

Effect of Agricultural land expansion on deforestation and its implication on climate change in Ethiopia and Zimbabwe



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Outline of the presentation

- Global overview of forest
- Role of forests
- Overview of Ethiopia and Zimbabwe forest Resources.
- Trend Analysis of Deforestation in Ethiopia and Zimbabwe context
- Agricultural Land Expansion and Deforestation.
- Deforestation and its implication on climate change
- Conclusion

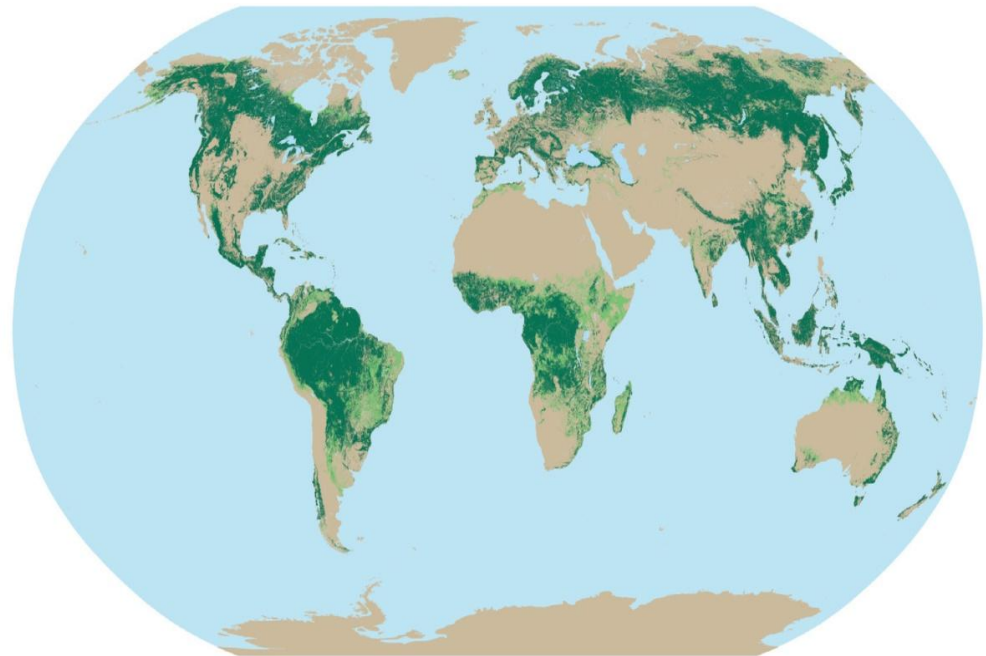
Introduction

Global Overview of forests

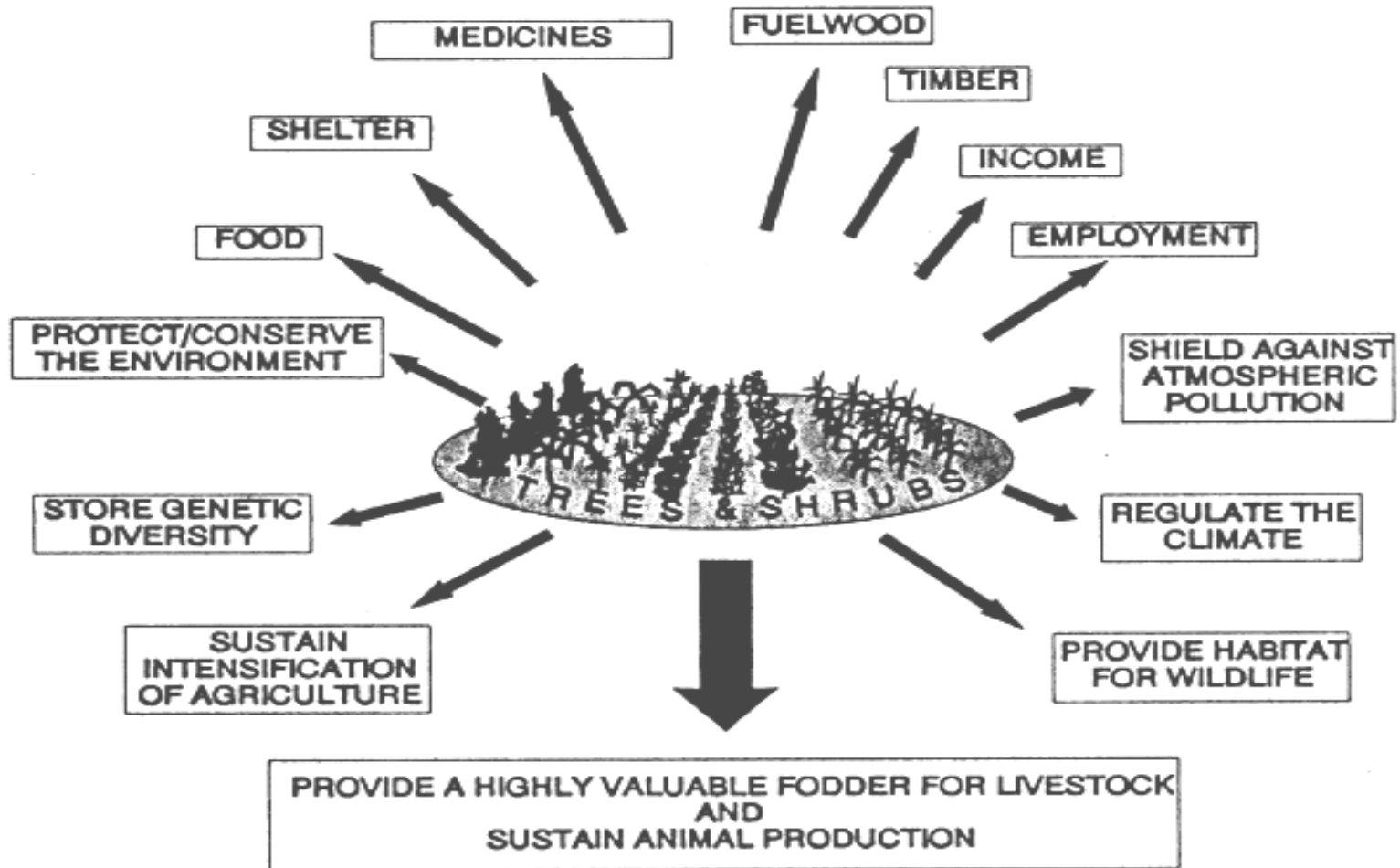
- The Total forests area in the world estimated at 3, 952 Billion ha.
- In coverage 30% of land area.
- From this Africa forest area about 635 412 million ha.
- In terms of coverage 16.1 % of Global Forest Area.

(FAO, 2005).

The world's forests

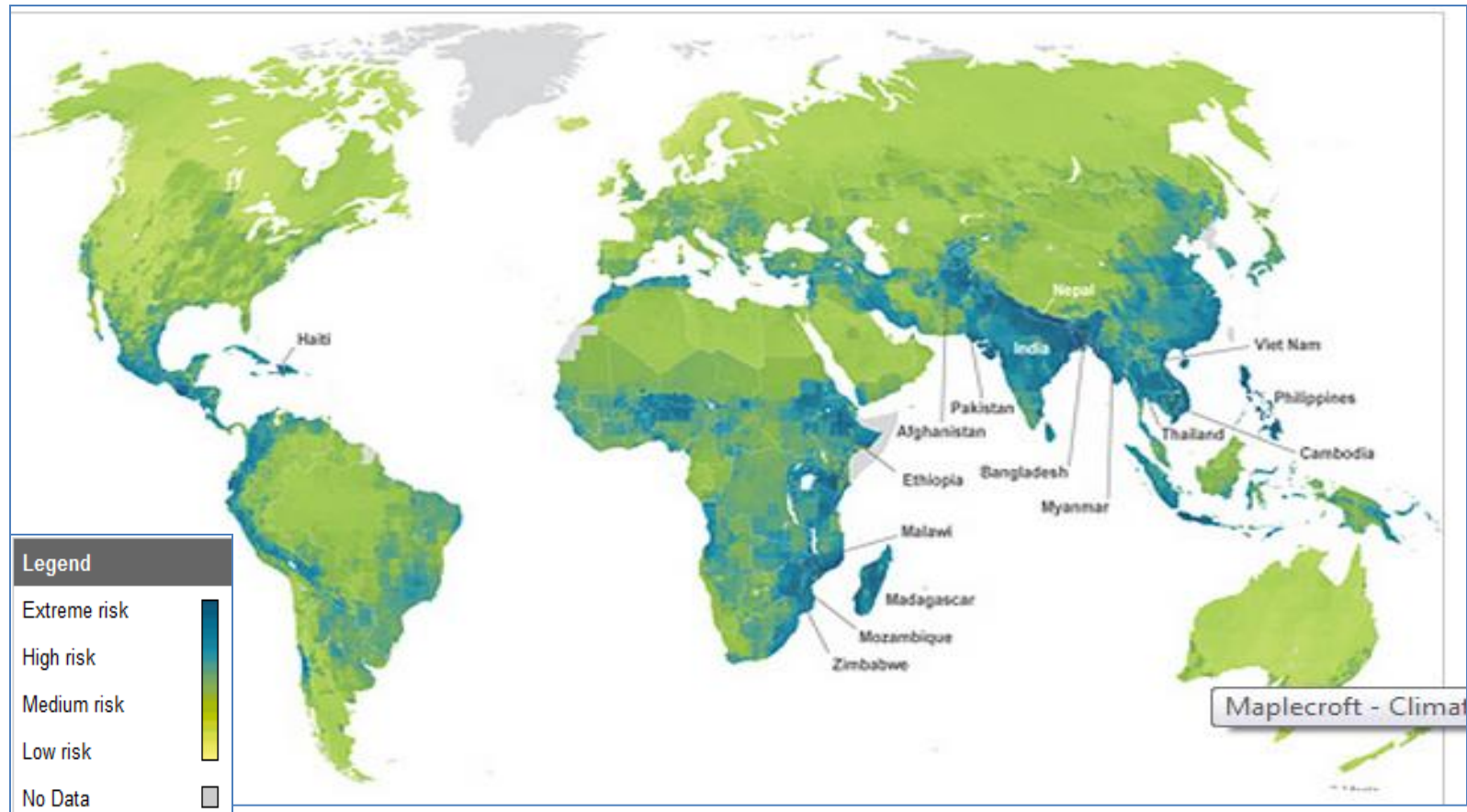


Role of forests



Sources: (FAO, 1992)

Global forest risk to climate change



source: <http://www.treehugger.com>

Countries Overview

- Ethiopia, East Africa
- Zimbabwe, Southern Africa
- Savanna forest

Overview of Ethiopia and Zimbabwe forest Resources

Forest Cover	Country	
	Ethiopia	Zimbabwe
Total Forest Area (1000 ha)	12296	15624
Percent forest cover	11	40
Primary Forest cover (1000 ha)	0	801
Primary forest , % Total forest	0	5
Other wood land (1000 ha)	44650	0
Percent other wood land	41	0
Total Land Area (1000 Square kilometers)	109631	38685

Source: <http://rainforests.mongabay.com>

Deforestation

- Clearance and cutting of forest areas
- One of the major causes of climate change
- Causes of deforestation
 - Agriculture expansion
 - Veld fires
 - Timber harvesting
 - Firewood collection

Trend Analysis of Deforestation in Ethiopia and Zimbabwe context

	Ethiopia	Zimbabwe
Years	Total (Net) Forest Cover (1000 ha)	Total (Net) Forest Cover (1000 ha)
1990	15114	22164
2000	13705	18894
2005	13000	17259
2010	12296	15624

Trend Analysis of Deforestation

Change in Forest Cover, (1990- 2010)

Ethiopia

- On average 140,900 ha or 0.93% of forest was lost annually.
- In total, 18.6% of its forest cover, that is 2,818,000 ha was lost.

Zimbabwe

- On average 327,000 ha or 1.48% of forest was lost annually
- In total, 29.5% forest cover, equaling 6 540 000ha

Source: <http://rainforests.mongabay.com>

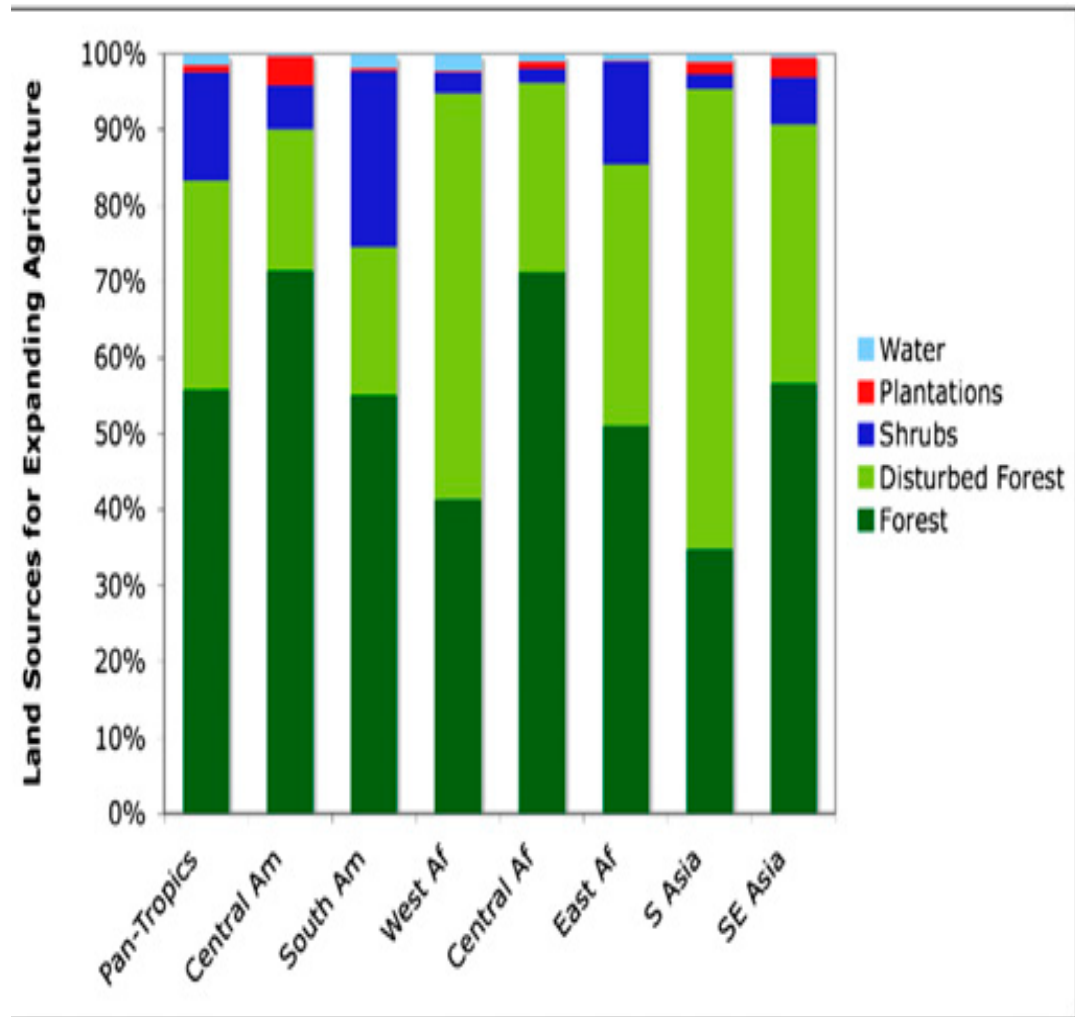
Forest Carbon stock in Ethiopia and Zimbabwe

Countries		
	Ethiopia	Zimbabwe
years	Carbon stock in living Forest biomass (million metric tons)	Carbon stock in living Forest biomass (million metric tons)
1990	289	697
2000	254	594
2005	236	543
2010	219	492

Source: http://rainforests.mongabay.com/defor_index.htm

Agricultural Land Expansion and Deforestation

- Generally through out Africa 60 % of new agricultural land comes from intact forest
- About 35% is from disturbed forest.
- 5% of new agricultural land comes from shrubs.



(Gibbs, et al. 2010)

Agriculture Expansion

Agro based economies

- Zimbabwe, Agriculture contributes 20.4%
- Ethiopia, Agriculture contributes 49.3% (Global finance, 2012)

Rural population

- Zimbabwe – 61.70%
- Ethiopia – 82.40% (World bank, 2012)

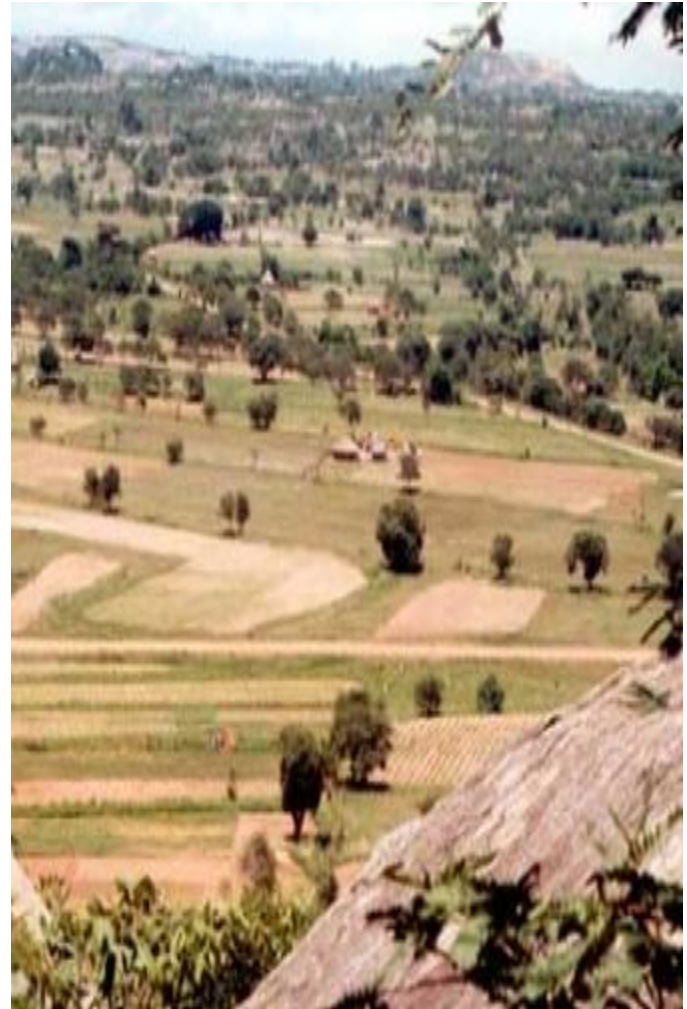
Zimbabwe

- Fast Track Land Reform, resulting in new conserved areas being cleared.
- 11 million ha of land acquired
- Opening up of forest for agric expansion has resulted in 12% increase in agric land(ZNRRCB,2010).
- New farmers lack implements and resort to using veld fires for clearing the land (Goredema et al,2011)

Agriculture expansion....

- In 2011 about 713 770ha of land was burnt of this 76 629ha was forest land(EMA,2012)
- Veld fires release green house gases
- Establishment of bio fuel plantations such as sugarcane plantations and jatropha

Agricultural expansion



Source.GoZ,2010

Agricultural expansion, Ethiopia

- Shifting cultivation
- Increase in Foreign Direct Investments(Land Grabbing
- Since 2008 about 3,619.509ha of land have been leased out (OI,2011 pg 1)
- Mostly forest areas
 - bio fuels
 - sugarcane
 - Cereals
 - livestock

Ethiopia

➤ Livestock

-65 000 cattle

-400 000 sheep's and goats

➤ Increased deforestation in the investment area(Gobena,2010)

➤ Deforestation rates in highland areas between 80 000 – 200 000 ha a year (O1,2011)

➤ Eviction of villages and relocated to new areas

Ethiopia Deforestation



[Source : http://3-9geogethiopia.wikispaces.com/](http://3-9geogethiopia.wikispaces.com/)

Deforestation and its implication on climate change

- Loss of Carbon dioxide into the atmosphere
- Fertilizers, Nitrous oxide green house gas
- Enteric fermentation, releases of methane from cows and sheep
- Soil erosion
- Flooding
- Desertification
- loss of bio diversity

Conclusion

- Rather than horizontal agricultural land expansion, it is better to increase vertical production and productivities per unit of area.
- Tenure security
- Increase production and productivity by using different agro forestry practices based on each agro ecological zones.
- Afforestation

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