

Tabel III-1.10.2 Jenis Berbahaya dan Status Ancaman Tanaman di Wilayah Intensif

No	Species	Kal	Tam	Kas	Man	Dangerous Spciesd	Threatened Status	
							Protected By I.G. ¹⁾	IUCN ²⁾ Categories
1	<i>Ailanthus integrifolia</i>		+	+	+			R
2	<i>Areca vestiaria</i>		+	+	+			R
3	<i>Calamus zollingeri</i>	+						R
4	<i>Canarium sp 2</i>	+						R
5	<i>Caryota mitis</i>	+		+			Pr	
6	<i>Garyota urens</i>				+		Pr	
7	<i>Casuarina selebica</i>	+						R
8	<i>Chisocheton warburgii</i>		+	+	+			R
9	<i>Dillenia celebica</i>	+		+				R
10	<i>Homalium celebicum</i>	+						R
11	<i>Hydnophytum formicarum</i>			+			Pr	
12	<i>Kibara corriacea</i>		+	+	+			LR/lc
13	<i>Lithocarpus celebicus</i>	+						R
14	<i>Magnolia paulantha</i>		+					R
15	<i>Manglietia glauca</i>	+	+	+	+			R
16	<i>Myristica fatua</i>			+				LR/lc
17	<i>Pharaserianthes minahasae</i>	+						R
18	<i>Pigaffeta flaris</i>			+	+		Pr	
19	<i>Pinanga caesia</i>	+	+	+	+			R
20	<i>Pinanga celebica</i>			+				R
21	<i>Piper aduncum</i>	+		+		Dangerous		
22	<i>Pterocarpus indicus</i>	+						VU A1d
23	<i>Saurauza minahasac</i>				+			R
24	<i>Talauma celebica</i>		+	+				R
25	<i>Terminalia bellinca</i>		+	+	+			R
26	Unknown 13			+	+		Pr	
27	Unknown 2	+		+		Dangerous		

Note: Kal = Kaluta forest, Tarn = Tarnpusu forest, Kas = Kasuratan forest, Man = Manimporok forest

1) Indonesian Government, 2) International Union for Conservation of Nature and Natural Resources

Pr: Protected by PP No. 7/1999 Concerning the protection of plants and animals.

R: Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically less than 5). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

LR/nt: A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. **Near Threatened (nt)**. Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

Vu C1+2a: A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future. C. Population estimated to number less than 10,000 mature individuals and either: 1. An estimated continuing decline of at least 10 % within 10 years or 3 generations, whichever is longer; or 2. A continuing decline, observed, projected or inferred, in numbers of mature individuals and population structure in the form of a severely fragmented (i.e. no sub-population estimated to contain more than 1000 mature individuals)

Tabel III-1.10.3 Status Ancaman Binatang di Wilayah Intensif

No	Scientific Name	Family	Location	Threatened Status	
				Protected By I.G. ¹⁾	IUCN ²⁾ Categories
1	<i>Accipiter</i> sp	Accipitridae	Kas	Pr	
2	<i>Aetopigia siparaja</i>	Nectariniidae	Kas	Pr	
3	<i>Centropus celebensis</i>	Centropoindae	Tam		R
4	<i>Dendrocopos temminckii</i>	Picidae	Tam		R
5	<i>Dicaeum auralimbatum</i>	Dicasidae	Tam, Kas		R
6	<i>Dicaeum celebicum</i>	Dicacidae	Kai, Tm, Kas		R
7	<i>Dicaeum nehrkorni</i>	Dicacidae	Tam, Man		R
8	<i>Ducula forsteni</i>	Columbidae	Kal, Tm		R
9	<i>Enodes erythrophris</i>	Stumidae	Kal		R
10	<i>Eudynamis melanorkynca</i>	Cuculidae	Kal		R
11	<i>Ficedula rufigula</i>	Muscicapidae	Kal, Ku		R/LR/nt
12	<i>Macropigya amboinensis</i>	Columbidae	Kal, Tm, Kas, Man	Pr	VU CI+2a
13	<i>Mulleripicus fulvus</i>	Picidae	Man		R
14	<i>Myzomela sanguinolenta</i>	Meliphagidae	Ku, Man	Pr	
15	<i>Nectarinia aspasia</i>	Nectariniidae	Kal	Pr	
16	<i>Nectarinia jugularis</i>	Nectariniidae	Tm	Pr	
17	<i>Pachycephala sulfuriventer</i>	Pachycephalidae	Tam, Ku, Man		R
18	<i>Penelopides exarhatus</i>	Bucerotidae	Kal	Pr	R
19	<i>Phaenicophaeus calyorchinus</i>	Cuculidae	Kal, Tm, Kas		R
20	<i>Pitta erythrogaster</i>	Pittidae	Tam, Kas	Pr	
21	<i>Prioniturus platturus</i>	Psittacidae	Kal		R
22	<i>Prosciurillus leucomus</i> (Tupai)		Kal		R
23	<i>Treron vernans</i>	Columbidae	Tam		R
24	<i>Trichastoma celebense</i>	Timaliidae	Kal, Tam, Ku		R

Note: Kal = Kaluta forest, Tarn = Tarnpusu forest, Kas = Kasuratan forest, Man = Manimporok forest

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R: Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically less than 5). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

LR/nt: A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Near Threatened (nt). Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

Vu CI+2a: A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future. C. Population estimated to number less than 10,000 mature individuals and either: 1. An estimated continuing decline of at least 10 % within 10 years or 3 generations, whichever is longer, or 2. A continuing decline, observed, projected or inferred, in numbers of mature individuals and population structure in the form of a severely fragmented (i.e. no sub-population estimated to contain more than 1000 mature individuals)

Tabel III-2.4.1 Aplikasi dari Berbagai macam jenis Pertanian pada Masing-masing Zona

Location	Kecamatan	Type	P Zone	Bm1 Zone	Bm2 Zone	Bm3 Zone	Bw Zone	F Zone	Total	Location	Kecamatan	Type	P Zone	Bm1 Zone	Bm2 Zone	Bm3 Zone	Bw Zone	F Zone	Total
East	Toulimambot	AGF.- I	0	127	0	0	0	0	127	West	Remboken-F	AGF.- I	0	0	6	0	6	0	12
		AGF.- I/IM	0	167	0	0	0	0	167			AGF.- I/IM	0	0	18	0	0	0	18
		AGF.- II/IM	0	0	20	0	0	0	20			AGF.- II/IM	0	0	0	60	0	0	60
		AGF.- III/IM	0	79	70	0	0	0	149			AGF.- III/IM	0	0	107	14	4	0	125
		UF/IM	0	31	31	0	0	7	38			UF/IM	0	0	0	0	5	48	53
		LF/IM	0	0	0	0	0	169	169			LF/IM	0	0	0	0	0	0	0
		Total	0	373	121	0	0	176	670			Total	0	0	131	74	15	48	268
Eris	Eris	AGF.- I	0	370	0	0	10	0	380	Kakas-W	Kakas-W	AGF.- I	0	0	39	0	0	0	39
		AGF.- I/IM	0	494	0	0	0	0	494			AGF.- I/IM	0	0	136	0	0	136	
		AGF.- II/IM	0	13	49	0	0	0	62			AGF.- II/IM	0	0	30	15	0	35	80
		AGF.- III/IM	0	88	0	0	0	0	88			AGF.- III/IM	0	0	135	0	0	0	135
		UF/IM	0	0	23	0	3	3	29			UF/IM	0	0	0	0	0	50	50
		LF/IM	0	0	0	0	10	90	100			LF/IM	0	0	0	0	0	7	7
		Total	0	965	72	0	23	93	1,153			Total	0	0	340	15	0	92	447
South	Kakas-E	AGF.- I	0	172	0	0	14	0	186	Tondano	Tondano	AGF.- I	0	30	0	0	30	0	60
		AGF.- I/IM	0	111	218	0	0	0	329			AGF.- I/IM	0	80	281	0	0	0	361
		AGF.- II/IM	0	0	75	0	0	32	107			AGF.- II/IM	0	0	450	0	0	0	450
		AGF.- III/IM	0	0	36	0	0	0	36			AGF.- III/IM	0	0	570	0	0	0	570
		UF/IM	0	0	0	0	2	30	32			UF/IM	0	0	20	440	0	81	541
		LF/IM	0	0	0	0	10	109	119			LF/IM	0	0	0	0	0	88	88
		Total	0	283	329	0	26	171	809			Total	0	110	1,321	440	30	169	2,070
South	Langowan	AGF.- I	0	15	0	0	0	0	15	Remboken	Remboken	AGF.- I	0	0	40	0	0	0	40
		AGF.- I/IM	0	86	100	0	0	0	186			AGF.- I/IM	0	0	311	0	0	0	311
		AGF.- II/IM	0	0	0	209	0	232	441			AGF.- II/IM	0	0	59	260	0	0	319
		AGF.- III/IM	0	0	260	79	0	0	339			AGF.- III/IM	0	0	400	0	0	0	400
		UF/IM	0	0	0	0	0	398	398			UF/IM	0	0	0	320	0	160	480
		LF/IM	0	0	0	0	0	105	105			LF/IM	0	0	0	0	0	30	30
		Total	0	101	360	288	0	735	1,484			Total	0	0	810	580	0	190	1,580
South	Tompaso	AGF.- I	0	1	0	0	0	0	1	Total	Total	AGF.- I	0	715	85	0	60	0	860
		AGF.- I/IM	0	14	13	0	0	0	27			AGF.- I/IM	0	952	1,077	0	0	0	2,029
		AGF.- II/IM	0	0	8	98	0	111	217			AGF.- II/IM	0	13	691	642	0	410	1,756
		AGF.- III/IM	0	0	125	0	0	0	125			AGF.- III/IM	0	167	1,703	93	4	0	1,967
		UF/IM	0	0	0	6	0	134	140			UF/IM	0	0	74	766	10	911	1,761
		LF/IM	0	0	0	0	0	20	20			LF/IM	0	0	0	0	20	618	638
		Total	0	15	146	104	0	265	530			Total	0	1,847	3,630	1,501	94	1,939	9,011

Note: AGF-I/IM; Improved agroforestry type I, AGF-II/IM; Improved agroforestry type II, and AGF-III; Improved agroforestry type III
 UF/IM: Improved upland farming, LF: Lowland farming

**Tabel III-2.5.1 Aktifitas yang diperlukan bagi Pengembangan Institusi
Dari masing-masing komponen (1/3)**

(a)	Community Institutional Development
	<ul style="list-style-type: none"> - To prepare minimum requirements for village cadre selection, - To prepare and apply village cadre recruiting procedure, - To select first generation of village cadres and NGO members as to attend training programs as well, - To prepare and apply village cadre introductory program, - To develop village cadre human resource management capacity in relevant government office (forestry services) and a village level proposal process, - To prepare guidelines and technical manual for proposal development - To train local village communities based on technical manual & guidelines, - To repair guidelines for proposal selection, - To facilitate project proposal process in selected villages, - To deploy extension workers in the field, - To promote project process, - To implement village proposal process for nursery development, proper farming practices, physical measures construction, and agroforestry development, - To prepare ongoing proposal preparation selection, funding process, and implementation.
(b)	Technical Institutional Development
	<ul style="list-style-type: none"> - To develop physical measures construction training for extension workers, - To establish agroforestry research and development capacity (AFRDC), - To prepare facility, - To recruit consultants, - To prepare research programs, - To implement research programs, - To prepare annual reports and recommendations, - To establish and maintain demonstration plots, - To prepare modules for village cadre training center, - To appoint village cadre training center (VCTC) - To prepare facility, uniforms and kits, - To prepare basic programs such as agroforestry, environmental and watershed awareness, priority project identification, proper farming practices, physical measures construction, and project management, - To begin village cadre induction and orientation, - To strengthen village cadre training center (receive updated modules, recommendations from AFRDC) - To prepare advanced agroforestry extension worker training program - To apply basic extension cadre training program for new recruits - To apply advanced extension cadre training program (physical measures, proper farming, and agroforestry)

**Tabel III-2.5.1 Aktifitas yang diperlukan bagi Pengembangan Institusi
Dari masing-masing komponen (2/3)**

(c) Institutional Development of Forestry Services
<p><u>1) Information Systems Development I (District level)</u></p> <ul style="list-style-type: none"> - Establish office in district structure - Engage institutional development and information systems consultant - Install computers and related hardware in district office - Install software in district office - Select staff for training - Select training contractor - Computer operation training I (Basic Computer Operation 10 trainees x 10 days) - Computer operation training II (Business Software 10 trainees x 10 days) - Computer operation training III (Database & Data Processing 10 trainees x 10 days) - Computer operation Training (Advanced training, desktop publishing and GIS, 25 trainees X 4 sessions X 10 days) - Research and identify routine data gathering points - Install data gathering equipment and facilities - Develop simple watershed database - Develop standard data forms for branch offices - Training for branch staff - Develop standardized project monitoring and evaluation forms - Train staff in differential GPS operation - Deploy branch office staff - Gather data - Design input data screen form - Data coding - Data entry - Forward data to province office - Descriptive analysis and report writing training I - Descriptive analysis and report writing workshop I <p><u>2) Information Systems Development II (Province level)</u></p> <ul style="list-style-type: none"> - Engage database and computer communications specialist - Install computers and related hardware in province office - Install software in province office - Install LAN intranet - Design website with IT staff - Select staff for general training - Install watershed database - Computer operation training I (basic computer operation 15 trainees x 10 days) - Computer operation training II (Business Software 15 trainees x 10 days) - Computer operation training III (database & data processing 15 trainees x 10 days) - Computer operation training IV (desktop publishing and graphics design combined with district office) - Descriptive analysis and report writing training workshop I (15 trainees x 2 days) - Descriptive analysis and report writing seminar I (15 trainees x 2 days) - Develop simple but attractive environmental leaflet for village awareness - Develop posters (environmental awareness) - Computer GIS operation training I on the job - Train staff in differential GPS operation on the job - Develop environmental impact signaling system - Environmental impact signaling report 1 - Environmental impact signaling report 2 - General real time on the job training and coaching for information systems and product development in province and district Offices <p><u>3) General capacity strengthening</u></p> <ul style="list-style-type: none"> - Technical assistance with counterpart arrangements where existing office staff work together with technical assistance staff.

**Tabel III-2.5.1 Aktifitas yang diperlukan bagi Pengembangan Institusi
Dari masing-masing komponen (3/3)**

(d)	Accurate Village Boundary Mapping
	<ul style="list-style-type: none"> - To recruit survey and mapping consultant - To consultant preparations - To gather existing village boundary maps from Sub Districts and Department of Lands - To develop standard approach for mapping village boundaries - To have meetings with all Sub District Heads for explaining objectives of village boundary mapping - To use differential GPS to locate and establish village reference points - To relate maps to natural and man made boundaries (streams, roads etc.) - To establish boundaries through map and aerial photo interpretation on 1:10,000 maps - To create village boundary layer in GIS - To overlay village boundaries on zoning and problem maps - To provide recommendations to Sub District and village about zoning needs
(e)	Institutional Integration and Strengthening of Legal and Regulatory Framework
	<ul style="list-style-type: none"> - To revise laws and adapt regional regulations (Forestry/Social Forestry) - To research and establish joint decree - To establish Watershed Conservation Committee - To establish forum for integration of government activities
(f)	Strengthening of Watershed Conservation Capacity at University of Manado
	<ul style="list-style-type: none"> - To work with staff to strengthen the research capacity and supervise watershed program - To work with university staff to select research topics - To researcher undertake research - To present findings and recommendations to university - To revise based on inputs if necessary - To present final report to Watershed Conservation Committee - To work with public relations and community information section to develop simplified report - To translate simplified report - To layout and prepare simplified report - To disseminate simplified report to community

Tabel III-3.1.1 Kegiatan yang membutuhkan AMDAL

Activities	Scale/Area
I. FORESTRY FIELD	
1 Development of Safari Garden	\geq 250 ha
2 Development of Zoo	\geq 100 ha
3 Forestry Exertion Authority	All size
4 Sago Forest Exertion Authority	All size
5 Industrial Plants Forest Exertion Authority	\geq 10,000 ha
6 Bamboo Forest Exertion Authority	All size
7 Exertion of Natural Tourism in	
- National Park	\geq 100 ha
- Natural Tourism Park	\geq 100 ha
- Hunting Park	\geq 100 ha
- Botanical Forest	\geq 100 ha
All the activities appropriate to the Conclusion of Forestry Department no. 167/Kpts-II/1994	
II. TOURISM FIELD	
1 Hotels	\geq 200 rooms or area $>$ 5ha
2 Golf Area	All size
3 Park	\geq 100 ha
4 Tourism Area	All size
III. AGRICULTURE FIELD	
1 Wet rice field on the Forest	\geq 1,000 ha
2 Food plantation cultivation and horticulture with or without its exemption units	\geq 3,000 ha
3 Estate season plant cultivation with or without its exemption unit	\geq 5,000 ha
4 Estate Plant cultivation with or without its exemption unit	\geq 10,000 ha
5 Fishpond cultivation	\geq 50 ha
IV. PUBLIC WORK	
1 River normalization	
Medium city	\geq 5 km
Village	\geq 10 km
2 Water	\geq 500 l/second
V. Relocation AND Forest cleared Settlement	
1 Settlement and relocation activities	\geq 1,500 ha

Tabel III-3.3.1 Pemeriksaan Lingkungan Pendahuluan – Daftar Lingkup Kerja-1(1/3)

Issues	Judgement			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/Extension of agroforestry	Introduction/Extension of erosion control farming practices
1. Social Issues				
Scheduled relocation	D	D	D	D
Unwilling relocation	D	D	D	D
Alteration of the right on land tenure, & residence	D	D	D	D
Change of life style	D	B/C	C	C
Conflict between population	C	A	C	C
Effect on indigenous people, minority, & nomads	D	D	D	D
Reform of traditional institution, & custom	C	D	B	C
Obstruction on fishing right, water right, local regulations	C	D	D	D
Alteration of social structure by organization, etc.	C	C	C	C
Radical change of social structure, & population increase	D	D	D	D
Lost opportunity on production, such as loss of land	D	C	C	D
Transfer, conversion of foundation of economic activity, or unemployment	D	C	C	D
Enlarging income gap	D	C	C	C
Impact on existing transportation	D	D	D	D
Impact on schools & hospitals	D	D	D	D
Cutting off the local society by roads	D	D	D	D
People's perception	C	C	A	A
2. Health & Hygiene				
Occurrence of local diseases	D	D	D	D
Spread of malaria/ filaria epidemic	D	D	D	D
Increase of pesticide consumption	D	D	D	D
Accumulation of remained toxic matter	D	D	D	D
Increase of waste and excrement	D	D	D	D
Garbage & trash dump, falling standards of hygiene	D	D	D	D
Spread of vermin	D	D	D	D

Tabel III-3.3.1 Pemeriksaan Lingkungan Pendahuluan - Daftar Lingkup Kerja -1(2/3)

(Continued)

Issues	Judgement			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/Extension of agroforestry	Introduction/Extension of erosion control farming practices
2. Health & Hygiene (continued)				
Dump of construction waste, excavated soil, sludge, trash, etc.	D	D	D	D
3. Historical remains, Cultural legacy, superb panorama, etc.				
Destruction or damage of historical remains and cultural legacy	D	D	D	D
Loss of precious scenery	D	C	D	D
Effects on underground resources	D	C	D	D
Change of ground features by construction of the structures	D	D	D	D
Disturbance of harmonic scenery by construction of the structures	D	D	D	D
4. Area of precious fauna and flora, and eco-system				
Alteration of vegetation	A	D	B	D
Invasion and propagation of harmful fauna and flora	C	B	B	B
Extermination or decrease of precious or specific fauna and flora	A	B	B	D
Disappeared wetland or peat bog	D	D	D	C
Loss of bio-diversity	B	B	B	D
Loss of rain forest/ wild lands	A	C	B	D
5. Soils and Lands				
Land devastation (incl. Desertification)	D	D	D	D
Loss of soil fertility	D	D	D	D
Soil pollution by discharge or diffusion of toxic waste water	D	D	D	D
Soil loss	D	D	D	D
Loss of top-soil after forest cutting	D	D	D	D
Loss of top-soil after land consolidation	D	D	D	D
Modified important ground feature and loss of important geology by cut and bank	D	D	D	D

Tabel III-3.3.1 Pemeriksaan Lingkungan Pendahuluan - Daftar Lingkup Kerja -1(3/3)

(Continued)

Issues	Judgement			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/Extension of agroforestry	Introduction/Extension of erosion control farming practices
6. Hydrology & Water quality				
Change of flow/water surface	D	B	B	B
Occurrence of inundation and floods	D	D	D	D
Change of groundwater flow and groundwater table	D	B	B	C
Pollution or deterioration of water quality	D	D	D	D
Turbid water by soil erosion / reduced discharge	D	D	D	D
Exhausted groundwater by excess extraction or lowered recharge	D	D	D	D
Seeped toxic water of buried materials	D	D	D	D
Eutrophication	D	D	D	D
Water temperature change	D	D	D	D
7. Lake and River				
Sedimentation in lake	D	C	C	C
Sedimentation in rivers	D	C	C	C
Riverbed degradation	D	C	C	C
8. Others				
Increased opportunity of slope failure, accidents	D	D	D	D
Pollution by exhaust or toxic gas of vehicles and plants	D	D	D	D
Noise and vibration caused traffic, pumps, etc.	D	D	D	D
Change of temperature and wind by large scale development	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.3.2 Pemeriksaan Lingkungan Pendahuluan - Scoping Check List-2(1/3)

Issues	Judgement			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
1. Social Issues				
Scheduled relocation	D	A	C	D
Unwilling relocation	D	A	C	D
Alteration of the right on land tenure, & residence	D	A	D	C
Change of life style	D	A	D	C
Conflict between population	D	A	A	C
Effect on indigenous people, minority, & nomads	D	C	D	D
Reform of traditional institution, & custom	D	B	C	D
Obstruction on fishing right, water right, local regulations	D	C	A	D
Alteration of social structure by organization, etc.	D	C	C	D
Radical change of social structure, & population increase	D	D	D	D
Lost opportunity on production, such as loss of land	C	A	C	C
Transfer, conversion of foundation of economic activity, or unemployment	D	C	D	C
Enlarging income gap	D	C	D	D
Impact on existing transportation	D	D	D	C
Impact on schools & hospitals	D	C	D	D
Cutting off the local society by roads	D	D	D	D
People's perception	C	C	C	C
2. Health & Hygiene				
Occurrence of local diseases	C	C	D	D
Spread of malaria/ filaria epidemic	C	D	D	D
Increase of pesticide consumption	C	D	D	D
Accumulation of remained toxic matter	D	D	D	D
Increase of waste and excrement	D	D	D	D
Garbage & trash dump, falling standards of hygiene	D	D	D	D
Spread of vermin	C	D	D	D

Tabel III-3.3.2 Pemeriksaan Lingkungan Pendahuluan - Scoping Check List-2(2/3)

(Continued)

Issues	Judgement			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
2. Health & Hygiene (continued)				
Dump of construction waste, excavated soil, sludge, trash, etc.	C	C	D	C
3. Historical remains, Cultural legacy, superb panorama, etc.				
Destruction or damage of historical remains and cultural legacy	C	C	D	C
Loss of precious scenery	C	C	D	C
Effects on underground resources	C	C	D	C
Change of ground features by construction of the structures	C	C	D	C
Disturbance of harmonic scenery by construction of the structures	C	C	D	C
4. Area of precious fauna and flora, and eco-system				
Alteration of vegetation	D	D	D	D
Invasion and propagation of harmful fauna and flora	C	C	D	D
Extermination or decrease of precious or specific fauna and flora	D	D	D	D
Disappeared wetland or peat bog	D	D	D	D
Loss of bio-diversity	D	D	D	D
Loss of rain forest/ wild lands	D	D	D	D
5. Soils and Lands				
Land devastation (incl. Desertification)	D	D	D	D
Loss of soil fertility	D	D	D	D
Soil pollution by discharge or diffusion of toxic waste water	D	D	D	D
Soil loss	D	D	D	D
Loss of top-soil after forest cutting	D	D	D	D
Loss of top-soil after land consolidation	D	D	D	D
Modified important ground feature and loss of important geology by cut and bank	D	D	D	C

Tabel III-3.3.2 Pemeriksaan Lingkungan Pendahuluan - Scoping Check List-2(3/3)

(Continued)

Issues	Judgement			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
6. Hydrology & Water quality				
Change of flow/water surface	C	A	D	B
Occurrence of inundation and floods	D	D	D	D
Change of groundwater flow and groundwater table	D	D	A	D
Pollution or deterioration of water quality	D	D	D	A
Turbid water by soil erosion / reduced discharge	D	D	D	A
Exhausted groundwater by excess extraction or lowered recharge	D	D	D	D
Seeped toxic water of buried materials	D	D	D	D
Eutrophication	D	D	B	D
Water temperature change	D	C	D	D
7. Lake and River				
Sedimentation in lake	A	A	D	A
Sedimentation in rivers	A	A	D	A
Riverbed degradation	D	D	D	C
8. Others				
Increased opportunity of slope failure, accidents	D	D	D	D
Pollution by exhaust or toxic gas of vehicles and plants	D	D	D	D
Noise and vibration caused traffic, pumps, etc.	D	D	D	D
Change of temperature and wind by large scale development	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
 B : Anticipated impact
 C : Unknown (necessary to assess, detail could be clarified in a further assessment),
 D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.1 Pengaruh dari Penerapan bagi Aktifitas Terencana dalam Lahan dan Tanah (1/2)

Issues	Activities			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/ Extension of agroforestry	Introduction/Extension of erosion control farming practices
Land devastation (incl. Desertification)	D	D	D	D
Loss of soil fertility	D	D	D	D
Soil pollution by discharge or diffusion of toxic waste water	D	D	D	D
Soil loss	D	D	D	D
Loss of top-soil after forest cutting	D	D	D	D
Loss of top-soil after land consolidation	D	D	D	D
Modified important ground feature and loss of important geology by cut and bank	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.1 Pengaruh dari Penerapan bagi Aktifitas Terencana dalam Lahan dan Tanah (2/2)

Issues	Activities			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
Land devastation (incl. Desertification)	D	D	D	D
Loss of soil fertility	D	D	D	D
Soil pollution by discharge or diffusion of toxic waste water	D	D	D	D
Soil loss	D	D	D	D
Loss of top-soil after forest cutting	D	D	D	D
Loss of top-soil after land consolidation	D	D	D	D
Modified important ground feature and loss of important geology by cut and bank	D	D	D	C

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA

Table III-3.4.2 Pengaruh dari Penerapan bagi Aktifitas Terencana dalam Hidrologi (1/2)

Issues	Activities			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
Change of flow/water surface	D	D	D	D
Occurrence of inundation and floods	D	D	D	D
Change of groundwater flow and groundwater table	D	D	D	D
Pollution or deterioration of water quality	D	D	D	D
Turbid water by soil erosion / reduced discharge	D	D	D	D
Exhausted groundwater by excess extraction or lowered recharge	D	D	D	D
Seeped toxic water of buried materials	D	D	D	D
Eutrophication	D	D	D	D
Water temperature change	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.2 Pengaruh dari Penerapan bagi Aktifitas Terencana dalam Hidrologi (2/2)

Issues	Activities			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
Change of flow/water surface	D	D	D	D
Occurrence of inundation and floods	D	D	D	D
Change of groundwater flow and groundwater table	D	D	D	D
Pollution or deterioration of water quality	D	D	D	D
Turbid water by soil erosion / reduced discharge	D	D	D	D
Exhausted groundwater by excess extraction or lowered recharge	D	D	D	D
Seeped toxic water of buried materials	D	D	D	D
Eutrophication	D	D	D	D
Water temperature change	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA
D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.3 Pengaruh dari Penerapan bagi Aktifitas Terencana bagi Fauna dan Flora(1/2)

Issues	Activities			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/Extension of agroforestry	Introduction/Extension of erosion control farming practices
Occurrence of local diseases	D	C	C	D
Spread of malaria/ filaria epidemic	D	C	C	D
Increase of pesticide consumption	D	C	C	D
Accumulation of remained toxic matter	D	D	D	D
Increase of waste and excrement	D	D	D	D
Garbage and trash dump, falling standards of hygiene	D	D	D	D
Spread of vermin	D	D	D	D
Dump of construction waste, excavated soil, sludge, trash, etc.	D	D	C	D
Alteration of vegetation	D	D	D	D
Invasion and propagation of harmful fauna and flora	C	D	D	D
Extermination or decrease of precious or specific fauna and flora	D	D	D	D
Disappeared wetland or peat bog	D	D	D	C
Loss of bio-diversity	D	D	D	D
Loss of rain forest/ wild lands	D	D	D	D

Tabel III-3.4.3 Pengaruh dari Penerapan bagi Aktifitas Terencana bagi Fauna dan Flora (2/2)

Issues	Activities			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
Occurrence of local diseases	D	D	D	D
Spread of malaria/ filaria epidemic	D	D	D	D
Increase of pesticide consumption	D	D	D	D
Accumulation of remained toxic matter	D	D	D	D
Increase of waste and excrement	D	D	D	D
Garbage and trash dump, falling standards of hygiene	D	D	D	D
Spread of vermin	D	D	D	D
Dump of construction waste, excavated soil, sludge, trash, etc.	D	D	D	D
Alteration of vegetation	D	D	D	D
Invasion and propagation of harmful fauna and flora	D	D	D	D
Extermination or decrease of precious or specific fauna and flora	D	D	D	D
Disappeared wetland or peat bog	D	D	D	D
Loss of bio-diversity	D	D	D	D
Loss of rain forest/ wild lands	D	D	D	D

Judgement scores *A : Serious impact anticipated, need careful assessment in the site,*
B : Anticipated impact
C : Unknown (necessary to assess, detail could be clarified in a further assessment),
D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.4 Pengaruh dari Penerapan bagi Aktifitas Terencana bagi Sosial-ekonomi(1/2)

Issues	Activities			
	Set-up of monitoring institution for watershed management	Establishing community forest	Introduction/Extension of agroforestry	Introduction/Extension of erosion control farming practices
Scheduled relocation	D	D	D	D
Unwilling relocation	D	D	D	D
Alteration of the right on land tenure, & residence	D	D	D	D
Change of life style	D	B/C	C	C
Conflict between population	D	D	C	C
Effect on indigenous people, minority, & nomads	D	D	D	D
Reform of traditional institution, & custom	D	D	D	D
Obstruction on fishing right, water right, local regulations	D	D	D	D
Alteration of social structure by organization, etc.	D	D	D	D
Radical change of social structure, & population increase	D	D	D	D
Lost opportunity on production, such as loss of land	D	D	D	D
Transfer, conversion of foundation of economic activity, or unemployment	D	D	D	D
Enlarging income gap	D	D	D	D
Impact on existing transportation	D	D	D	D
Impact on schools & hospitals	D	D	D	D
Cutting off the local society by roads	D	D	D	D
People's perception	D	D	D	D
Destruction or damage of historical remains and cultural legacy	D	D	D	D
Loss of precious scenery	D	D	D	D
Effects on underground resources	D	D	D	D
Change of ground features by construction of the structures	D	D	D	D
Disturbance of harmonic scenery by construction of the structures	D	D	D	D
Increased opportunity of slope failure, accidents	D	D	D	D
Pollution by exhaust or toxic gas of vehicles and plants	D	D	D	D
Noise and vibration caused traffic, pumps, etc.	D	D	D	D
Change of temperature and wind by large scale development	D	D	D	D

Judgement scores

A : Serious impact anticipated, need careful assessment in the site,

B : Anticipated impact

C : Unknown (necessary to assess, detail could be clarified in a further assessment),

D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-3.4.4 Pengaruh dari Penerapan bagi Aktifitas Terencana bagi Sosial-ekonomi (2/2)

Issues	Activities			
	Expansion of woodland, Prevention of deforestation	Green belt along the lake and rivers	Regulation of fishery in the lake	Construction of erosion control structures
Scheduled relocation	D	D	D	D
Unwilling relocation	D	D	D	D
Alteration of the right on land tenure, & residence	D	D	D	D
Change of life style	D	D	D	D
Conflict between population	D	D	D	D
Effect on indigenous people, minority, & nomads	D	D	D	D
Reform of traditional institution, & custom	D	D	D	D
Obstruction on fishing right, water right, local regulations	D	D	D	D
Alteration of social structure by organization, etc.	D	D	D	D
Radical change of social structure, & population increase	D	D	D	D
Lost opportunity on production, such as loss of land	D	D	D	D
Transfer, conversion of foundation of economic activity, or unemployment	D	D	D	D
Enlarging income gap	D	D	D	D
Impact on existing transportation	D	D	D	D
Impact on schools & hospitals	D	D	D	D
Cutting off the local society by roads	D	D	D	D
People's perception	D	D	D	D
Destruction or damage of historical remains and cultural legacy	D	D	D	D
Loss of precious scenery	D	D	D	D
Effects on underground resources	D	D	D	D
Change of ground features by construction of the structures	D	D	D	D
Disturbance of harmonic scenery by construction of the structures	D	D	D	D
Increased opportunity of slope failure, accidents	D	D	D	D
Pollution by exhaust or toxic gas of vehicles and plants	D	D	D	D
Noise and vibration caused traffic, pumps, etc.	D	D	D	D
Change of temperature and wind by large scale development	D	D	D	D

Judgement scores

A : Serious impact anticipated, need careful assessment in the site,

B : Anticipated impact

C : Unknown (necessary to assess, detail could be clarified in a further assessment),

D : No impact anticipated, not necessary IEE and/or EIA

Tabel III-4.1.1 Rencana Konservasi DAS bagi Masing-masing Zona di Wilayah Intensif

Item	Zone					
	P Zone	Bm1 Zone	Bm2 Zone	Bm3 Zone	Bw Zone	F Zone
1 Physical Watershed Conservation Measures 1.1 Forestry Management and Rehabilitation	1) Boundary survey for protection forests 2) Community forestry (Soputan protection forest at south area) 3) Reforestation 4) Forest patrol 5) Research for non-wood products	The same plan will be applied for Bm1 and Bm2 zones 1)Nursery (9 locations), 2)Extension workers (30 persons), 3)Fuel wood plantation (150ha), 4)Delivery station(7 locations)		No plan	1) Establishment of green belt	No plan
1.2 Agriculture/Agroforestry Improvement	1) Fruit tree dominant agroforestry system in the middle part of community forest	1) AGF-I(Type I-2,4,5)/IM 2) Introduction of culture practice considering soil conservation	1) AGF-III(Type III-2)/IM 2) Application of AGF-I(Type I-2,4)/IM to place with low resistance to soil erosion 3) Application of AGF-II(Type II-2)/IM and UF/IM to place with high resistance to soil erosion	1) AGF-II(Type II-2/IM) and UF/IM 2) Application of AGF-III(Type III-2/IM) to a part of sloped area	1) Application of AGF-I(Type I-2) to sloped area along road. 2) Application of AGF-III (TypeIII-2) to gentle-sloped area 3) Application of AGF-I (TypeI-6) to undualted grass fallow 4) Provision of hedge raw at boundary of home garden	1) Application of AGF-II(Type II-2)/IM and UF/Im with hedge raw
1.3 Erosion Control Facility Development	1) Slope Protection works for hillsides at Mt.Maimberg in the South Area.	1) Construction of slope protection works for road at Eris-3 in the East Area 2) Construction of check dam at Tandengan in the East Area 3) Construction of check dam at Ranomerut in the East Area	1) Construction of slope protection works for road at Paleloan in the East Area 2) Construction of check dam at Tataaran in the West Area 3) Rehabilitation of existing check dam at Leleko in the West Area	1) Rehabilitation of existing check dam at Kasuratan in the West Area	No plan	1) River bed protection works at 6 sites on Panasen river in the South 2) River bank protection works at 900m site on Panasen river in the South Area 3) Construction of check dam at Tounipus in the East Area 4) Rehabilitation of existing check dam at Tountimomor in the South Area
2 Institutional Development	Applied for all zones. 1)Community institutional development, 2)Technical institutional development, 3)Institutional development of forestry services, 4) Accurate village boundary mapping, 5) Institutional integration and strengthening of legal and regulatory framework, 6) Strengthening of watershed conservation capacity at university of Manado, 7) Strengthening of local NGOs.					
3 Community Empowerment	Applied for all zones. Provide relevant information and data to implementers and supporting agencies to be able to facilitate decision making for community empowerment.					
4 Monitoring and Evaluation System 4.1 Engineering Items 4.2 Socio-Economic Items	Applied for all zones. 1) Soil erosion and sedimentation, 2) Water quality, 3) Water balance, 4) River bed erosion and slope failures Applied for all zones. 1) Micro planning for sustainable land use, 2) Awareness raising and environmental education, 3) Organizing of local people and reorienting of officials, 4) Strengthening of social safety net, 5) Gender and conservation.					

Note 1

AGF-I (TypeI-2)/IM Improved Estate Crop Dominant Agroforestry System
 AGF-I (TypeI-4,5,6)/IM Improved Tree(woody trees and tree crops) Dominant Agroforestry System
 AGF-II (TypeII-2)/IM Improved Herbaceous Crop Dominant Agroforestry System
 AGF-III (TypeIII-2)/IM Improved Inter-cropping System
 UF/IM Improved Upland Cultural Practice

Note 2

S Zone is not included in Watershed Conservation Plan.