Output of Indonesian National Workshop on Methodology for Peatland GHG Monitoring

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OUTLINE

- BACKGROUND OF THE WORKSHOP
- PEATLAND AS A SOURCE OF GREENHOUSE GASES
- IMPORTANCE OF GREENHOUSES GASES METHODOLOGY TO SUPORT THE INDONESIAN CLIMATE CHANGE SECTORAL ROAD MAP
- TOPICS AND OUTPUT OF THE WORKSHOP
- REFERENCES

BACKGROUND

- The function of ministry of environment to conduct ghg innventory base on act of environment protection and management
- Many research which had been conducted by university or institution in various method

PEATLAND AS A SOURCE OF THE GREEN HOUSE GASES

- Peatland influences global environment balance of GHG (CO_2, CH_4 and N_2O), particularly CO_2
- In natural condition : peatland play role as carbon (CO_2) sink
- Peatland store 30 % of total land carbon (global)
- Carbon emission from Peatland in SE Asia : 350 million ton produced by drainage activities

IMPORTANCE OF GREENHOUSES GASES METHODOLOGY - 1

- Different GHG emission in peatland caused by:
  1. Peat Characteristics:
     - Various forest zone
     - Various land uses
     - Various development pattern
     - Various peatland characteristics
  2. **Various measurement techniques and calculation methods**

IMPORTANCE OF GREENHOUSES GASES METHODOLOGY - 2

- Need of GHG Methodology for :
  1. Standardized methodology of GHG calculation for MRV (Measurable, Reportable, Verifiable)
  2. Address carbon financing options under REDD
     a. Determine **Baseline** as the sum of *carbon stock* changes that would occur within the boundary of the project area in the absence of the proposed REDD/CDM project activity

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b. Determine **Reference Emissions Level** (REL) as the amount of gross *emissions* from a geographical area estimated within a reference time period (REDD)
c. Determine **Reference Level** (RL) as the amount of net/gross *emissions and removals* from a geographical area estimated within a reference time period (REDD-plus)

TOPICS & OUTPUTS OF THE WORKSHOP - 1

- Methodology of GHG emission calculation from degraded peatland

  Output:

  - The biggest Carbon stock in peatland is in peat itself, followed by plant tissue and litter.
  - Each carbon stock may increase or decrease depends on natural factor and human factor.
  - Maximum Carbon content in peatland is about 58%, if there is no mineral soil
  - Total Carbon (C)/ha maximum in peatland is 10^3 x 10^3 x 2 x 0.1 x 0.58 kg = 116.000 kg or 116 ton (thickness = 20cm)

TOPICS & OUTPUTS OF THE WORKSHOP -2

- Methodology of GHG emission calculation from agricultural peatland

  Output:

  4 methods that may be done

  1. Measurement of Changes in carbon stocks

     Advantages:

     - ✓ Reflecting the influence of long-term management of peat,
     - ✓ Reflects carbon status at the time of measurement

     Weaknesses: Requires intensive repeated measurements (once at 5 years or less)

     stocks lost ground C was assumed to be CO2

Continue...

2. Measurement of emission / flux
   Advantages: Distinguish CO2, CH4, and N2O
   Weaknesses: Requires intensive measurement due to daily variations, seasonal, and spatial
3. Measurement of subsidence
   Advantages: Relatively easy to apply
   Weaknesses: Accuracy is highly dependent on the ratio of peat decomposition and compaction
4. Empirical formula
   Advantages: easy to apply
   Weaknesses: low accuracy, generalization of various soil properties and the influence of management is very high

TOPICS & OUTPUTS OF THE WORKSHOP -3

- Methodology of GHG emission calculation from burned peatland

  Output:

  - Calculation of C emission from peatland fire consist of :
    - Emission from above ground fuel
    - Emission from under ground fuel
  - Emission ratio, burning fraction and fire severity need to be considered in Carbon and other GHG emission calculation from peatland fire

RECOMMENDATION OF THE WORKSHOP

VARIOUS MEASUREMENT TECHNIQUES AND METHOF OF CALCULATION S RESULTING VARIOUS VALUE OF GHG THEREFORE INDONESIAN AS A LARGEST PEATLAND SHOULD HAVE THE APLICABLE ***STANDARDIZED METHODOLOGY FOR GHG AND SHOULD BE MEASURABLE, REPORTABLE, VERIFIABLE***

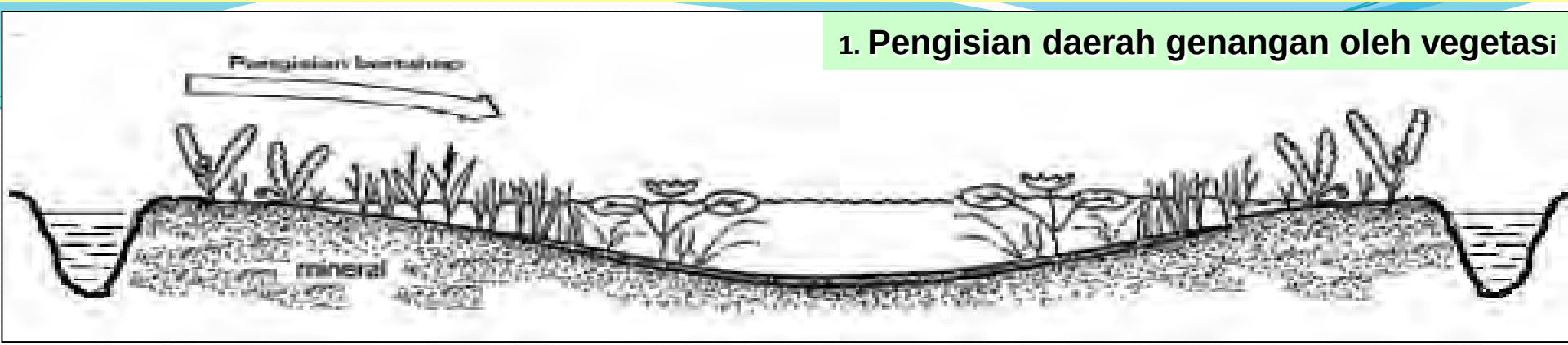
References

- Agus, F. 2010. Guidelines for Carbon Stock Measurement Methods in Peatland. Agency for Research and Development of Agricultural Land Resources, Ministry of Agriculture.
- Dewi, S. and M. van Noordwijk. 2009. National-Sub National Carbon Calculation and Climate Change Mitigation. A paper presented in Technology Exhibition. Forestry Research and Development Agency. Ministry of Forestry. Jakarta, 19 November 2009.
- Maas, A. 2009. Methodology of GHG emission measurement in degraded peatland. A paper presented in Workshop on Formulation of Calculation Methodology for GHG Emission in Peatland, Ministry of Environment Republic of Indonesia, Jakarta, 4 May 2010.
- Syaufina, L. 2009. Methodology of GHG emission measurement in peatland due to fire. A paper presented in Workshop on Formulation of Calculation Methodology for GHG Emission in Peatland, Ministry of Environment Republic of Indonesia, Jakarta, 4 May 2010.
- Ministry of Environment of Republic of Indonesia. 2009. Peatland Ecosystem Profile in Indonesia.

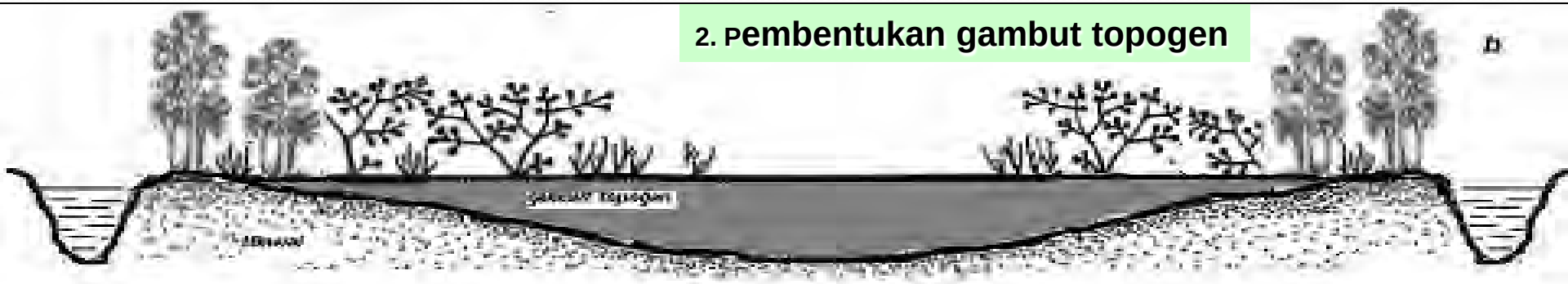
Thank you

PROSES PEMBENTUKAN GAMBUT

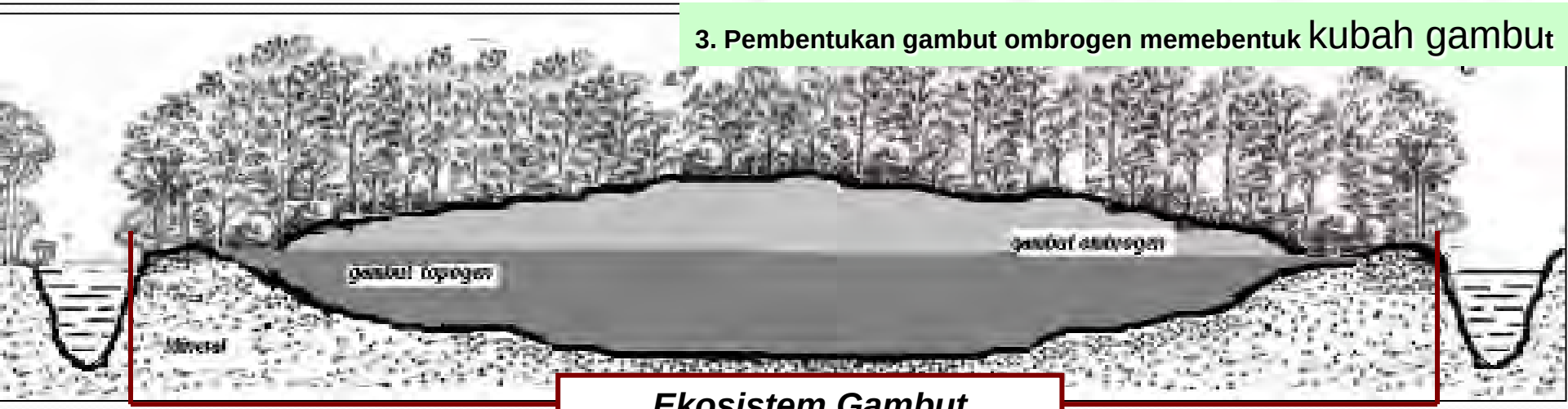
1. Pengisian daerah genangan oleh vegetasi



2. Pembentukan gambut topogen



3. Pembentukan gambut ombrogen memebentuk kubah gambut



Ekosistem Gambut

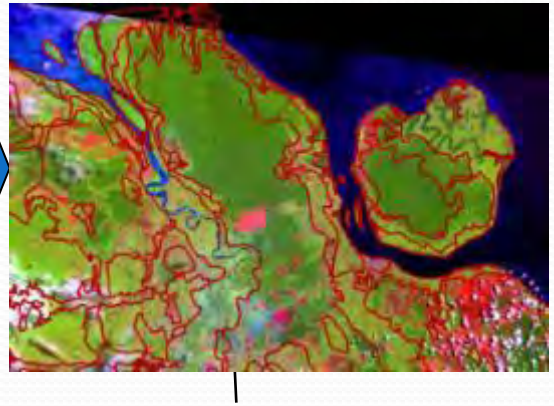
Sumber: Dimodifikasi dari Agus, F. dan I.G.M. Subiksa, 2008

Ilustrasi delineasi kesatuan hidrologis dan kubah gambut

Citra Landsat TM

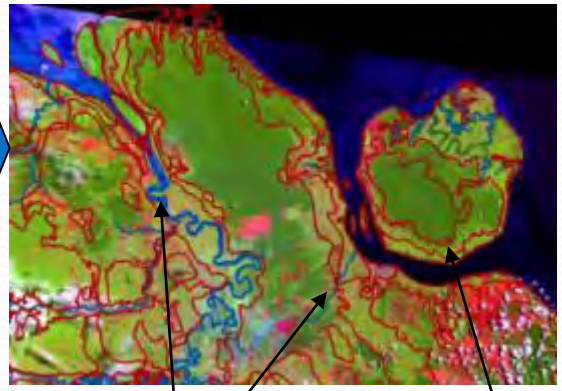
Dataran rendah dan pasang surut

Citra dan LS

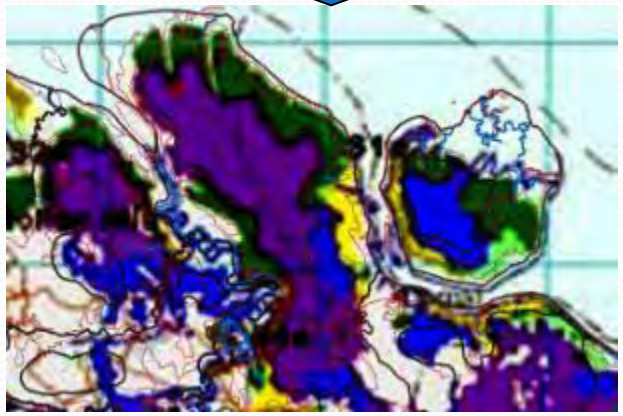


SL : GBT

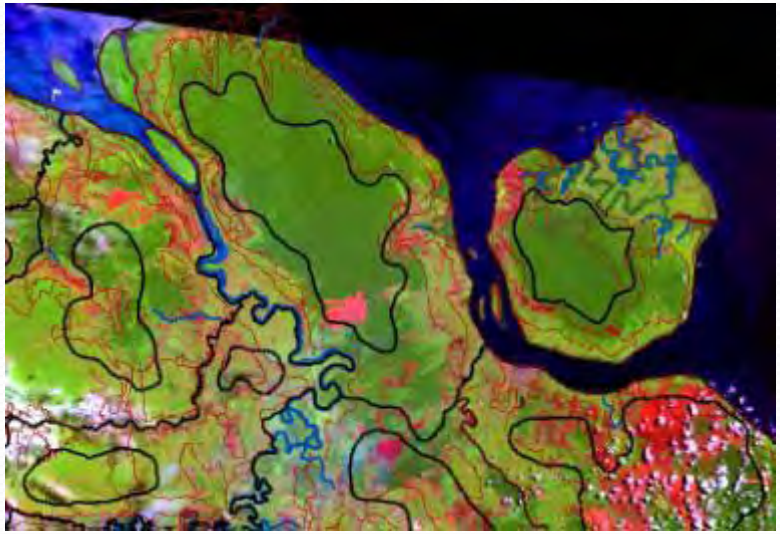
Citra, LS, Sungai



Sungai dan laut di daerah gambut akan menentukan batas KHG

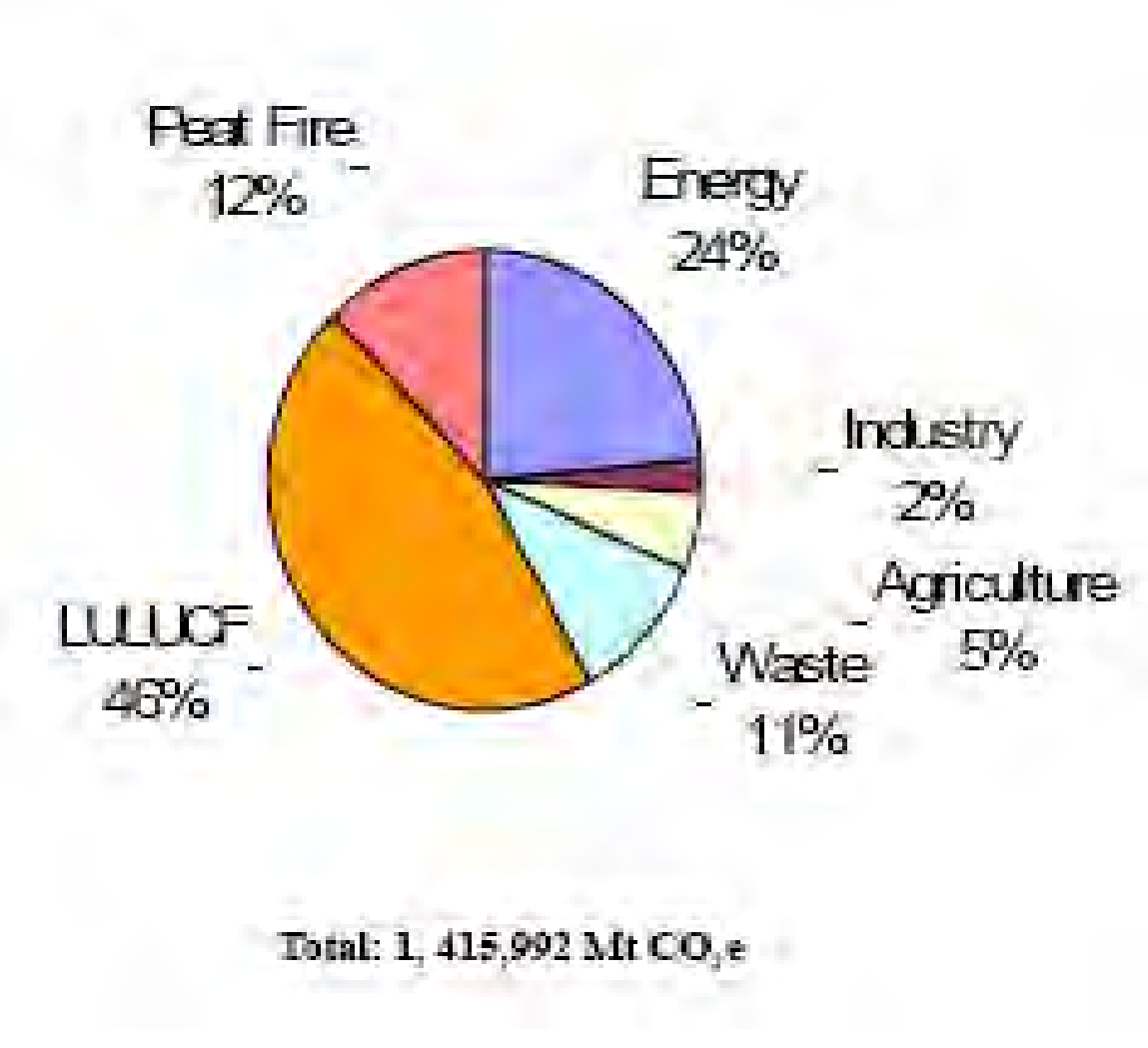


Sistem lahan, sungai, peta tanah gambut WI



Terbentuk KHG dan KG

Emission in 2000 was 1.415,992 Mt CO2e →58% from LULUCF (including 12% from burned peatland) (SNC roadmap) – (Dewi and van Noordwijk, 2009)



Tindaklanjut Hasil COP15

1. Harus segera ada persetujuan dari sektor terhadap **kegiatan mitigasi** yang akan masuk dalam daftar NAMAs. Khususnya bagi Indonesia terkait rencana reduksi emisi 26% s/d 41% pada tahun 2020
2. Sesuai dengan UU 32/2009 KLH melakukan **inventarisasi GRK**, saat ini sedang dalam proses penyiapan sistem inventarisasi gas rumah kaca nasional, sebagai perangkat pemantauan pencapaian aksi mitigasi nasional
3. Segera ditetapkan **mekanisme pelaksanaan MRV** aksi mitigasi
4. Mempersiapkan posisi Indonesia yang terkait dengan *Financial mechanism*, *capacity building*, teknologi transfer, *share vision*, mekanisme penggunaan *positif insentif* dari REDD, tata laksana *Measurable Reportable and Verifiable* (MRV), Nasional Communication untuk negara berkembang