

# Status, changes and trends in global forests: Good and bad news

Jan Plesník

Nature Conservation Agency of the Czech Republic



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ



# Status, changes and trends in global forests: Good and bad news

I suppose the process of acceptance of any new idea will pass through the usual four stages:

- i) this is worthless nonsense;
- ii) this is an interesting, but perverse, point of view;
- iii) this is true, but quite unimportant;
- iv) I always said so.

John B.S. Haldane (1892 – 1964)

# Status, changes and trends in global forests: Good and bad news



# Status, changes and trends in global forests: Good and bad news

- Outline of the presentation:
  - What is a forest?
  - Changes and trends in global forest cover
  - Forests in protected area all around the world
  - Productive, protective and poly-functional forests
  - Social and economic importance of world's forests

# Status, changes and trends in global forests: Good and bad news

## What is a forest?

- High variability of one of the main land-cover types
- Ecotones

## Woody species:

- Woody herbs
- Bushes and shrubs
- Trees



# Status, changes and trends in global forests: Good and bad news



- At present, there are 800 forest definitions
- Lack of quantitative criteria
- Using canopy cover as a criterion

# Status, changes and trends in global forests: Good and bad news

The most common forest definition was elaborated by FAO in 1998

- Forest is a land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach *in situ* these thresholds.



# Status, changes and trends in global forests: Good and bad news



- The FAO forest definition does not include
- land that is predominantly under agricultural or urban land use



# Status, changes and trends in global forests: Good and bad news

On the other hand, the FAO forest definition includes

- Areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years
- Forest roads, firebreaks and other small open areas

# Status, changes and trends in global forests: Good and bad news

On the other hand, the  
FAO forest definition  
includes

Areas with young trees  
that have not yet reached  
but which are expected to  
reach a canopy cover of  
10 percent and tree height  
of 5 meters



# Status, changes and trends in global forests: Good and bad news



The FAO forest definition also includes

- Windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.

# Status, changes and trends in global forests: Good and bad news

The FAO forest definition includes

- rubber-wood, cork oak and Christmas tree plantations
- In Europe, the annual consumption of Christmas trees is approx. 58 million trees



# Status, changes and trends in global forests: Good and bad news



The FAO forest definition weaknesses :

- Low canopy cover
- Forest should also be
  - Vineyards
  - Hop gardens
  - Dense bush or savannah (Australia, Africa)

# Status, changes and trends in global forests: Good and bad news

- Forests cover 31% of total land area on Earth (over 4 billion hectares, *i.e.* area four times bigger than Europe)
- The second largest global land-use type, after farmland



# Status, changes and trends in global forests: Good and bad news

- The five most forest-rich countries (the Russian Federation, Brazil, Canada, the United States of America and China) account for more than half of the total forest area



# Status, changes and trends in global forests: Good and bad news

- An average of 0.6 ha per capita
- Ten countries or areas have no forest at all
- An additional 54 have forest on less than 10 percent of their total land area.





# Status, changes and trends in global forests: Good and bad news

But at the Neolithic Era/New Stone Age (8,000 years ago before the Neolithic Revolution had introduced farming), forests covered approx. half of the total land area on Earth

# Status, changes and trends in global forests: Good and bad news

	world	Europe	Europe without the Russian Federation	European Union
Forest cover (%)	31.0	44.5	32.2	37.6
Change in forest cover since 2000 (%)	-1.2	0.7	3.8	2.8
Proportion of forests in protected areas (%)	13	12	12	13
Proportion of undisturbed forests (%)	36	26	4	4
Proportion of monocultures (%)	7	4	9	8
Proportion of planted area from the total forest cover (%)	n.a.	8	31	34

# Status, changes and trends in global forests: Good and bad news

- Around 13 million hectares of forest (the size of Greece) were converted to other uses or lost through natural causes each year in 2000-2010 compared to 16 million hectares per year in the 1990s.



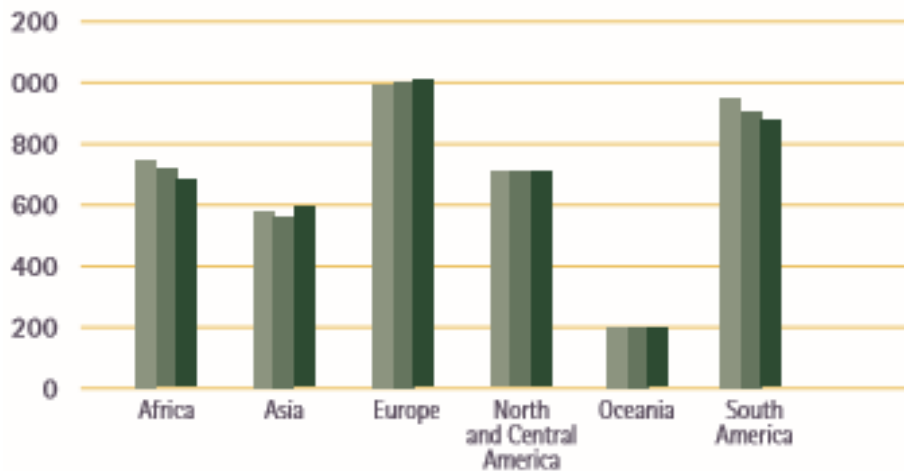
# Status, changes and trends in global forests: Good and bad news

- Large-scale planting of trees is significantly reducing the net loss of forest area globally
- Afforestation and natural expansion of forests in some countries and regions have reduced the net loss of forest area significantly at the global level

# Status, changes and trends in global forests: Good and bad news

Trends in forest area, 1990–2010 (million ha)

■ 1990 ■ 2000 ■ 2010



- South America and Africa continue to have the largest net loss of forest
- In North and Central America and Oceania forest cover has been stable
- In Europe and Asia, forest cover increased in 2000-2010

# Status, changes and trends in global forests: Good and bad news

- The net change in forest area in the period 2000–2010 is estimated at  $-5.2$  million hectares per year (an area about the size of Costa Rica), down from  $-8.3$  million hectares per year in the period 1990–2000.



# Status, changes and trends in global forests: Good and bad news

- A good news: The rate of global deforestation shows signs of decreasing
- A bad news: but it is still alarmingly high
- Deforestation occurs mainly in primary forests, particularly in tropical developing countries



# Status, changes and trends in global forests: Good and bad news



- Primary or undisturbed forest is a forest of native species where there are no clearly visible indications of human activities and the ecological processes have not been significantly disturbed



# Status, changes and trends in global forests: Good and bad news

- Primary forests account for 36% of forest area
- But they have decreased by more than 40 million hectares since 2000



# Status, changes and trends in global forests: Good and bad news

- Main driver of deforestation is not logging for timber, but seeking for new agricultural or urban land (slash & burn approach)
- Selective logging can be profitable if dealing with the highly demanded timber



# Status, changes and trends in global forests: Good and bad news



- The global area of planted forest is increasing – it now accounts for 7% of total forest area or 264 million hectares
- During 2005–2010, the area of planted forest increased by about 5 million hectares per year

# Status, changes and trends in global forests: Good and bad news

- Most of the planted forests was established through afforestation, i.e. planting of areas not forested in recent times, particularly in China.
- Three-quarters of all planted forests consist of native species while one-quarter comprises introduced species.



# Status, changes and trends in global forests: Good and bad news



- Global forests are not the world's lungs, rather world's air-conditioner or a humidifier.
- Particularly, they are a safebox of the global biological diversity, namely at the species level.

# Status, changes and trends in global forests: Good and bad news

- Although tropical rain forests cover 6 % of the Earth's terrestrial land, they harbour more than half of the wild plant and animal species



# Status, changes and trends in global forests: Good and bad news



- Forest biodiversity is being lost at an alarming rate: up to 100 animal and plant species are lost every day in tropical forests

# Status, changes and trends in global forests: Good and bad news

- Bushmeat causes „the syndrome of dead forest“





# Status, changes and trends in global forests: Good and bad news



- A protected area is
- A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (IUCN 2008)

# Status, changes and trends in global forests: Good and bad news



- Legally established protected areas cover an estimated 13% of the world's forests
- The primary function of these forests may be the biological diversity conservation, the soil and water protection, or the conservation of cultural heritage.

# Status, changes and trends in global forests: Good and bad news

- The area of forest within a protected area system has increased by 94 million hectares since 1990
- Two-thirds of this increase has been since 2000



# Status, changes and trends in global forests: Good and bad news

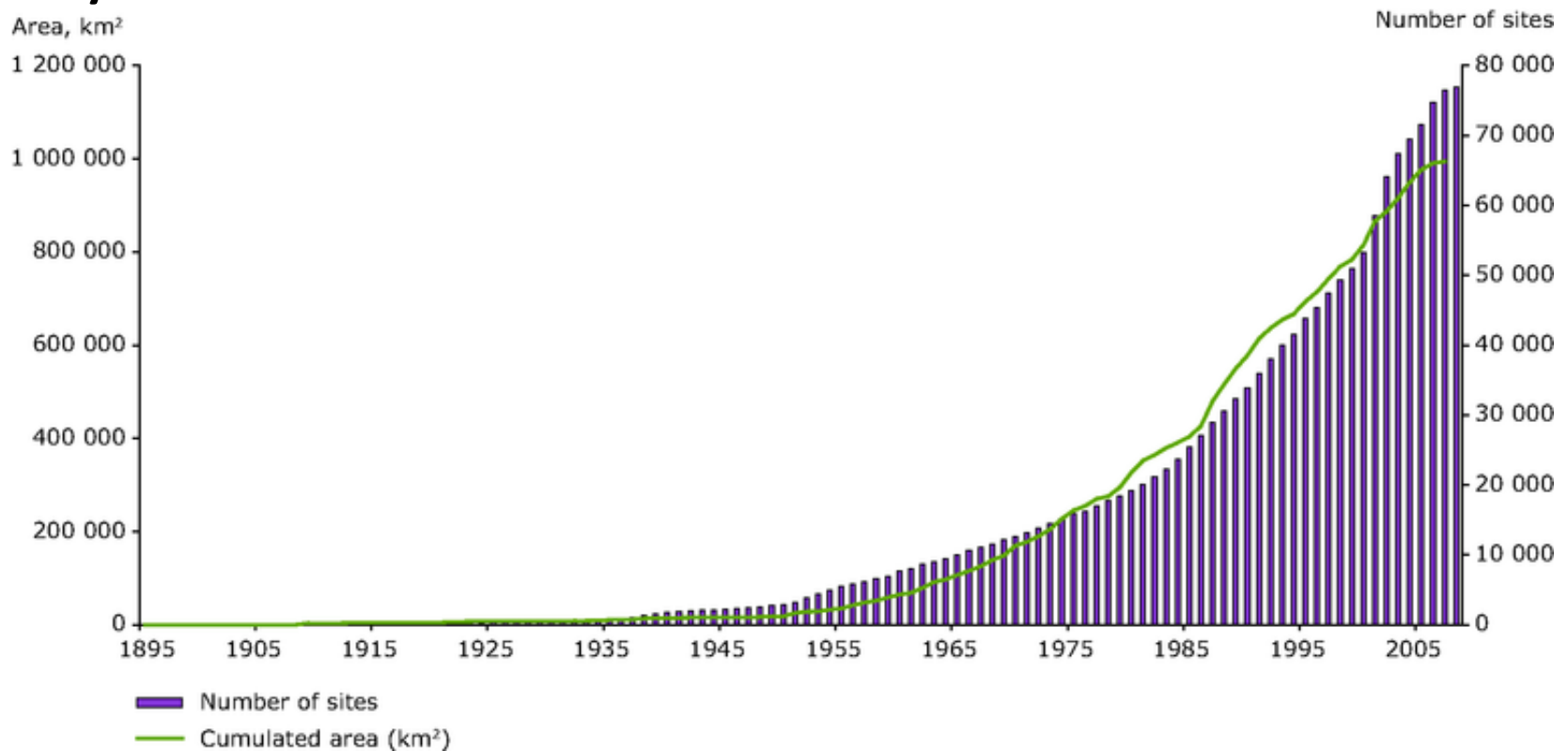
- As of 24 November, 2013, 205,836 PAs registered at the World Database on Protected Areas, (UNEP-WCMC Cambridge, U.K.)
- 142,067 in Europe (69 %)

[www.protectedplanet.org](http://www.protectedplanet.org)



# Status, changes and trends in global forests: Good and bad news

- Since 1990, the world's protected areas have increased by number 58 % and in their extent by 48 %



# Status, changes and trends in global forests: Good and bad news

- The highest proportion protected (25 %) display temperate coniferous forests
- The lowest proportion
  - Temperate grasslands
  - Savannahs
  - Bushes



# Status, changes and trends in global forests: Good and bad news



PA size is generally a problem

- Globally – over half of all PAs is smaller than  $10 \text{ km}^2$
- Europe – 90 % is smaller than  $10 \text{ km}^2$ , 65 % range between 1 and 100 hectares

# Status, changes and trends in global forests: Good and bad news

Are PAs really effective in biodiversity protection?

- Various methods  
RAPPAM, METT
- 2010 global  
assessment: 100  
countries assessed
- 14 % completely  
inadequate  
management  
(paperparks)





# Status, changes and trends in global forests: Good and bad news

- Only 24 % of the protected areas assessed have sound management
- But a sample size: 4,151 PAs assessed
- Only 5 % of the forest protected areas are effective
- Forest protected areas should be viewed in a broader landscape



# Status, changes and trends in global forests: Good and bad news



## PAs spending, costs and shortfalls

- Annual investments into PAs USD 6.5 – 10 billion: declining
- USD 50 billion needed for having an effective global PA network

# Status, changes and trends in global forests: Good and bad news

- Ecosystem services provided by PAs: annual value USD 5 trillion
- Americans spend annually for soft drinks USD 52 billion
- The costs for an effective global PA network are 5 % of those for annual perverse subsidies



# Status, changes and trends in global forests: Good and bad news

- 30% of the world's forests (close to 1.2 billion hectares) are primarily used for production of wood and non-wood products



# Status, changes and trends in global forests: Good and bad news

- An additional 949 million hectares (24 percent) are designated for multiple uses – in most cases including the production of wood and non-wood forest products



# Status, changes and trends in global forests: Good and bad news



- After a decrease in the 1990s, wood removals began to increase
- Globally, reported wood removals amounted to 3.4 billion cubic meters annually, similar to the volume recorded for 1990 and equivalent to 0.7 percent of the total growing stock.

# Status, changes and trends in global forests: Good and bad news

- Considering that informally and illegally removed wood, especially woodfuel, is not usually recorded, the actual amount of wood removals is undoubtedly higher.



# Status, changes and trends in global forests: Good and bad news

- Wood removals valued just over USD 100 billion annually in the period 2003–2007, mainly accounted for by industrial roundwood.
- At the global level reported values show no change in 1990-2000, but an increase of about 5 percent annually in 2000–2005, suggesting that roundwood prices recovered somewhat since their decline in 1990–2000. However, they have since fallen sharply.



# Status, changes and trends in global forests: Good and bad news

- At the global level, woodfuel accounted for about half of the removed wood.



# Status, changes and trends in global forests: Good and bad news

- 8% of the world's forests have soil and water conservation as their primary objective
- Around 330 million hectares of forest are designated for soil and water conservation, avalanche control, sand dune stabilization, desertification control or coastal protection.



# Status, changes and trends in global forests: Good and bad news

- The area of forest designated for protective functions increased by 59 million hectares between 1990 and 2010, primarily because of large-scale planting in China

# Status, changes and trends in global forests: Good and bad news

Designated functions of  
the world's forests (%)

Production	30
Protection	8
Conservation	12
Social services	4
Multiple use	24
Other	7
Unknown	16



# Status, changes and trends in global forests: Good and bad news

- More than 1.6 billion people depend on forests for their livelihoods
- Forests are home to an estimated 300 million people around the world.



# Status, changes and trends in global forests: Good and bad news



- 80 % of people in developing countries rely on traditional medicines, up to half of which originate from plants found mainly in tropical forests.

# Status, changes and trends in global forests: Good and bad news

- Forest biodiversity is the basis for more than 5,000 commercial products, from aromatic oil distilled from leaves to herbal medicines, food and clothing

# Status, changes and trends in global forests: Good and bad news



- Three quarters of the world's accessible fresh water comes from forested watersheds
- Forests purify drinking water for two-thirds of the major cities in developing countries.



# Status, changes and trends in global forests: Good and bad news

- Employment in forest establishment, management and use declined by about 10 % in 1990-2005, probably because of gains in labour productivity.



# Status, changes and trends in global forests: Good and bad news

- Europe, East Asia and North America saw steep declines (15 to 40 percent between 1990 and 2005), while in other regions, employment increased somewhat – probably because roundwood production has increased faster than gains in labor productivity.

# Status, changes and trends in global forests: Good and bad news



- Governments generally spend more on forestry than they collect in revenue.
- On average, total forest revenue collection was about USD 4.5 per hectare, ranging from under USD 1 per hectare in Africa to just over USD 6 per hectare in Europe.

# Status, changes and trends in global forests: Good and bad news

- Public expenditure on forestry was about USD 7.5 per hectare on average.
- Average expenditure was highest in Asia (over USD 20/hectare).
- In contrast, the average expenditure per hectare was less than USD 1 in South America and Oceania.



# Status, changes and trends in global forests: Good and bad news

- 80% of the world's forests are publicly owned, but ownership and management of forests by communities, individuals and private companies is on the rise. Despite changes in forest ownership and tenure in some regions, most of the world's forests remain under public ownership.

# Status, changes and trends in global forests: Good and bad news

- North and Central America, Europe (other than the Russian Federation), South America and Oceania have a higher proportion of private ownership than other regions.
- In some regions, there is an increasing trend of involving communities, individuals and private companies in the management of publicly owned forests.

# Status, changes and trends in global forests: Good and bad news



- Unique role of forests in carbon sequestration: they store half of the total terrestrial above-ground carbon
- Burning particularly tropical forest is responsible for 10 – 25 % of all the greenhouse gas emissions and 340,000 deaths

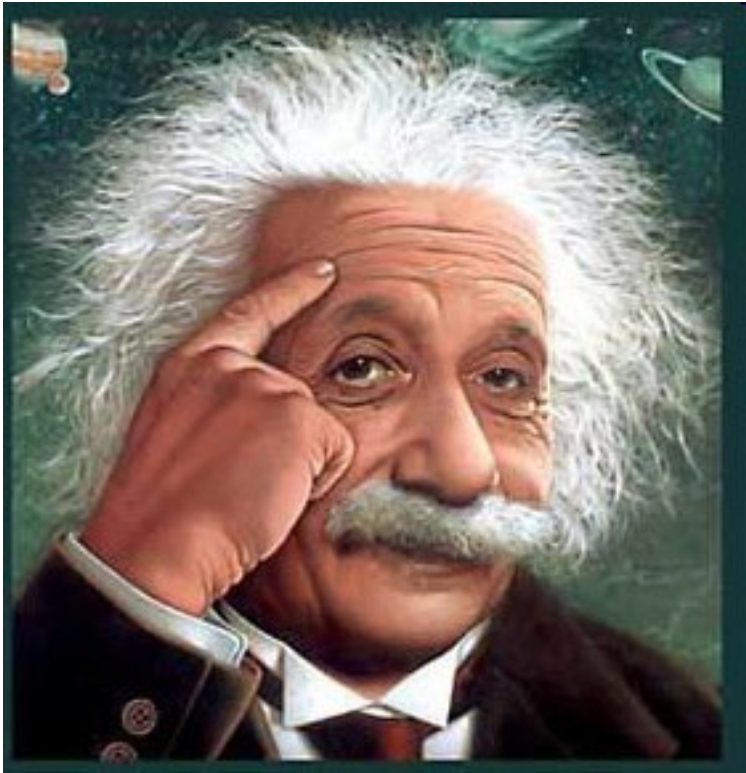
# Status, changes and trends in global forests: Good and bad news

- Loss of forest ecosystem services is estimated to be USD 2–5 trillion annually
- This is 3-8 % of the global gross domestic product in 2010





# Status, changes and trends in global forests: Good and bad news



- Look deep into nature, and than you will understand everything better
- Albert Einstein

# Status, changes and trends in global forests: Good and bad news



# Status, changes and trends in global forests: Good and bad news

Thank you very much  
for your attention

[jan.plesnik@nature.cz](mailto:jan.plesnik@nature.cz)

