Mayang Mangurai, BAPPEDA, the objectives of the Sumatra Regional Workshop are:

1. To provide a venue for biodiversity stakeholders in Sumatra to meet, exchange information and identify biodiversity issues.
2. To identify regional issues, opportunities and aspirations in biodiversity management in Sumatra.
3. To gather input for the formulation of IBSAP documents.
4. To build consensus among stakeholders in formulating regional conservation objectives, strategy and recommendations relating to Sumatra's biodiversity.

Some 70 invitations were sent out but the response was overwhelming and 90 people came to this workshop. The participants came from almost every province in Sumatra, representing adat community, victims of mining activity, NGO, Bappeda of some provinces, Bapedalda, private