Methods and criteria for determining forest restoration potential

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Overview

1. Definitions

2. General issues

3. Differences between approaches

5. Links to REDD+ and the Cancun Safeguards

4. Technical methods and criteria

Some examples:

Forest and landscape restoration – An active process that brings people together to identify, negotiate, and implement practices that restore an agreed balance of the ecological, social, and economic benefits of forests and trees within a broader pattern of land-uses. (WRI, 2011)

Forest landscape restoration is the long-term process of regaining ecological functionality and enhancing human well-being across deforested or degraded forest landscapes. (IUCN/GPFLR, 2014)

Classification by forest origin. Some examples:

'Secondary forest' includes:

- Restoration forest: natural regeneration on forest land after shifting cultivation, fire or exploitation;

- Forest after extraction: regrowth after logging or other forest products harvesting.

'Planted forest' includes:

- New plantations on non-forested land

- Replanting forests after logging;

- Natural regeneration after exploitation.

Definitions, cont.

Degraded forest

- Broadly:

Degradation – A process that reduces the volume and canopy cover of trees across a landscape. Degradation leads to reduced biomass, reduced biodiversity, and a reduction in the ecosystem services provided by forests. (WRI, 2011)

- The specific definitions in each context have important implications for planning for REDD+

Classification of forest reserves. Some examples:

- Wood/forest:

  - Poor forest: standing volume 10 -100 m3/ha

  - No reserve volume forest: average diameter < 8 cm, standing volume < 10 m3/ha

- Bamboo forest:

  – Classified by species, diameter and density levels

And classifications for bare land:

  - Planted areas but not yet forest

  - With naturally regenerating trees

  - Without regenerating trees

  - Limestone without forest

Key questions include:

1. What is the area of analysis?

2. Where can forests potentially grow? (Climate, soils, land use)

3. What is the current extent of forests?

4. Where have forests been lost or degraded?

5. What and where are the constraints on restoration? Where is restoration economically, socially, ecologically feasible?

6. Where are the opportunities for restoration?

7. What are the carbon benefits of restoration?

8. What other benefits and costs are associated with restoration strategies?

9. Who needs to be involved? (Stakeholders, communities, co's?)

Differences between approaches

- Approaches can be more top-down or bottom-up

- Potential may be measured more by technical parameters (climate, soil, species) or by social-political-economic parameters (land-use, feasibility, community preferences)

- How spatial analysis is used in the decision-making process

- Where/how potential carbon benefits are included in the analysis

- Whether or not undertaken from a REDD+ perspective

- Classify potential according to different restoration strategies (e.g. mosaic restoration) or simply high/low potential

Some differences, cont:

Legend to the restoration opportunity map

Wide scale	🟩	Remote	🟫
Mosaic	🟩	Croplands	🟧

Croplands, i.e. former forest lands which have been converted to croplands, are not considered as providing restoration opportunities.
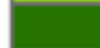
Highest potential

Lowest potential

No restoration opportunity

Restoration opportunity

Landscape scale: potential to restablish forest

Landscape scale: potential to enhance existing forest cover

Patch scale: in areas of forest cover loss
with mosaic agriculture/degraded vegetation

Links to REDD+ and the Cancun Safeguards

- Forest restoration clearly a potential REDD+ activity, and group of actions. E.g:
  - Afforestation
  - Assisted natural regeneration
  - Natural regeneration
- Offers important multiple benefits, depending on strategy and implementation. E.g.:
  - Enhancement of carbon stocks
  - Enhanced ecosystem services provision
  - Opportunities for increased/alternative livelihoods
  - Complement/support national forestry priorities/targets
- Planning for forest restoration strategies as a REDD+ action needs to take REDD+ as starting point, e.g. What are the goals of restoration as part of REDD+? These may affect approach/input data

- There are also risks associated with forest restoration actions:

  – Conversion of natural forests and loss of biodiversity

  – Loss of rights to / access to forest resources, agricultural/grazing areas, by local communities

  – Reduction in ecosystem service provision in/around poorly planned/managed plantations (e.g. soil conservation, pollination)

- Safeguards need to be considered and addressed from an early stage to help achieve multiple benefits and reduce risks. All Safeguards may apply, but as examples:
  - Safeguard (b) on transparent and effective national forest governance structures
  - Safeguard (c) on respect for knowledge and rights of indigenous peoples and local communities
  - Safeguard (e) on conservation of natural forests & biodiversity and enhancement of other social & environmental benefits

An example (WRI, 2011):

- Global forest restoration potential map: broad, global scale

- Input data focused on forest, climate, soil, land cover, etc. Data related to related economic/social/ environmental benefits not considered.

- Not undertaken from REDD+ perspective, although carbon stocks enhancement potential can be included

WRI example: steps

- Created map of potential forest extent globally

  - Using ecoregion/ecozone classifications (FAO, 1999, Olson et al., 2001), climate data (Hijmans et al., 2005), and current forest distribution.

- The current tree cover distribution mapped using combination of two MODIS-derived products:

  – A global forest map (SDSU, 2011), and

  – A tree canopy density layer from the VCF product (Hansen et al., 2003).

WRI example steps, cont:

- Then mapped several classes of forest degradation:
  - Some derived from areas of 'disagreement' between potential and current forest maps: deforestation, partial deforestation, degradation.
  - Not all of secondary forests or forest plantations classified as degraded. Used the World IFL Dataset to select the intact portion of the non-degraded forests.

WRI example steps, cont:

- Used information on current land-use to assess the opportunities for restoration:
  - Land-use data include maps of population density, urban/industrial areas, cropland.
  - Areas with high population density or with intensively managed croplands were considered as having no or low forest restoration potential
  - Scattered cropland, pastures, agroforestry and all types of forest plantations were considered as providing promising opportunities for restoration.

WRI example steps, cont:

Deforested and degraded forest lands were divided into four categories; map of restoration opportunity areas and other former forest lands (1 km2):

- Wide-scale restoration – Less than 10 people per square km and potential to support closed forest.

- Mosaic restoration – Moderate human pressure (between 10 and 100 people per sq km).

- Remote restoration – Very low human pressure (density of less than one person per sq km within a 500 km radius).

- Croplands – Intensive human pressure (over 100 people per sq km).

A World of Opportunity
for Forest and Landscape Restoration

BONN CHALLENGE
on forests, climate change
and biodiversity 2011
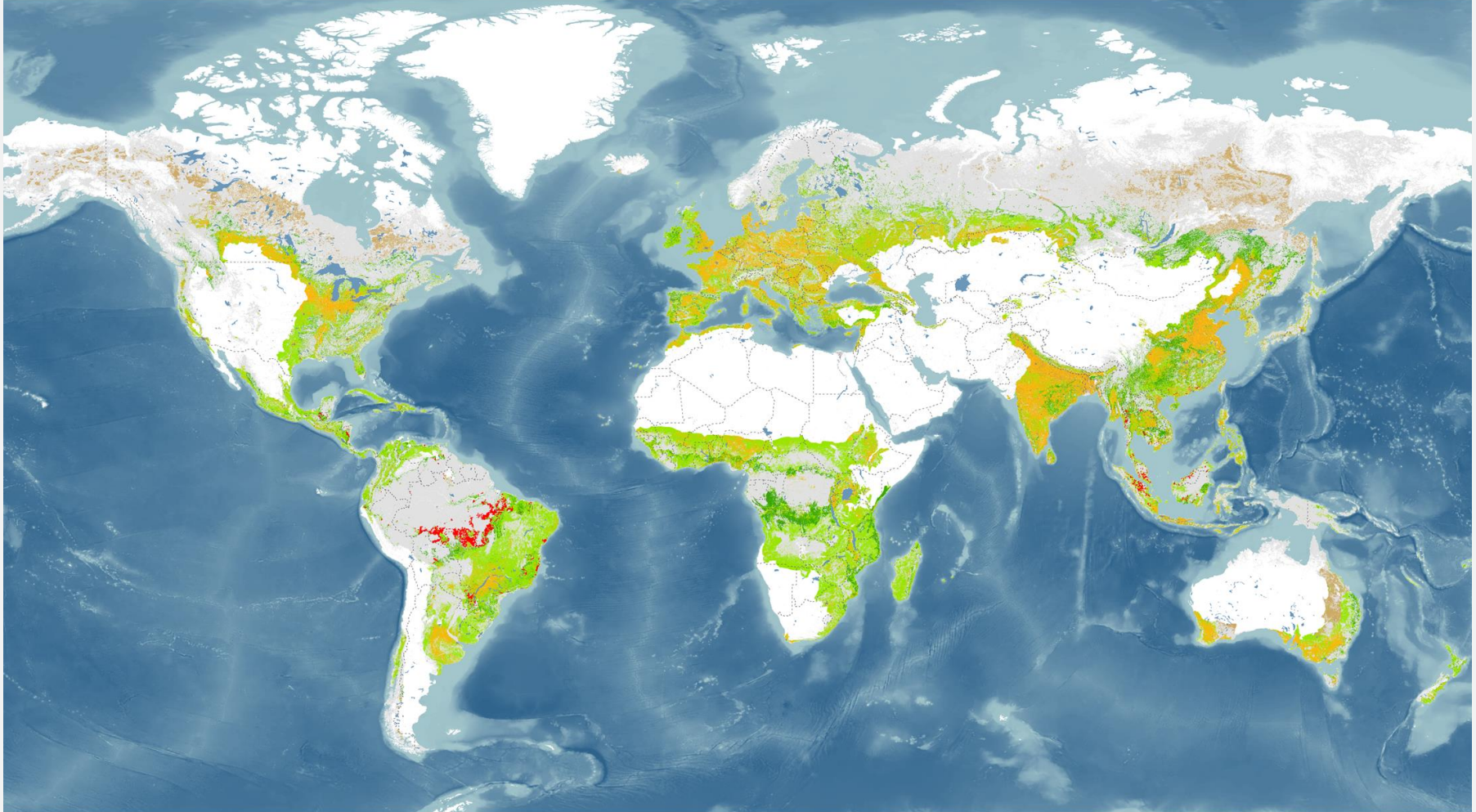
FOREST AND LANDSCAPE RESTORATION
OPPORTUNITIES

- Wide-scale restoration
- Mosaic restoration
- Remote restoration

OTHER AREAS

- Agricultural lands
- Recent tropical deforestation
- Urban areas
- Forest without restoration needs

THE GLOBAL PARTNERSHIP ON FOREST LANDSCAPE RESTORATION

WORLD RESOURCES INSTITUTE

South Dakota State University SDSU

IUCN

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

PROFOR

Forestry Commission

# Example of another approach: multiple benefits analyses

- Undertaken through collaboration between UNEP-WCMC and UN-REDD partner countries (e.g. DRC, Sulawesi, Paraguay)

- To inform REDD+ planning at national and/or sub-national scales

- Utilising additional datasets to explore goals and multiple benefits associated with REDD+ actions (e.g. ecosystem services enhancement, biodiversity)
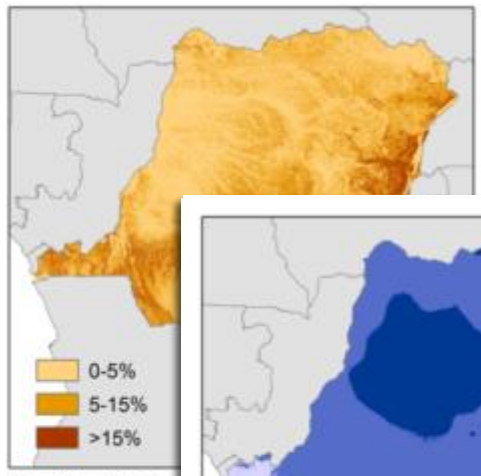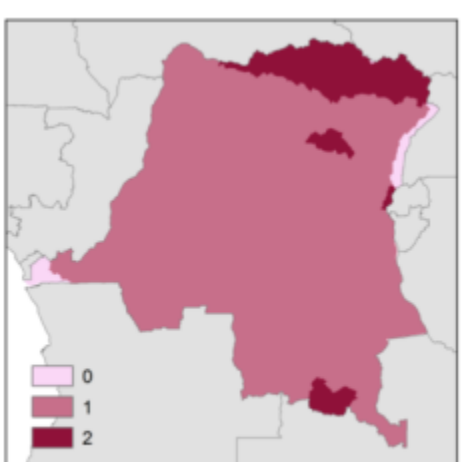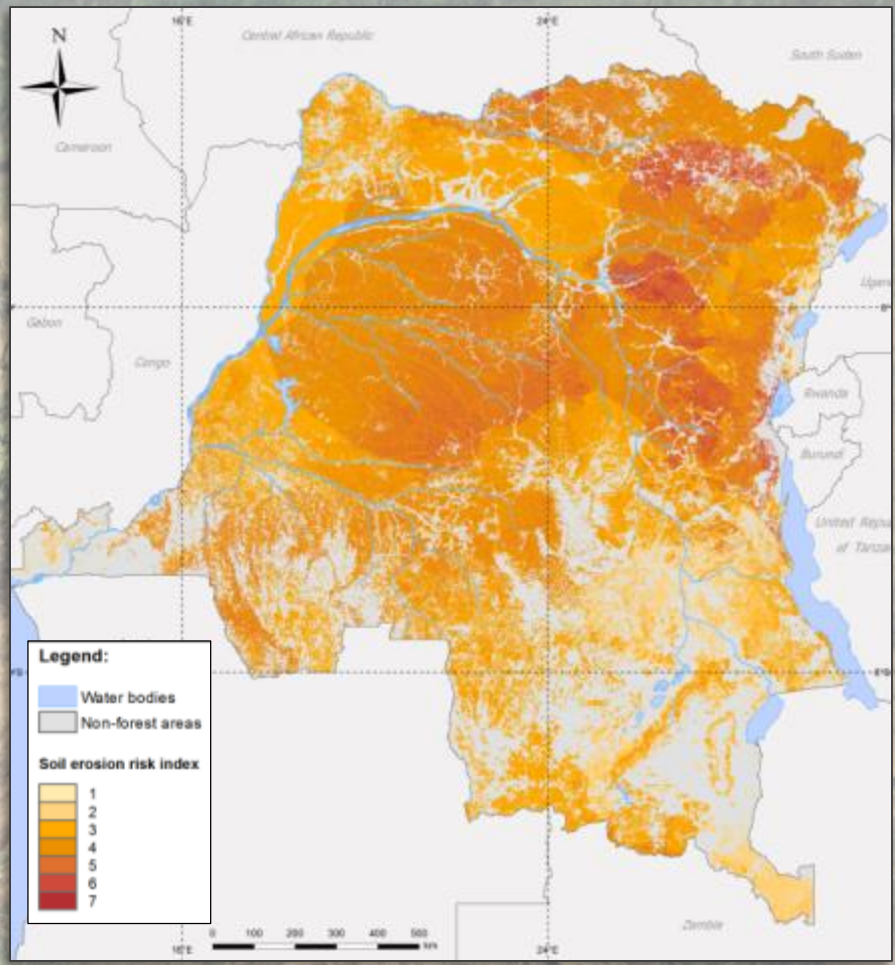
Map 1b - Classes
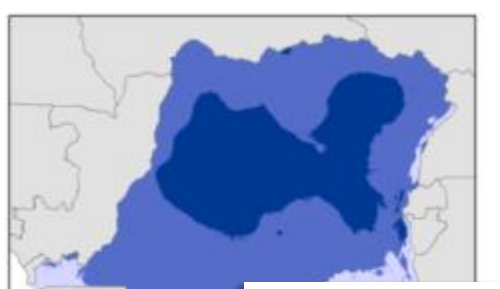
Map 2b - Classes of pre

Map 3b - Number of dams per catchment

Legend:
- Water bodies
- Non-forest areas

Soil erosion risk index
1
2
3
4
5
6
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Thank You!

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