



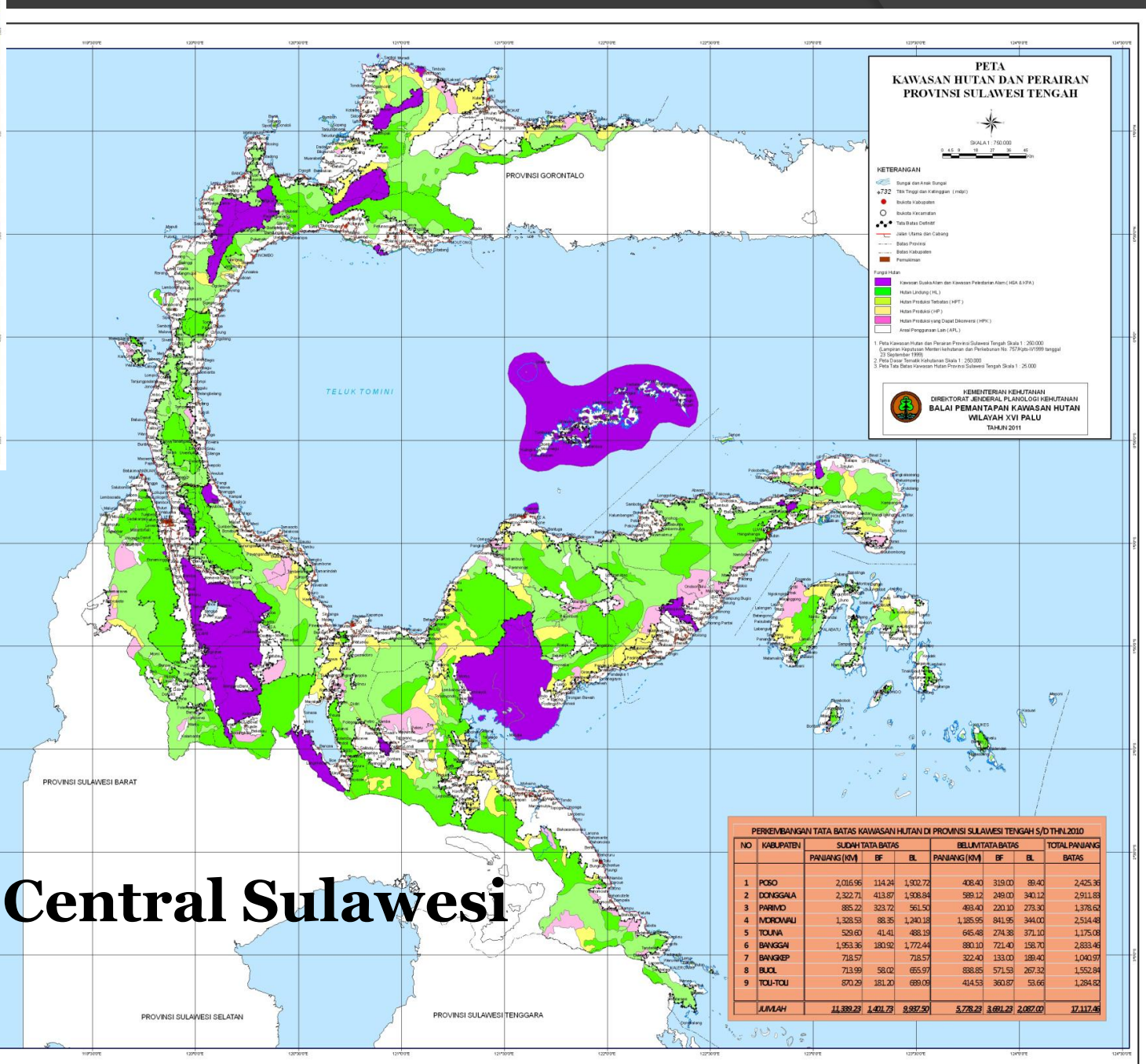
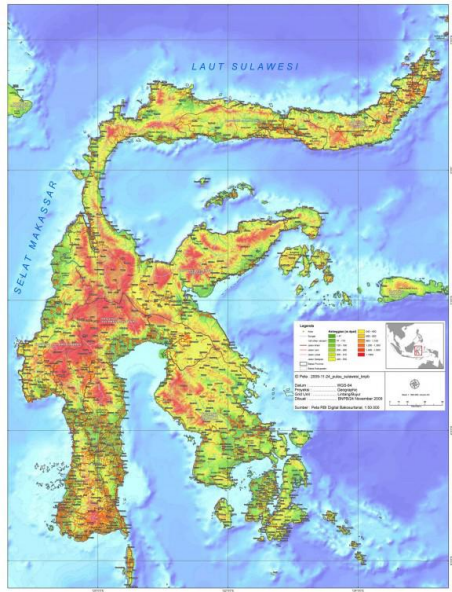
Identifying priority areas (Demonstration Activities) for REDD+ actions at a provincial scale in Central Sulawesi - Indonesia

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**UN-REDD Asia-Pacific regional workshop
“Supporting planning for REDD+ activities through spatial analysis”,
In Bangkok, 9-11th October 2013**

INDONESIA





**PETA
KAWASAN HUTAN DAN PERAIRAN
PROVINSI SULAWESI TENGAH**

SKALA 1 : 750.000

KETERANGAN

- Sungai dan Anak Sungai
- 4732 Titik Tinggi dan Ketinggian (meter)
- Batas Kabupaten
- Batas Kecamatan
- Titik Batas Desa
- Jalan Utama dan Cabang
- Batas Provinsi
- Batas Kabupaten
- Perairan

Fungsi Hutan

- Kawasan Suaka Alam dan Kawasan Pelestarian Alam (KSA & KPA)
- Hutan Lindung (HL)
- Hutan Produksi Terbatas (HPT)
- Hutan Produksi (HP)
- Hutan Produksi yang Dapat Diakses (HPD)
- Area Penggaruan Lahan (APL)

1. Peta Kawasan Hutan dan Perairan Provinsi Sulawesi Tengah Skala 1 : 200.000
 2. Laporan Kegiatan Memerintahkan dan Perencanaan No. 75/Agas/0580 tanggal 23 September 1999
 3. Peta Dasar Teknik Kelautan Skala 1 : 250.000
 4. Peta Dasar Teknik Kelautan Skala 1 : 250.000

KEMENTERIAN KEHUTANAN
DIREKTORAT JENDERAL PLANOLOGI KEHUTANAN
BALAI PEMANTAPAN KAWASAN HUTAN
WILAYAH XVI PALU
 TAHUN 2011

Central Sulawesi

NO	KABUPATEN	SUDAH TATA BATAS			BELUM TATA BATAS			TOTAL PANJANG BATAS
		PANJANG (KM)	BF	BL	PANJANG (KM)	BF	BL	
1	POGO	2,016.96	114.24	1,902.72	406.40	319.00	89.40	2,425.36
2	DONGGALA	2,322.71	413.87	1,908.84	589.12	249.00	340.12	2,911.89
3	PARIWD	885.22	323.72	561.50	483.40	220.10	273.30	1,378.62
4	MOROMALI	1,328.59	88.35	1,240.24	1,185.95	841.95	344.00	2,514.48
5	TOUNA	529.60	41.41	488.19	645.48	274.38	371.10	1,175.08
6	BANGGAI	1,953.36	180.92	1,772.44	880.10	721.40	158.70	2,883.46
7	BANGGEP	718.57	718.57	0	322.40	133.00	189.40	1,040.97
8	BUOL	713.99	58.02	655.97	888.85	571.53	267.32	1,524.84
9	TOU-TOU	870.29	181.27	689.02	414.53	360.87	53.66	1,284.82
JUMLAH		11,889.29	1,491.29	9,997.99	5,778.29	3,691.29	2,087.00	17,117.46

How to select the priority area (District/City) for Demonstration Activities (DA) REDD+ in Central Sulawesi

Central Sulawesi consist of :
10 Districts and 1 City

Methodology

A. Site

- 10 districts & 1 city

B. Criteria (consist of some indicators)

- Supporting of local government
- Demography
- Biophysics of Natural Resources

C. Method & Technique

- Collecting data (primary & secondary)
- Measuring of each indicator from the criteria (scoring indicator)

Criteria, *indicator*, and scoring to selecting district for DA REDD+ in Central Sulawesi

(3= *high priority*, 2= *moderate priority*, 1= *low priority*)

I. Supported by Local Government (25%)

1. *Financial allocation for forest development (proportional)*
2. *Forest management Organization (capability)*
3. *Cooperation between Government and Community (yes/no)*
4. *Cooperation between NGO and Community (yes/no)*

II. Demography (20%)

1. *Number of Villages (in border or in forest)*
2. *Population density (high/low)*
3. *Human Resources (high/low forestry background)*

III. Biophysics of forest resources (55%)

1. *Stock carbon (proportional)*
2. *Critical land area (proportional)*
3. *Forest land area (proportional)*
4. *Forest land cover (proportional)*
5. *Forest area management (proportional)*

Data Processing & Analysis

A. Measuring & Indicator value

- point 3 : high priority
- point 2 : moderate priority
- point 1 : low priority

B. Recapitulation of total indicator value

C. Indicator value of criteria & Total of priority value

D. Selecting of district/city priority

- Priority 1 : > 60.9
- Priority 2 : $53.0 - 60.9$
- Priority 3 : < 53.0

Calculation

Formula :

$$\text{NITk} = \frac{B_k}{J_{ik}} \times \left(\text{sum of } \frac{N_i}{N_{i \text{ max}}} \right)$$

$$\text{TNP} = \text{sum of NITk}$$

note:

NITk : Indicator value of the criteria

k : criteria of priority (1 ... 5)

n : number of indicator each criteria (4, 3, 5)

Ni : sum of indicator value of each criteria

Bk : Percentage of each criteria (25, 20, 55)

Ni max : max of indicator value (3)

TNP : sum of NITk

CRITERIAS		Total Value of each District/City										
		Palu	Sigi	Donggala	Parimo	Poso	Morowali	Touna	Banggai	Tolitoli	Buol	Bangkep
A	Local Governmnet Supporting											
1	Dev. Budget allocation distribution	1	1	2	1	1	1	1	3	2	1	2
2	Forest management institution	3	3	3	3	3	1	3	3	2	3	3
3	Cooperation between gov & community	1	3	3	3	1	1	2	1	2	1	1
4	Cooperation between NGO/privat & community	1	2	1	1	1	1	1	1	1	1	1
	TOTAL A	6	9	9	8	6	4	7	8	7	6	7
B	DEMOGRAPHY											
1	Village number	1	3	1	2	2	3	3	1	1	1	2
2	Population density	1	3	3	3	1	1	3	1	3	2	2
3	Human resources	1	2	2	3	2	1	2	2	3	1	1
	TOTAL B	3	8	6	8	5	5	8	4	7	4	5
C	Biophysics of Natural Resources											
1	Carbon stock	3	1	2	1	1	1	2	2	2	1	3
2	Critical land area	3	1	2	2	1	1	1	1	2	2	2
3	Forest area	1	3	2	2	3	3	3	3	2	2	1
4	Forest land cover	3	1	1	2	1	1	1	2	2	1	2
5	Forest area management	2	2	3	1	3	1	2	2	2	1	1
	TOTAL C	12	8	10	8	9	7	9	10	10	7	9

	CRITERIAS	Total Value of each District/City										
		Palu	Sigi	Donggala	Parimo	Poso	Morowali	Touna	Banggai	Tolitoli	Buol	Bangkep
A	Local Governmnet Supporting											
	Value of Contribution	25	25	25	25	25	25	25	25	25	25	25
	Number of indicator	4	4	4	4	4	4	4	4	4	4	4
	Total Indicator value of each criteria	6	8	9	8	6	4	7	8	7	6	7
	Max of indicator value	3	3	3	3	3	3	3	3	3	3	3
	Criteria Indicator Value	12.50	16.67	18.75	16.67	12.50	8.33	14.58	16.67	14.58	12.50	14.58
B	DEMOGRAPHY											
	Value of Contribution	20	20	20	20	20	20	20	20	20	20	20
	Number of indicator	3	3	3	3	3	3	3	3	3	3	3
	Total Indicator value of each criteria	3	8	6	8	5	5	8	4	7	4	5
	Max of indicator value	3	3	3	3	3	3	3	3	3	3	3
	Criteria Indicator Value	6.67	17.78	13.33	17.78	11.11	11.11	17.78	8.89	15.56	8.89	11.11
c	Biophysics of Natural Resources											
	Value of Contribution	55	55	55	55	55	55	55	55	55	55	55
	Number of indicator	5	5	5	5	5	5	5	5	5	5	5
	Total Indicator value of each criteria	12	8	10	8	9	7	9	10	10	7	9
	Max of indicator value	3	3	3	3	3	3	3	3	3	3	3
	Criteria Indicator Value	44.00	29.33	36.67	29.33	33.00	25.67	33.00	36.67	36.67	25.67	33.00
	Total Priority Value	63.17	63.78	68.75	63.78	56.61	45.11	65.36	62.22	66.81	47.06	58.69

Formula :

$$NITk = \frac{Bk}{Jik} \times \left(\sum \frac{Ni}{Ni \text{ mak}} \right)$$

$$TNP = \text{sum of NITk}$$

note:

NITk : Indicator value of the criteria

k : criteria of priority (1 ... 5)

n : number of indicator each criteria (4, 3, 5)

Ni : sum of indicator value of each criteria

Bk : Percentage of each criteria (25, 20, 55)

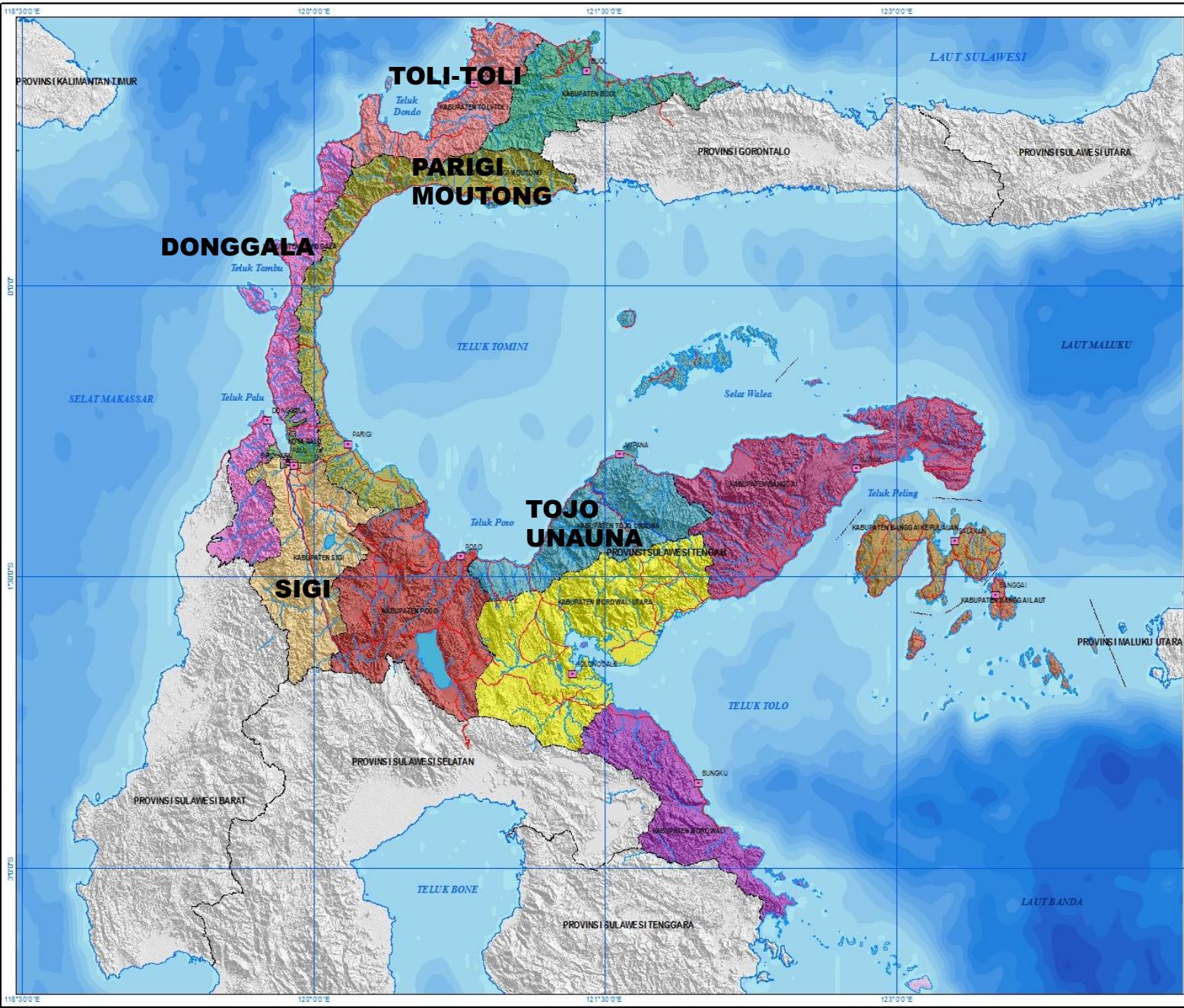
Ni max : max of indicator value (3)


Districts	Score	Category	Priority
Donggala	68.75	1	1
Tolitoli	66.81	1	2
Touna	65.36	1	3
Sigi	63.78	1	4
Parimo	63.78	1	5
Palu	63.17	1	6
Banggai	62.22	1	7
Bangkep	58.69	2	8
Poso	56.61	2	9
Buol	47.06	3	10
Morowali	45.11	3	11

Governor decree No: 522/
330/DISHUTDA-G.ST/2012 on 8th May 2012

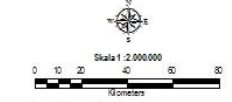
5 Districts Selected for DA in REDD+ program
“ Central Sulawesi”

1. Donggala,
2. Toli-Toli,
3. Sigi,
4. Tojo Una Una,
5. Parigi Moutong.





**PETA ADMINISTRASI
PROVINSI SULAWESI TENGAH**

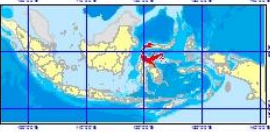


Skala 1:2.000.000

0 10 20 30 40 50 60 70 80
Kilometers

Proyeksi : Geodesis
Sistem Grid : UTM Geografis
Datum : WGS 1984 (WGS 84)

Diagram Lokasi




■ Lokasi penggambaran

Leyenda

	Kota Provinsi		Batas Kecamatan
	Kota Kabupaten		Jalan
	Kota Kecamatan		Garis Pantai
	Batas Provinsi		Sungai
	Batas Kabupaten		Danau/DAM/Bendungan

Kedalaman

0 meter -5500 meter




Kecamatan

- KABUPATEN BANGGAI
- KABUPATEN BANGGAI KEPULAUAN
- KABUPATEN BANGGAI LAUT
- KABUPATEN BULU
- KABUPATEN DONGGALA
- KABUPATEN MOROWALI
- KABUPATEN MOROWALI UTARA
- KABUPATEN MOROWALI SELATAN
- KABUPATEN PARIGI MOUTONG
- KABUPATEN POSO
- KABUPATEN SIGI
- KABUPATEN TOJO UNA-UNA
- KABUPATEN TOLI-TOLI
- KABUPATEN TOLI-TOLI
- KOTA PALU

Sumber Peta:

1. Peta Republik Indonesia, Berdasarkan Tahun 1999
2. Peta Administrasi Provinsi Sulawesi Tengah, ATLAS Indonesia, Berdasarkan Tahun 2001
3. Peta "Topografi" Kabupaten Provinsi Sulawesi Tengah, Berdasarkan Tahun 2001
4. Kantor Wilayah BKN Sulawesi Tengah, Tahun 2002
5. Data SRTM 30 meter, CGIAR/ISRIC, Tahun 2010
6. Badan Informasi Geospasial, SRTM, Tahun 2010

MAP & ART Design
 Geography Need Map, Map Need Geography


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Prioritizing REDD+ actions and areas where they should be implemented

What actions should we choose and where should we do them?

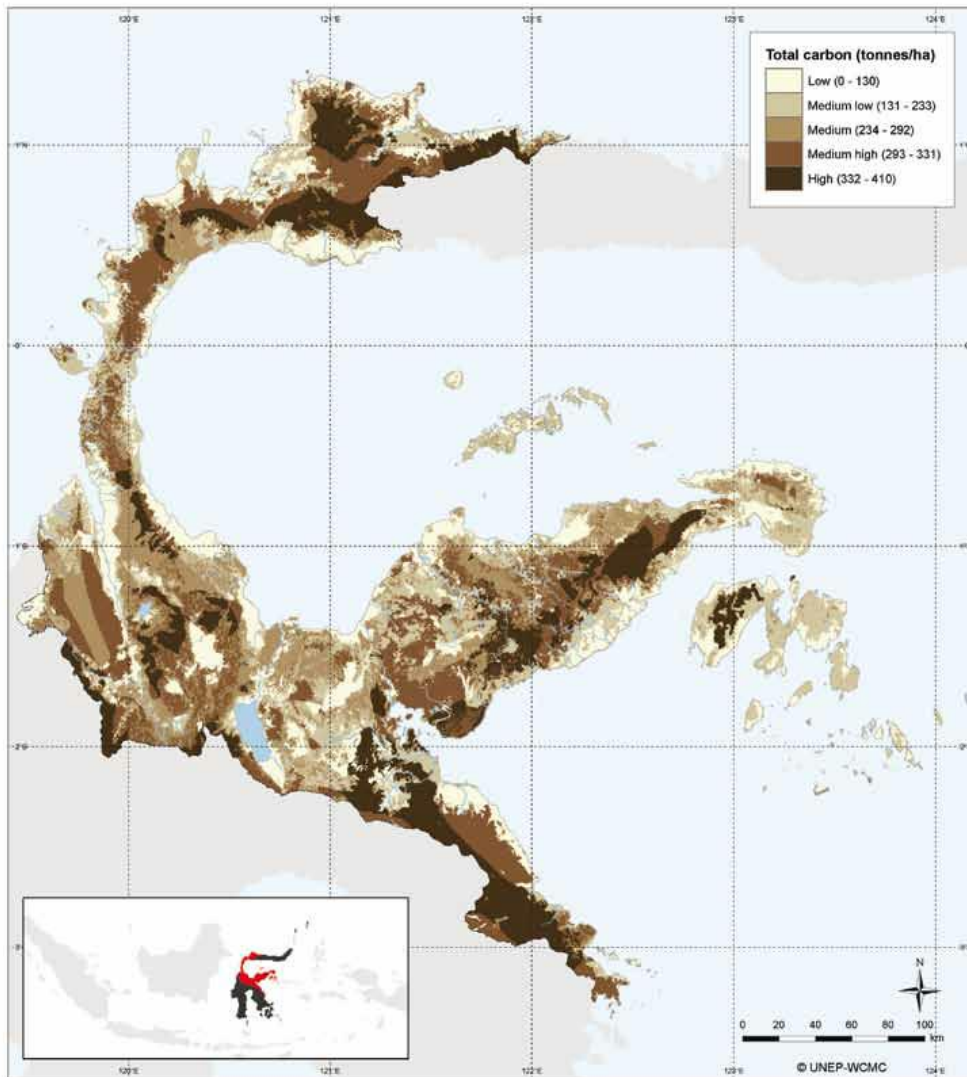
- a) Which legal rules and planning documents provide guidance for the management of forests and other lands?
- b) In which areas of the province can we get the biggest carbon benefits from the implementation of different kinds of REDD+ actions?
- c) Which forest areas are particularly important for social and environmental benefits?
- d) Exactly how much carbon and other benefits can we obtain by implementing a number of defined actions in a certain place?
- e) If we have decided on certain priority targets for carbon and other benefits, where could we implement REDD+ actions to reach those targets?
- f) *Are the planned activities in line with the UNFCCC safeguards and other frameworks, including the UN-REDD Social and Environmental Principles?*

How spatial data could help?

Spatial data showing in this map could help us to get the idea what kind of activity can we implement it

Central Sulawesi Province - Total Carbon

(Biomass carbon plus soil carbon)



This map was produced for the UN-REDD programme in Indonesia in collaboration between UNEP-WCMC and the Ministry of Forestry of Indonesia, DG Forest Planning (Jakarta Office and Office for Forest Planning Region XVI), the Regional Forest Service Central Sulawesi and Tadulako University.

Method and Data Sources:

Biomass Carbon Method: Land cover map for 2009 produced by the Ministry of Forestry; carbon values for each land cover category assigned based on a literature search of published biomass values; land cover category 'secondary forest' was further stratified into areas of lower to higher disturbance using data from the ALLREDDI land cover dataset for 2005. **Source:** Ministry of Forestry, DG Forest Planning (in prep.); Land cover dataset for Central Sulawesi interpreted from Landsat ETM 7+ images from 2008-2009. Land cover dataset for 2005 produced by ICRAF in cooperation with the Ministry of Forestry, Forestry Planning Agency, under the ALLREDDI project (see: Ekadinata, A., Widayati, A., Dewi, S., Rahman, S., van Noordwijk, M. (2011): Indonesia's land-use and land-cover changes and their trajectories (1990, 2000 and 2005). ALLREDDI Brief 01, Bogor, Indonesia. World Agroforestry Centre - ICRAF, SEA Regional Office. **Soil Carbon Method:** Data for Central Sulawesi was extracted from the Global Soil Carbon Map. **Source:** Scharlemann, J.P.W., Hiederer, R., Kapos, V. (in prep.). Global map of terrestrial soil organic carbon stocks. UNEP-WCMC and EU-JRC, Cambridge, UK. **Combined biomass and soil carbon:** The biomass and soil carbon values were added to obtain an approximation of total ecosystem carbon.

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations Environment Programme or contributory Organisations.



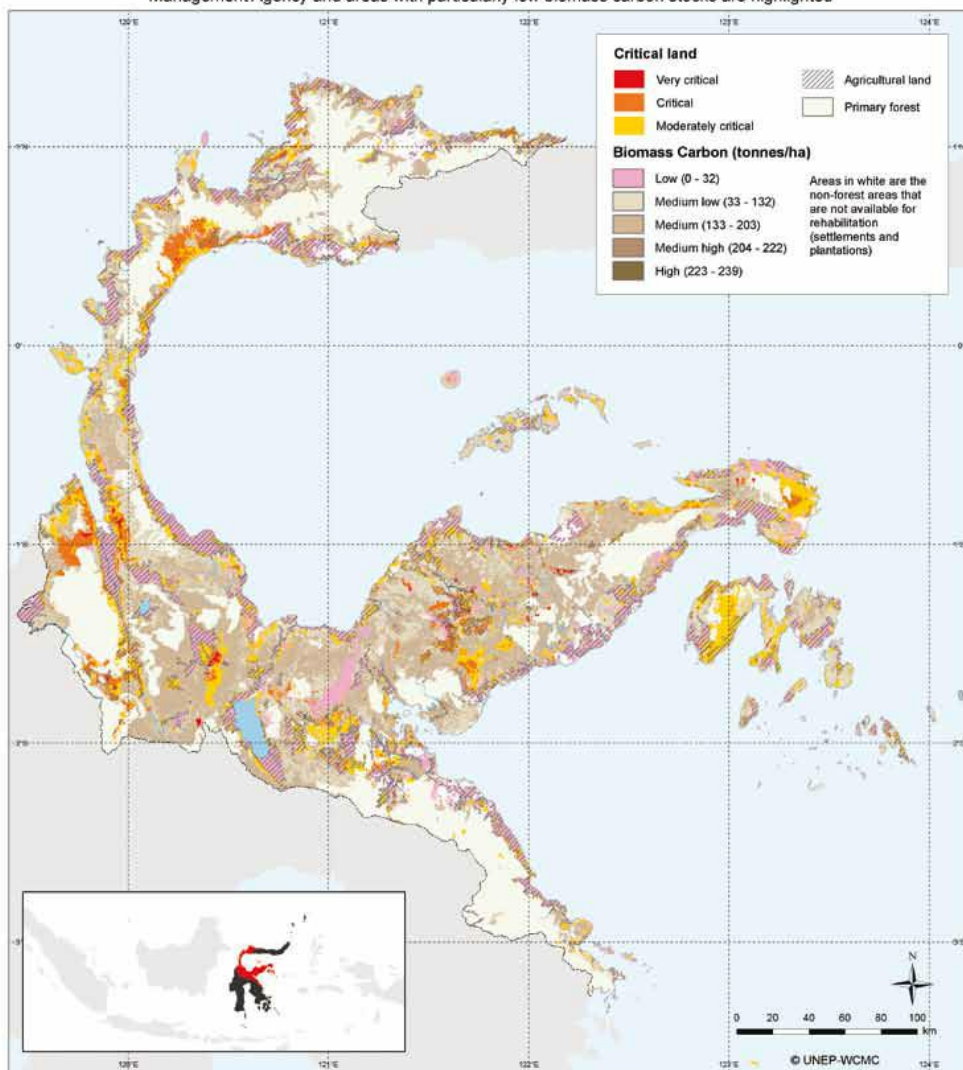
UN-REDD
PROGRAMME



Activity option :
Maintain C stock in dark brown area

Central Sulawesi Province - Potential Areas for REDD+ Actions to Rehabilitate Forests

This map shows areas with potential for rehabilitation; "critical land" identified by Watershed Management Agency and areas with particularly low biomass carbon stocks are highlighted



This map was produced for the UN-REDD programme in Indonesia in collaboration between UNEP-WCMC and the Ministry of Forestry of Indonesia, DG Forest Planning (Jakarta Office and Office for Forest Planning Region XVI), the Regional Forest Service Central Sulawesi and Tadulako University.

Method and Data Sources:

Biomass Carbon: see explanation on Map of Biomass Carbon for Central Sulawesi Province;

Method for presentation of potential areas for REDD+ actions to rehabilitate forests: Based on the land cover map for 2009 produced by the Ministry of Forestry, all areas that are considered to have potential and availability for rehabilitation are shown in brown shading indicating their biomass carbon stock. Low-carbon areas were highlighted in pink based on the Biomass Carbon layer. Areas identified as critical land were highlighted based on data from the Ministry of Forestry, Agency for Watershed Management Central Sulawesi. Agricultural areas (unlikely to be available for rehabilitation) were marked with black hatching and the following areas were blanked out: non-forest areas that are not available for rehabilitation (shown in white on the map) and primary forest (shown in light green).

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UN-REDD
PROGRAMME



Activity option : Forest rehabilitation especially in red area

However,

to get better decision it needs not only more data information but should also accuracy, valid and trusted

Thanks a lot for your attention