



BADAN PUSAT STATISTIK

Pelopop
Data Statistik
Terpercaya
Untuk Semua

Land Accounts in Indonesia

Alila Hotel, Jakarta
November 30, 2017

Presented in Closing National Workshop
for the 9th Tranche Development Account Project





outline

- ☐ Background
- ☐ Land Accounts in Indonesia
- ☐ Technical issues faced and resolutions



Background

Consideration

Government Regulation on Environmental Economic Instruments (PP IELH) no. 46/2017 initiated by the Ministry of Environment and Forestry



mandates BPS to prepare natural resource account and GDP / GRDP which takes into account the depletion of natural resources

Implement SEEA CF 2012



Background

SEEA and National Development Priorities



RPJMN (2015-19) - Medium-term Development Plan

STRATEGI PEMBANGUNAN

NORMA PEMBANGUNAN KABINET KERJA

- Membangun untuk manusia dan masyarakat
- Mewujudkan pertumbuhan ekonomi, pembangunan sosial dan pembangunan ekologi yang berkelanjutan
- Memulihkan dan menjaga keseimbangan antarsektor, antarwilayah dan antarkelompok sosial dalam pembangunan
- Mewujudkan perekonomian yang inklusif, berbasis ilmu pengetahuan dan teknologi, dan keunggulan sumber daya manusia

3 DIMENSI PEMBANGUNAN

DIMENSI PEMBANGUNAN MANUSIA

Pendidikan

Kesehatan

Perumahan

DIMENSI PEMBANGUNAN SEKTOR UNGGULAN

Kedaulatan Pangan

Kedaulatan Energi & Ketenagalistrikan

Kemaritiman

Pariwisata dan Industri

DIMENSI PEMERATAAN & KEWILAYAHAN

Antarkelompok Pendapatan

Antarwilayah

KONDISI PERLU

Kepastian dan Penegakan Hukum

Keamanan dan Ketertiban

Politik & Demokrasi

Tata Kelola & RB

QUICK WINS DAN PROGRAM LANJUTAN LAINNYA



Background

THE GLOBAL GOALS For Sustainable Development



From MDGs to SDGs

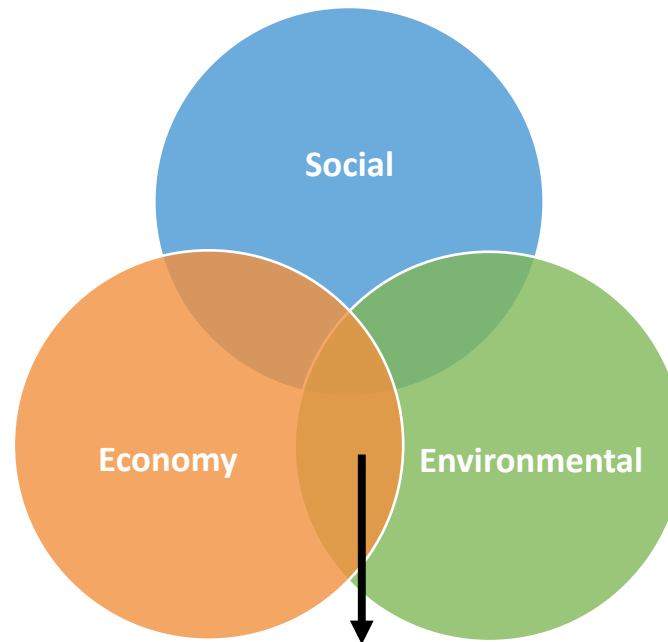
- Millennium Development Goals (MDGs) ends in 2015, replaced by Sustainable Development Goals / SDGs (2016-2030)
- SDGs include:
 - **3 dimensions: economic, social, environmental**
 - 17 goals, 169 target, 241 indicators



One of important factor to support the successful implementation of SDGs:
DATA AVAILABILITY



3 Dimensions of SDGs



**Relationship between
Environment and Economy?**

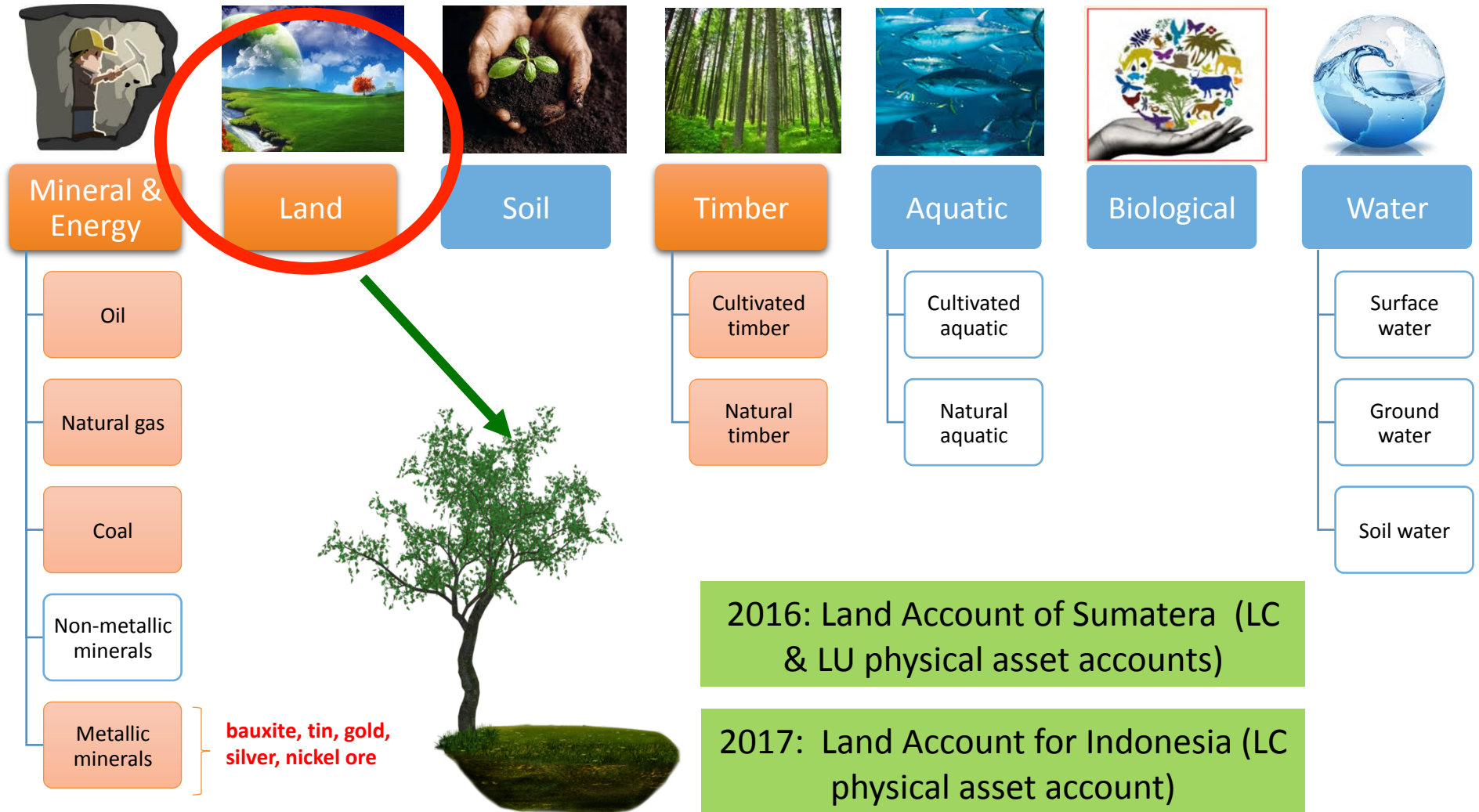
Need to compile
**"INTEGRATED SYSTEM OF
ENVIRONMENTAL
AND ECONOMIC ACCOUNTS"**





Land Accounts in Indonesia

Environmental Assets in SEEA





Land Accounts in Indonesia

| Data Source | Data Type | Limitations |
|--|--|---|
| Ministry of Environment and Forestry | <ul style="list-style-type: none">Land Cover data | <ul style="list-style-type: none">Land cover and land use account of Sumatra, only available in physical units (2016) |
| Geospatial Information Agency & National Land Agency | <ul style="list-style-type: none">Land Use data (BIG only provide land use of Sumatera 2009 and 2012)Land value (not accessible from BPN) | |



Land Accounts in Indonesia

Step to compile land account in Indonesia 2009-2014:

Data Collected from Ministry
of Environment and Forestry



shp file
23 land cover classes

GIS Data Processed by Map
Division in BPS



dbf file

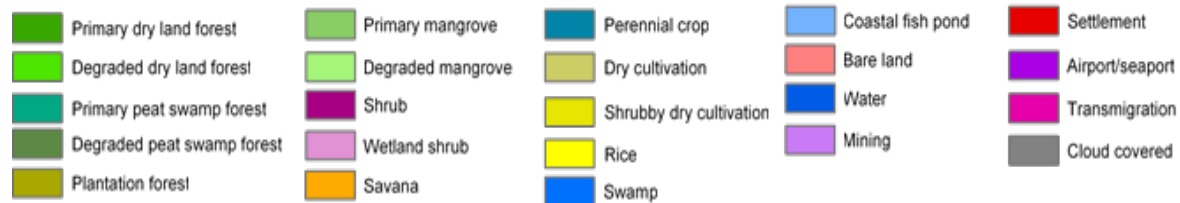
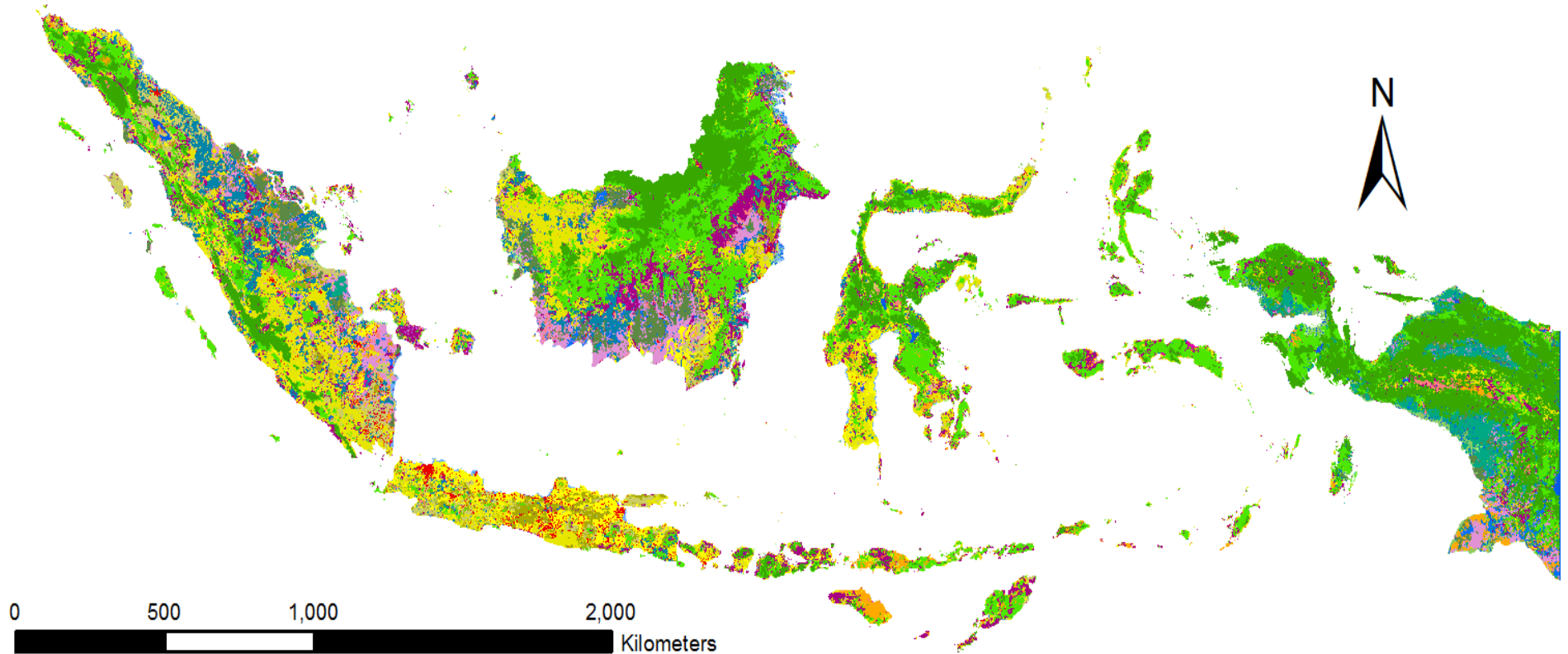
Data in dbf format processed
by Production Accounts
Directorate



compile land account

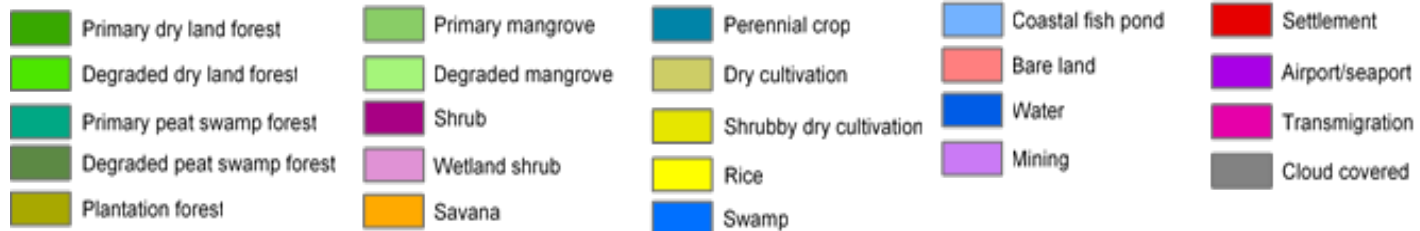
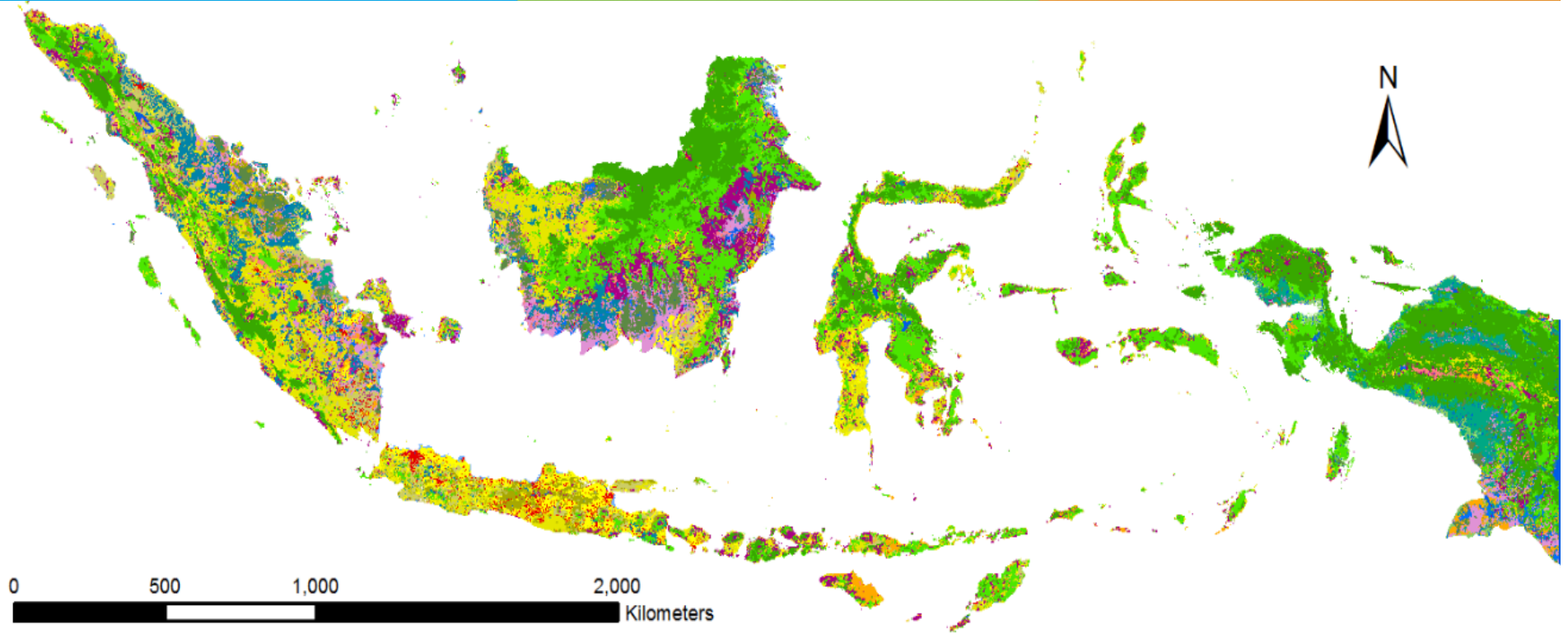


Indonesia Land Cover Map, 2009





Indonesia Land Cover Map, 2014





Dissemination of Land Accounts in Indonesia





Land Cover Account of Indonesia, 2009-2014



Pelopor
Data Statistik
Terpercaya
Untuk Semua


Veraca Lahan: Indonesia, 2009-2014

lampiran 3.1.1 : Neraca Fisik Tutupan Lahan 2009-2014, Indonesia (Hektar)

| | Tutupan Lahan | | | | | | | | | | | | Tutupan Lahan | | | | | | | | | | | | |
|----------------------------|---------------------------|-----------------------------|-----------------------|-------------------|---------------|----------------|------------|-----------|---------------|--------|-----------------------|-----------|-------------------------|---------------------|--------------|------------------------|----------------------------------|-----------|---------|-------------------|-----------------------|--------------|-----------|------------------------|------------|
| | (Hektar) | | | | | | | | | | | | (Hektar) | | | | | | | | | | | | |
| | Hutan Lahan Kering Primer | Hutan Lahan Kering Sekunder | Hutan Mangrove Primer | Hutan Rawa Primer | Hutan Tanaman | Semak/ Belukar | Perkebunan | Pemukiman | Tanah Terbuka | Awan | Savana/ Padang Rumput | Danau | Hutan Mangrove Sekunder | Hutan Rawa Sekunder | Belukar Rawa | Pertanian Lahan Kering | Pertanian Lahan Kering Bercampur | Sawah | Tambak | Bandar/ Pelabuhan | Transmigrasi/ Kampung | Pertambangan | Rawa | Diskrepan si Statistik | Total |
| Stok awal 2009 | 39.671.899 | 38.461.266 | 1.510.389 | 5.489.415 | 4.486.661 | 15.182.468 | 9.513.356 | 2.559.132 | 2.994.665 | 29.738 | 3.332.417 | 3.753.406 | 1.380.521 | 7.317.979 | 8.716.403 | 10.165.097 | 26.275.197 | 7.633.583 | 840.307 | 17.543 | 320.829 | 475.850 | 1.572.429 | -607.420 | 191.093.13 |
| Penambahan Terkelola | | | | | | | | | | | | | | | | | | | | | | | | | |
| Penambahan Alami | | | | | | | | | | | | | | | | | | | | | | | | | |
| Penilaian Kembali ke Atas | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Penambahan Stok | 37.873 | 724.401 | 37.202 | 4.612 | 858.914 | 1.548.377 | 1.033.861 | 69.369 | 1.129.954 | 0 | 16.469 | 6.412 | 61.505 | 125.079 | 462.805 | 445.427 | 1.613.773 | 93.935 | 16.678 | 319 | 3.737 | 106.427 | 43.148 | 0 | 8.440.27 |
| Pengurangan Terkelola | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pengurangan Alami | | | | | | | | | | | | | | | | | | | | | | | | | |
| Penilaian Kembali ke Bawah | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Pengurangan Stok | 567.028 | 1.602.938 | 16.244 | 154.760 | 301.250 | 1.538.020 | 92.670 | 37.069 | 521.184 | 29.738 | 208.448 | 3.526 | 37.140 | 1.047.566 | 739.795 | 323.624 | 987.284 | 139.370 | 8.942 | 187 | 37.694 | 684 | 45.115 | 0 | 8.440.27 |
| Stok akhir 2014 | 39.142.745 | 37.582.729 | 1.531.347 | 5.339.267 | 5.044.325 | 15.192.825 | 10.454.547 | 2.591.433 | 3.603.434 | 0 | 3.140.439 | 3.756.293 | 1.404.886 | 6.395.492 | 8.439.413 | 10.286.900 | 26.901.686 | 7.588.149 | 848.043 | 17.675 | 286.872 | 581.592 | 1.570.462 | -607.420 | 191.093.13 |

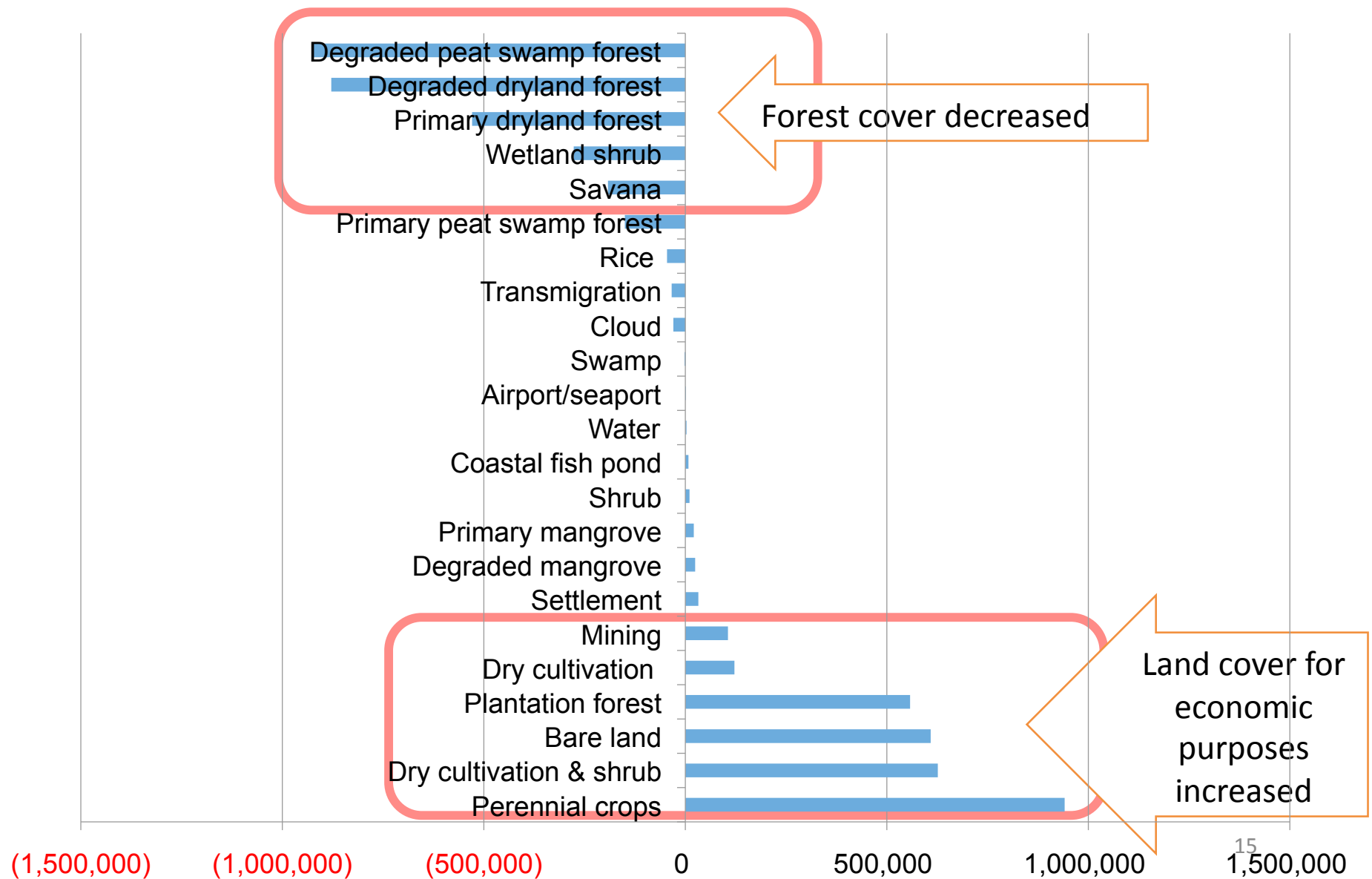


Net Change Matrix of LC Account, 2009-2014

|  BADAN PUSAT STATISTIK | | | | | | | | | | | | | | | | |
|--|------------------------|---------------------------|-----------------------------|-----------------------|---------------------|---------------------|----------------------|----------------------|---------------------|---------------------|----------|-----------------------|---------------------|-------------------------|---------------------|--|
| Neraca Lahan: Indonesia, 2009-2014 | | | | | | | | | | | | | | | | |
| Lampiran X.1 : Net Change Matrix Tutupan Lahan 2009-2014, Indonesia (Hektar) | | | | | | | | | | | | | | | | |
| Tutupan Lahan | Tutupan Lahan (Hektar) | | | | | | | | | | | | | | | |
| | Stok Awal 2009 | Hutan Lahan Kering Primer | Hutan Lahan Kering Sekunder | Hutan Mangrove Primer | Hutan Rawa Primer | Hutan Tanaman | Semak/ Belukar | Perkebunan | Pemukiman | Tanah Terbuka | Awan | Savana/ Padang Rumput | Danau | Hutan Mangrove Sekunder | Hutan Rawa Sekunder | |
| Hutan Lahan Kering Primer | 39.671.899,33 | 39.104.871,81 | 463.295,89 | | | | 47.636,04 | 4.912,59 | 189,89 | 28.404,97 | - | 124,81 | 24,50 | 48,42 | 114,20 | |
| Hutan Lahan Kering Sekunder | 38.461.265,67 | 20.979,51 | 36.858.327,31 | 202,98 | | 38.051,19 | 598.150,52 | 124.535,70 | 3.643,11 | 397.634,84 | - | 3.213,91 | 348,59 | 1.255,76 | | |
| Hutan Mangrove Primer | 1.510.389,43 | | | 1.494.145,34 | | | 219,11 | 24,83 | 216,08 | 690,12 | - | 96,82 | | 8.986,39 | 2.683,88 | |
| Hutan Rawa Primer | 5.489.414,77 | | | 34.734,13 | 5.334.654,77 | 13.544,27 | 20,61 | 12.591,22 | | 17.391,26 | - | | | | 71.107,11 | |
| Hutan Tanaman | 4.486.660,95 | | 991,39 | | | 4.185.410,77 | 40.187,01 | 12.721,91 | 485,53 | 166.840,11 | - | 874,69 | 66,44 | | 23,91 | |
| Semak/ Belukar | 15.182.467,72 | 10.062,56 | 209.190,47 | | | 65.112,36 | 13.644.447,50 | 139.363,76 | 2.265,16 | 83.750,05 | - | 5.725,56 | 832,86 | 476,26 | | |
| Perkebunan | 9.513.355,54 | | | | | 9.558,22 | 3.660,45 | 9.420.685,93 | 2.415,31 | 24.071,69 | - | | 124,06 | | | |
| Pemukiman | 2.559.131,98 | | 160,42 | | | 12,22 | 374,05 | 916,40 | 2.522.063,20 | 1.244,74 | - | 127,85 | 72,12 | 131,30 | | |
| Tanah Terbuka | 2.994.664,87 | | 572,80 | | | 205.549,00 | 44.289,48 | 182.727,12 | 545,29 | 2.473.480,54 | - | 1.599,31 | 436,93 | 1.038,32 | 105,42 | |
| Awan | 29.738,43 | 6.542,59 | 3.237,68 | 641,23 | 4.612,47 | 10,18 | 5.632,16 | 727,29 | | 955,87 | - | 6,44 | 1,75 | 35,57 | 76,25 | |
| Savana/ Padang Rumput | 3.332.417,32 | | 3.899,27 | 248,56 | | 1.937,79 | 92.257,17 | 871,34 | 663,98 | 4.041,33 | - | 3.123.969,52 | 1.451,96 | 321,73 | | |
| Danau | 3.753.406,32 | | | | | | 36,18 | 11,38 | 103,07 | 721,13 | - | | 3.749.880,69 | 36,32 | | |
| Hutan Mangrove Sekunder | 1.380.521,13 | | 280,13 | 609,32 | | 799,32 | 980,70 | 1.462,63 | 308,00 | 5.966,35 | - | | 44,76 | 1.343.380,75 | | |
| Hutan Rawa Sekunder | 7.317.979,22 | | | | | 228.523,56 | 3.751,13 | 123.897,43 | 308,40 | 280.606,03 | - | | 179,31 | 36.291,55 | 6.270.413,59 | |
| ? | | | | | | | | | | | - | - | | | | |
| Belukar Rawa | 8.716.403,06 | | 86,72 | 288,17 | | 222.912,71 | 93.827,26 | 194.923,49 | 205,63 | 70.890,54 | - | 640,78 | 977,91 | 6.655,70 | 50.692,26 | |
| Pertanian Lahan Kering | 10.165.097,39 | 48,03 | 28.521,69 | 103,06 | | 5.074,82 | 12.332,90 | 46.965,84 | 14.326,96 | 4.874,58 | - | 959,92 | 785,69 | 669,04 | | |
| Pertanian Lahan Kering Bercampur Semak | 26.275.196,66 | 240,45 | 13.063,13 | 93,59 | | 15.273,27 | 604.044,23 | 106.294,89 | 26.081,58 | 32.910,10 | - | 1.260,37 | 425,21 | 155,57 | 275,64 | |
| Sawah | 7.633.583,31 | | 447,60 | | | 199,91 | 256,47 | 48.425,36 | 14.352,13 | 6.013,91 | - | 1.506,88 | 154,05 | 32,24 | | |
| Tambak | 840.307,48 | | | | | | 429,51 | 51,62 | 2.547,99 | 113,92 | - | 321,85 | | 4.436,37 | | |
| Bandara/ Pelabuhan | 17.543,39 | | | | | | | | 116,22 | | - | | | | | |
| Transmigrasi/ Kampung | 320.829,02 | | 654,09 | | | | | 21.047,72 | 219,74 | 150,94 | - | | | 881,32 | | |
| Pertambangan | 475.849,69 | | | | | | 15,30 | 127,19 | | | - | | 315,87 | | | |
| Rawa | 1.572.429,44 | | | 280,73 | | 15.818,08 | 276,89 | 11.261,10 | 375,35 | 2.681,03 | - | 10,27 | 170,09 | 52,94 | | |
| Diskrepani Statistik | (607.420,12) | | | | | | | | | | - | | | | | |
| Total | 191.093.132,00 | 39.142.744,95 | 37.582.728,57 | 1.531.347,12 | 5.339.267,25 | 5.007.787,66 | 15.192.824,68 | 10.454.546,75 | 2.591.432,61 | 3.603.434,05 | - | 3.140.438,97 | 3.756.292,79 | 1.404.885,53 | 6.395.492,25 | |



Net changes of Land Cover, 2009-2014





Forest in Indonesia LC Classification

There are 7 classes of forest in land cover classifications by Ministry of Environment and Forestry:

1. *Primary dryland forest*
2. *Degraded dryland forest*
3. *Primary mangrove*
4. *Primary peat swamp forest*
5. *Plantation forest*
6. *Degraded mangrove, and*
7. *Degraded peat swamp forest*



SDGs Goal 15

SUSTAINABLE DEVELOPMENT GOAL 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss





Percentage of Forest Area in Indonesia, 2009-2014 (percent)

SDGs 15.1.1

| Islands | Islands Area (ha) | Forest Area (ha) | | Percentage of Forest Area | |
|--------------------|--------------------|-------------------|-------------------|---------------------------|--------------|
| | | 2009 | 2014 | 2009 | 2014 |
| (1) | (2) | (3) | (4) | (5) | (6) |
| Sumatera | 48.079.328 | 14.628.541 | 14.020.642 | 30,43 | 29,16 |
| Jawa | 12.943.828 | 3.275.795 | 3.231.092 | 25,31 | 24,96 |
| Kalimantan | 54.415.007 | 28.808.842 | 27.618.869 | 52,94 | 50,76 |
| Sulawesi | 18.852.236 | 9.547.788 | 9.410.733 | 50,65 | 49,92 |
| Bali-Nusa Tenggara | 7.307.048 | 2.764.176 | 2.940.565 | 37,83 | 40,24 |
| Maluku | 7.889.653 | 5.144.792 | 5.118.359 | 65,21 | 64,87 |
| Papua | 41.606.032 | 34.148.196 | 34.063.992 | 82,08 | 81,87 |
| Indonesia | 191.093.132 | 98.318.131 | 96.404.253 | 51,45 | 50,45 |



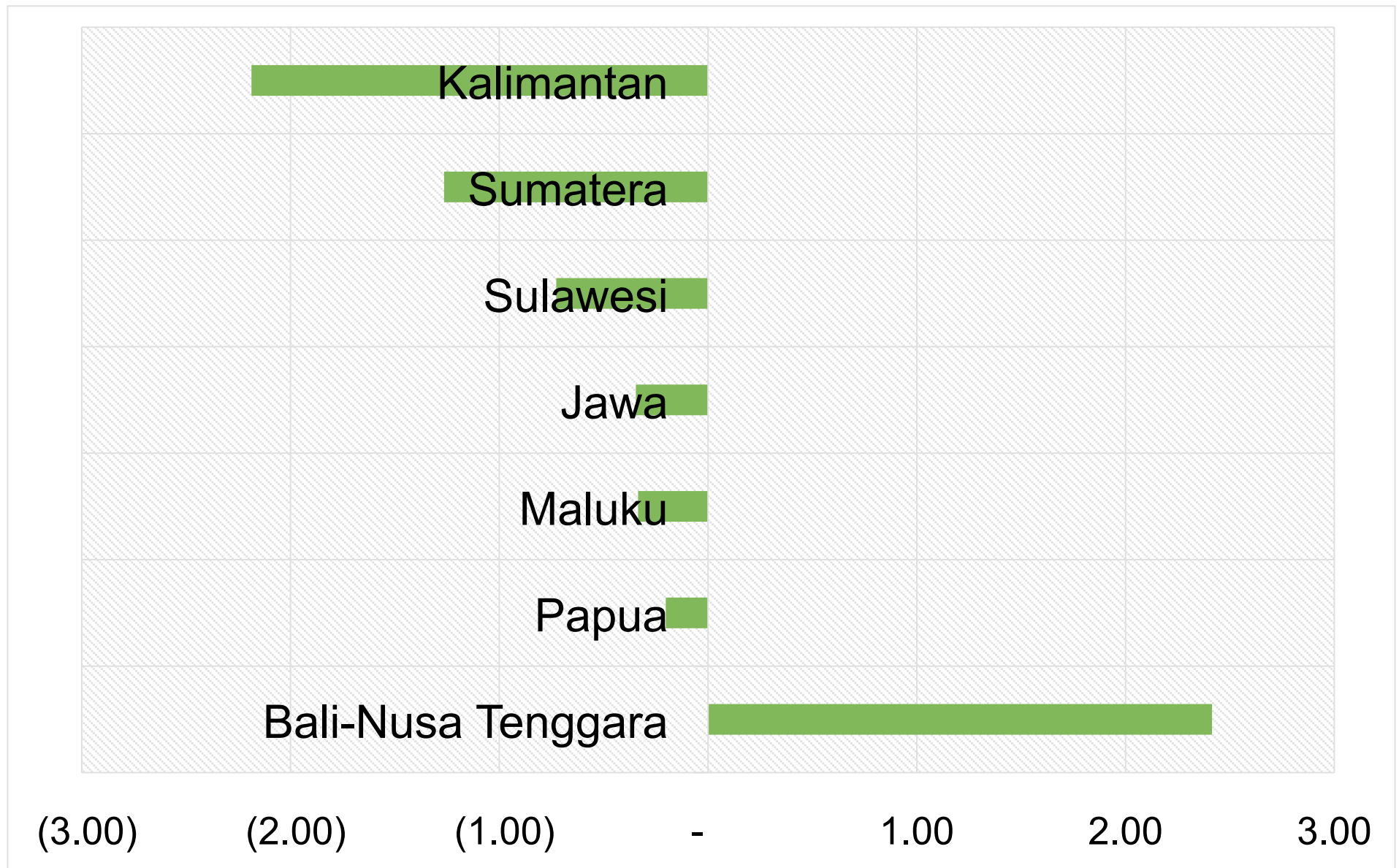
Forest Loss in Indonesia Land Cover, 2009-2014

SDGs 15.2.2

| Islands | Islands Area (ha) | Forest Loss | |
|--------------------|--------------------|--------------------|---------------|
| | | Hectar | Percentag e |
| (1) | (2) | (3) | (4) |
| Sumatera | 48.079.328 | (607.899) | (1,26) |
| Jawa | 12.943.828 | (44.703) | (0,35) |
| Kalimantan | 54.415.007 | (1.189.973) | (2,19) |
| Sulawesi | 18.852.236 | (137.055) | (0,73) |
| Bali-Nusa Tenggara | 7.307.048 | 176.389 | 2,41 |
| Maluku | 7.889.653 | (26.433) | (0,34) |
| Papua | 41.606.032 | (84.204) | (0,20) |
| Indonesia | 191.093.132 | (1.913.877) | (1,00) |



Forest Loss in Indonesia Land Cover, 2009-2014





Technical issues faced and resolution

- There is limitation of map accuracy, as a result we get different result in total area compare to official area → **resolution: create statistical discrepancy classification**
- Land use map is not yet available for whole country → **land account coverage only for land cover**
- Can't access Land value data due to confidentiality issue → **only do land account in physical terms**

TERIMA KASIH



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