REDD＋とは何か？
REDD+の概念、背景、歴史と主な課題

What is REDD+?

Concept, background, history and main challenges of REDD+

Contents of this presentation

Characteristics of tropical rainforests

ex. Mixed dipterocarp forest

Conservation/rehabilitation of tropical rainforests

- biomass, biodiversity

REDD+ and Climate change

What should we do?

An undisturbed dipterocarp forest in Southeast Asia may have:

Tall canopy height 40-50 m

Emergent trees height > 60 m

Large aboveground biomass 400-600 t ha^{-1}

High species diversity

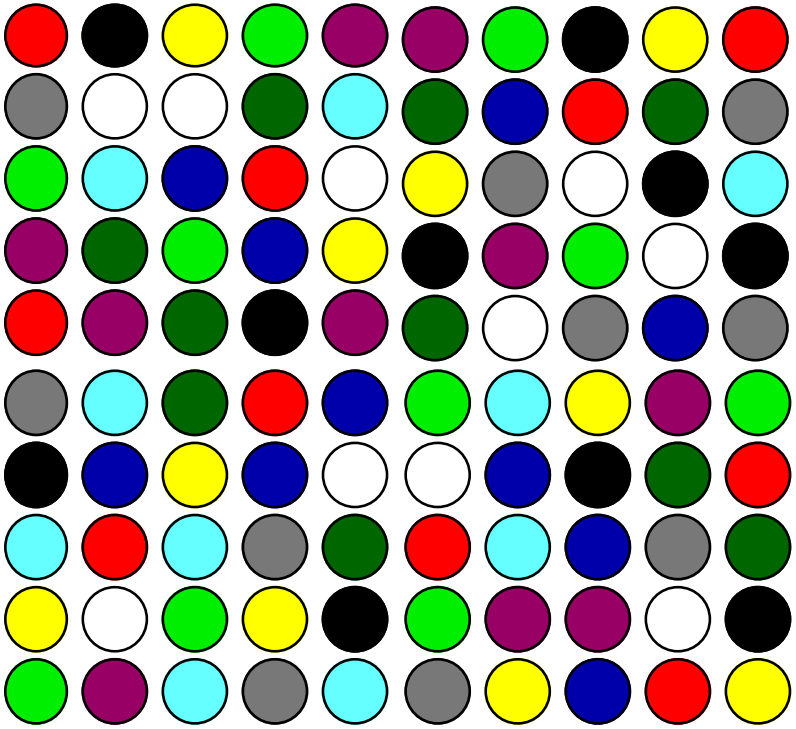
- more than 100 tree species ha^{-1}
- Sometimes more than 200 tree species ha^{-1}
- 1174 tree species in a 52 ha plot in Sarawak, Malaysia.
- About 1300 tree species in whole Japan.

  from North to South, total 37,000,000 ha

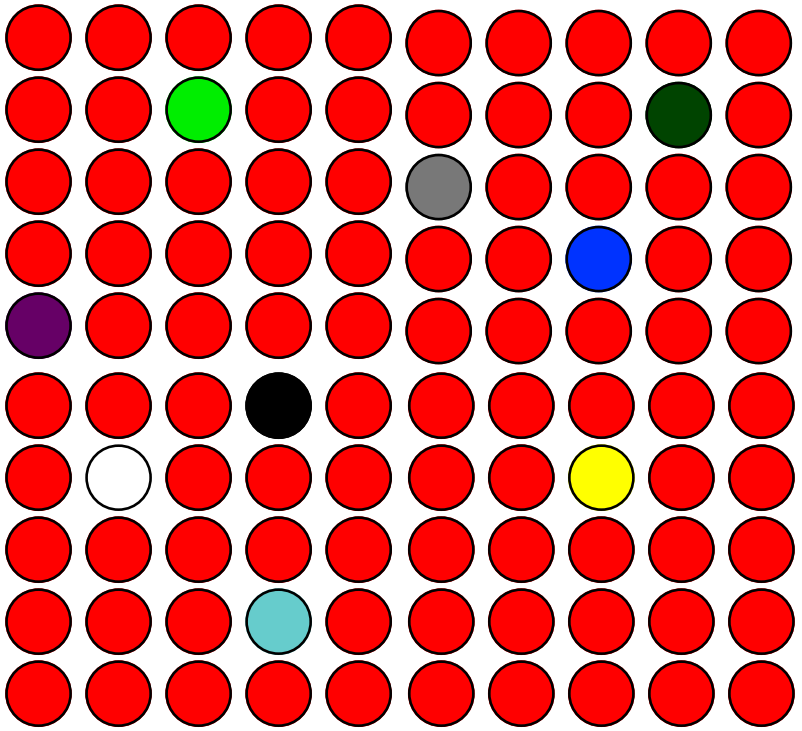
- Fewer mature trees for a species.
- No dominant tree species
- Large variation in tree size

個体数および樹種数が同じでも、ある樹種の個体数が極端に多い場合、
多様性（複雑さ）は低くなる。熱帯雨林では左の図のように、非常に多くの樹種が、
特別な優占種を持つことなく混ざり合っている。

Suppose the same number of species (expressed as different colors) and
total number of individuals (dots),
if a number of individuals of a specific species becomes dominant, diversity becomes decreased.
A number of species are mixed without dominant species in tropical rainforests.



Number of dots: 100



Number of colors: 100

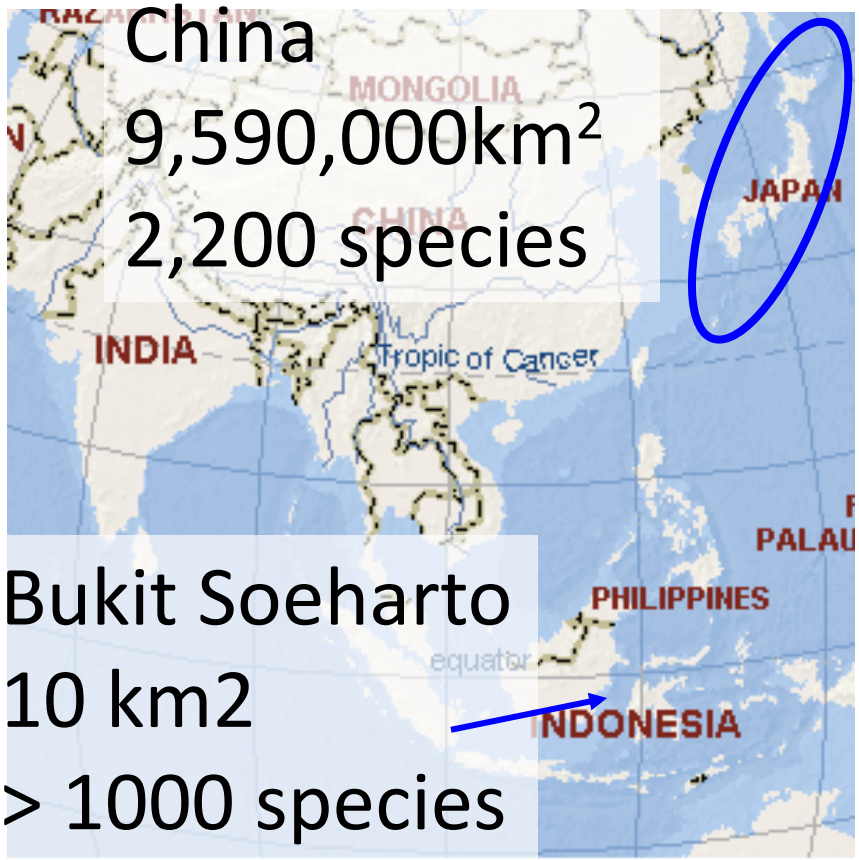
Former Soviet Union

22,400,000km^2

382 species

Japan 380,000km^2

730species



China

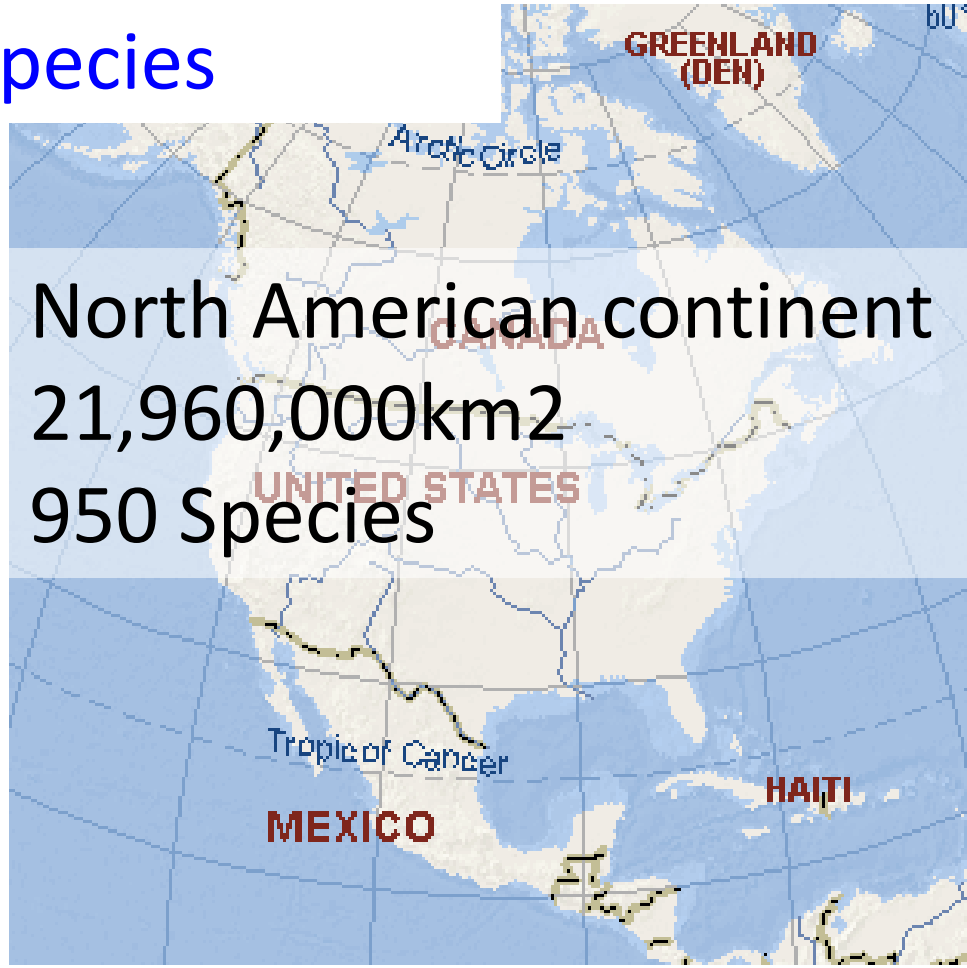
9,590,000km^2

2,200 species

Bukit Soeharto

10 km2

> 1000 species



North American continent

21,960,000km2

950 Species

Numbers of Longhorn beetles and surveyed area summarized by H. Makihara

Tropical planted forests can accumulate Carbon comparable to or larger than those in primary forests within 50 years.

50 years old dipterocarp stands,
stem biomass > 400 t ha^{-1}

Hiratsuka et al. J For Res (2005) 10:487–491

http://link.springer.com/article/10.1007/s10310-005-0166-7

One or two species exotic tree species were planted in a plot

- Remaining natural forests should be protected for biodiversity conservation.
- Only around 10% of world forests are protected as national parks and nature conservation area.
- Officially protected forests are not conserved well because of resource limitation both in human and money.
- We need to improve management of timber production forests in the tropics.
- Logged forests are much better than no forests

Key Reference:

ITTO/IUCN Guidelines for the conservation and sustainable use of biodiversity in tropical timber production forests

http://www.itto.int/policypapers_guidelines/

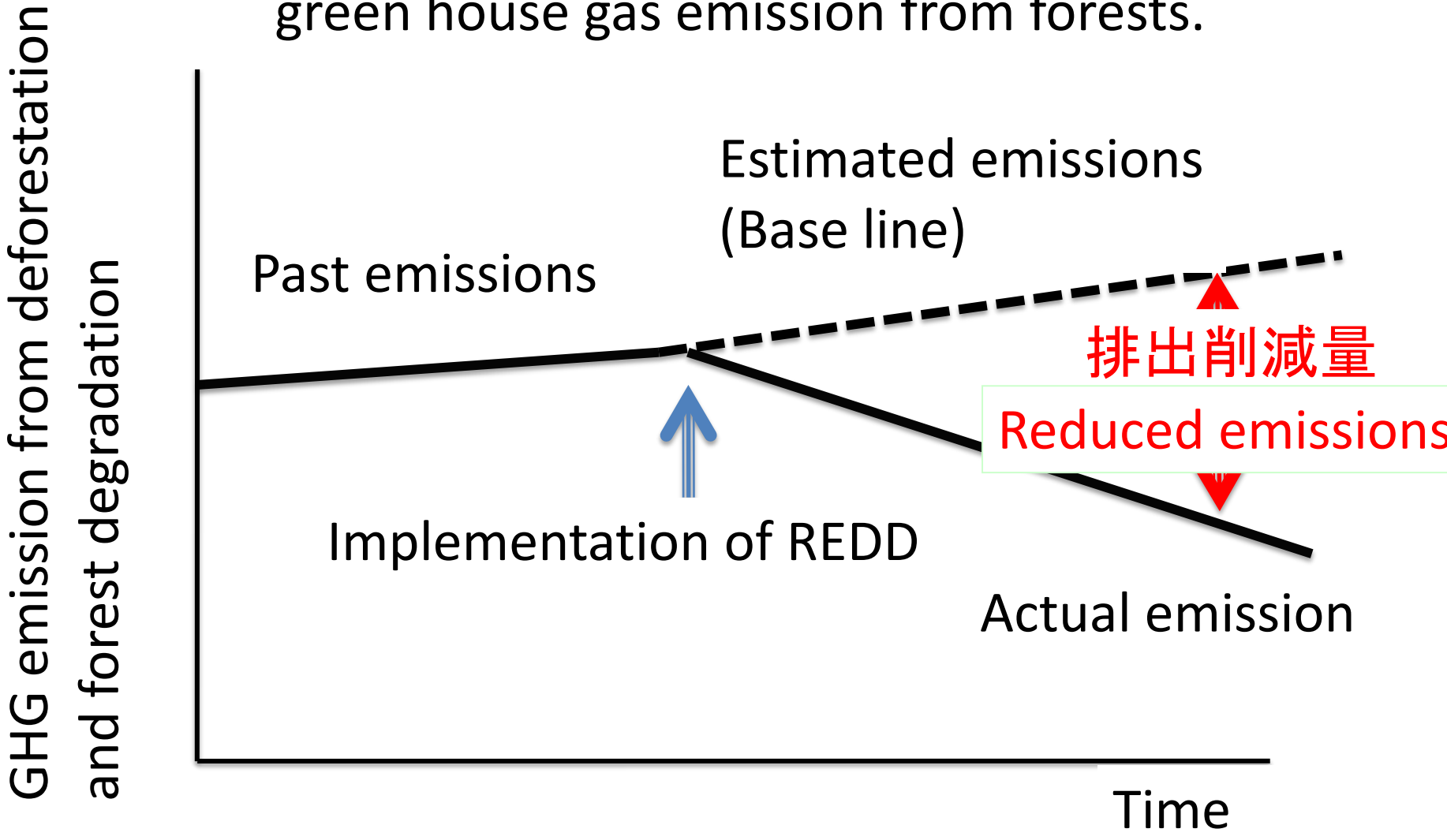
Rehabilitation of degraded forest land is for local livelihood

No impacts on biodiversity in short term but may have positive impact, if the planted area is managed properly.

Lessons from past rehabilitation efforts are available at

http://www.cifor.org/rehab/

The concept of REDD is that reward the reduction of green house gas emission from forests.



排出削減量に対して支払いがなされる。

Reduced emissions to be rewarded

Background of REDD+

REDD

- has a *huge potential*
- is *cheap*
- can be done *quickly*
- can produce *win-win-win* outcomes

Angelsen 2009 Will REDD make a difference?

arborvitae issue 40 p10

http://www.iucn.org/about/work/programmes/forest/fp_news_events/fp_news_arborvitae/?4016/arborvitae-Issue-40

Activities of REDD+

- Reducing emission from deforestation
- Reducing emission from forest degradation

- Conservation of Forest Carbon Stocks
- Sustainable Management of Forest
- Enhancement of Forest Carbon Stocks

We have been working hard on these issues even before REDD+ emerged but we do not have much success.

See Realising REDD+ from CIFOR

http://www.cifor.org/online-library/browse/view-publication/publication/2871.html

Why might we be optimistic?

- the volume of finance will be sufficient
- the high-level political attention and engagement at the national level
- REDD finance will be performance-based

- As an idea, REDD+ is a success story
- But REDD+ faces huge challenges
- It is well documented in the CIFOR book Analysing REDD+

According to **The Emissions Gap Report 2012** A UNEP Synthesis Report
http://www.unep.org/publications/ebooks/emissionsgap2012/

The report gives an updated estimate of the 2020 emissions gap of 8 to 13 gigatonnes of equivalent CO_2, larger than earlier estimates because of higher than expected economic growth.

Forestry sector are expected to cut 1.3-4.2 Gt-CO_2e for bridging the emission gap.

Emission from deforestation and forest degradation

- IPCC (2007) 8.4 Gt in 2004
- http://www.ipcc.ch/publications_and_data/ar4/wg3/en/contents.html
- Science (2012)

  2.97 Gt (only deforestation)

  2.09-4.47 Gt 90% Confidence interval

http://www.sciencemag.org/content/336/6088/1573.abstract

Emission reduction potential of avoiding deforestation

- Nabuurs et al. (2007) P559 Table 9.3

3.95 Gt - CO_2 $year^{-1}$ (less than 100USD/tCO_2)

http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter9.pdf

How much will we we have achieved?
Ex. Recently approved VCS REDD+ Projects

- Rimba Raya Indonesia

https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=674&lat=-2.78051067417254&lon=112.170133504944&bp=1

131 million t CO_2 over 30years

4.4 million t CO_2 $year^{-1}$

- Mai Ndombe, Democratic Republic of Congo
- https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=934

175 million t CO_2 over 30 years

5.8 million t CO_2 $year^{-1}$

- The Purus Project, Brazil
- https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=963&lat=%2D8%2E994141&lon=%2D69%2E451007&bp=1

Total 1,341,205t-CO_2 over the first 10 years

0.13 million t CO_2 $year^{-1}$

They are not enough to fill the emission gap.

Conclusion　結論

- Better to conserve forests rather than to rehabilitate after deforestation/forest degradation.
- 破壊された森林を修復するよりも、無用の破壊を避け森林を保全することが肝心
- We need REDD+ activities at national and international level to mitigate climate change.
- 気候変動緩和には国、国際的なREDDプラスの取組が重要