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The Global Perspective of Climate Change

- Importance of Climate Forestry in the fight against Climate Change

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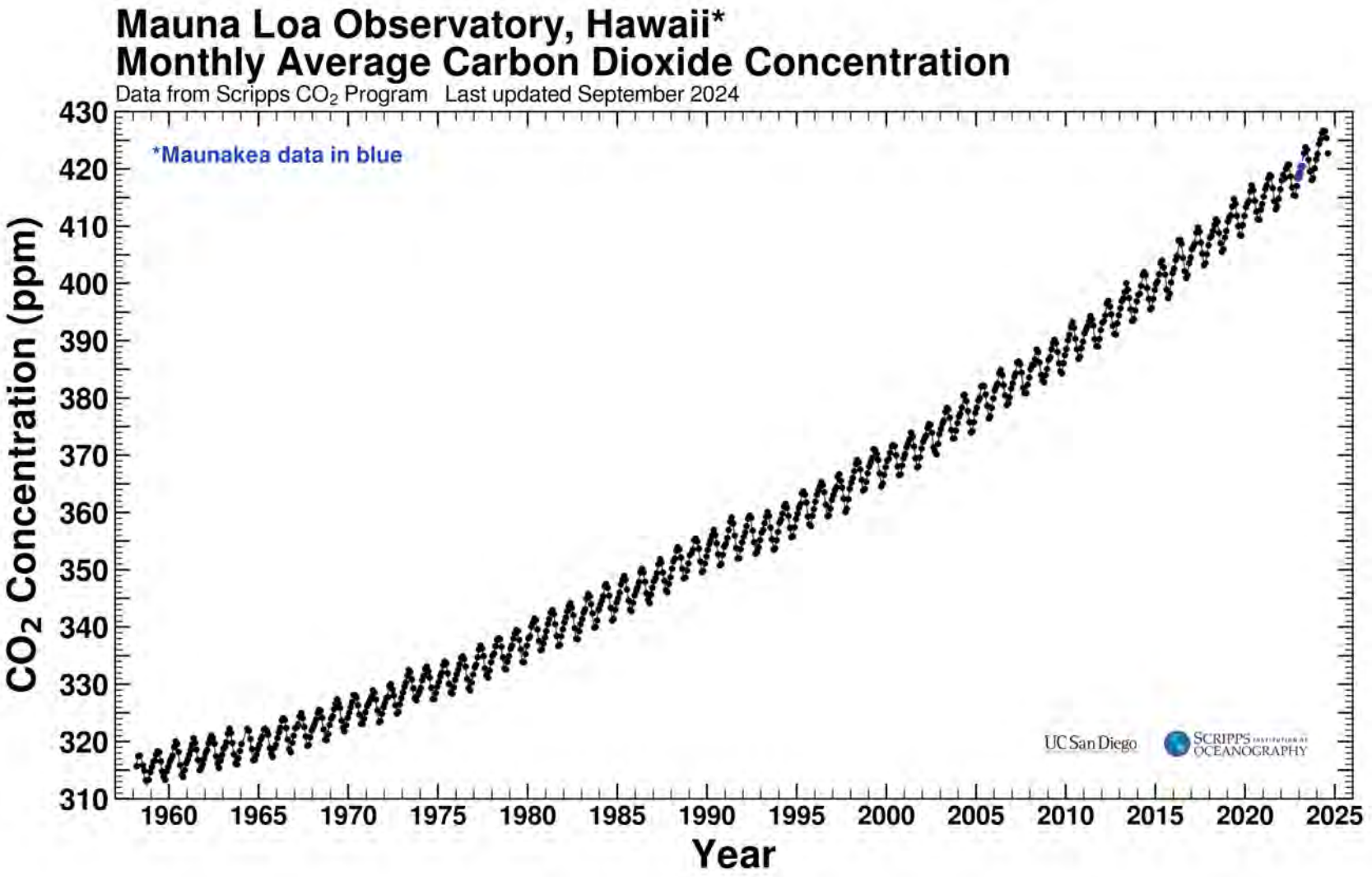
The important Climate conference (COP 21) in Paris in 2015

Paris conference 2015: almost all countries, especially the rich countries promised to reduce their Carbon dioxide emissions into the atmosphere.

What happened in the climate Carbon dioxide content after the COP 21 Paris conference?

The trend in the climate CO2 content



Long term trend and seasonal cycle in CO2

- The long-term trend of rising Carbon dioxide levels is driven by human activities, today the fossil Carbon dioxide emissions

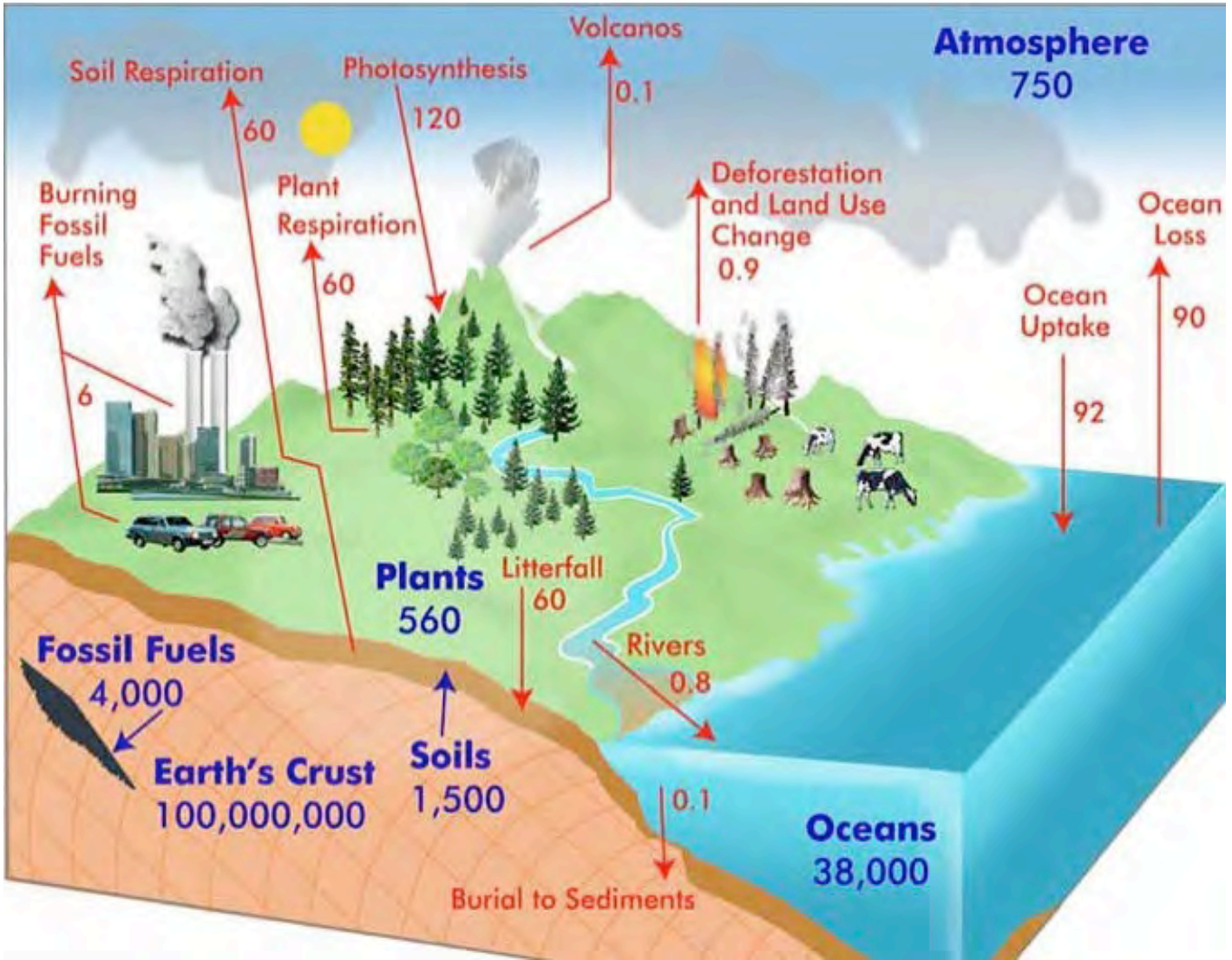
- The seasonal cycle of highs and lows (small peaks and valleys) is driven by Northern Hemisphere summer vegetation growth, which reduces the atmospheric Carbon dioxide, and winter decay, which increases it.

- **FORESTS ARE IMPORTANT**

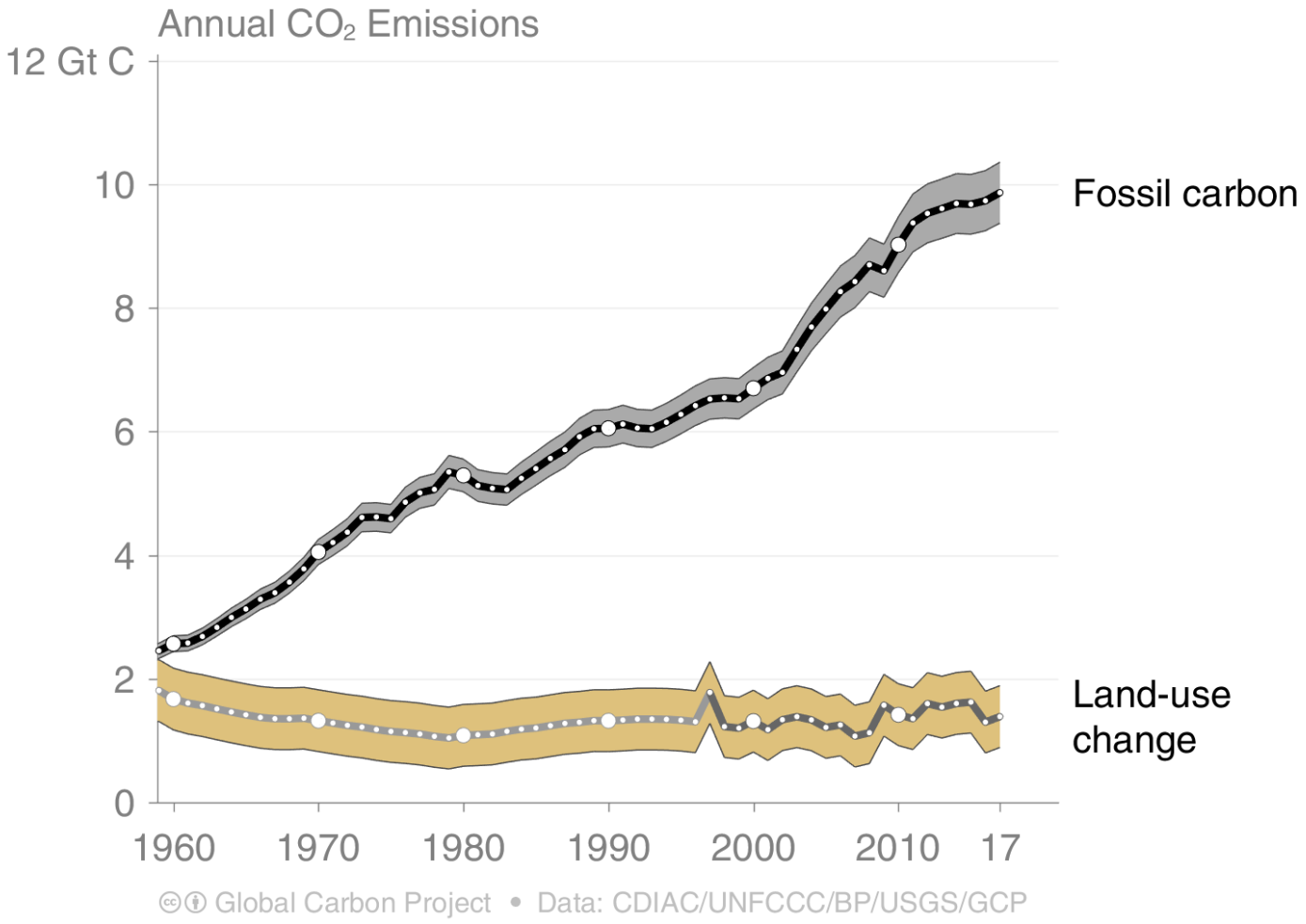
Globally Carbon stocks in atmosphere and plants (mainly forests) are at same level

Blue: Global Carbon stocks billion tn C

Red: Global Carbon emission and sink flows billion tn C/year



Radical change in 1950s: fossil CO2 emissions exceeded land-use change emissions (deteriation of forests)



Climate change started from forests

After the Ice Age the Carbon in

- Biomass (forests) 850 billion tn C
- Atmosphere 550 billion tn C

Today the Carbon in

- Atmosphere 850 billion tn C
- Biomasss (forests) 550 billion tn C

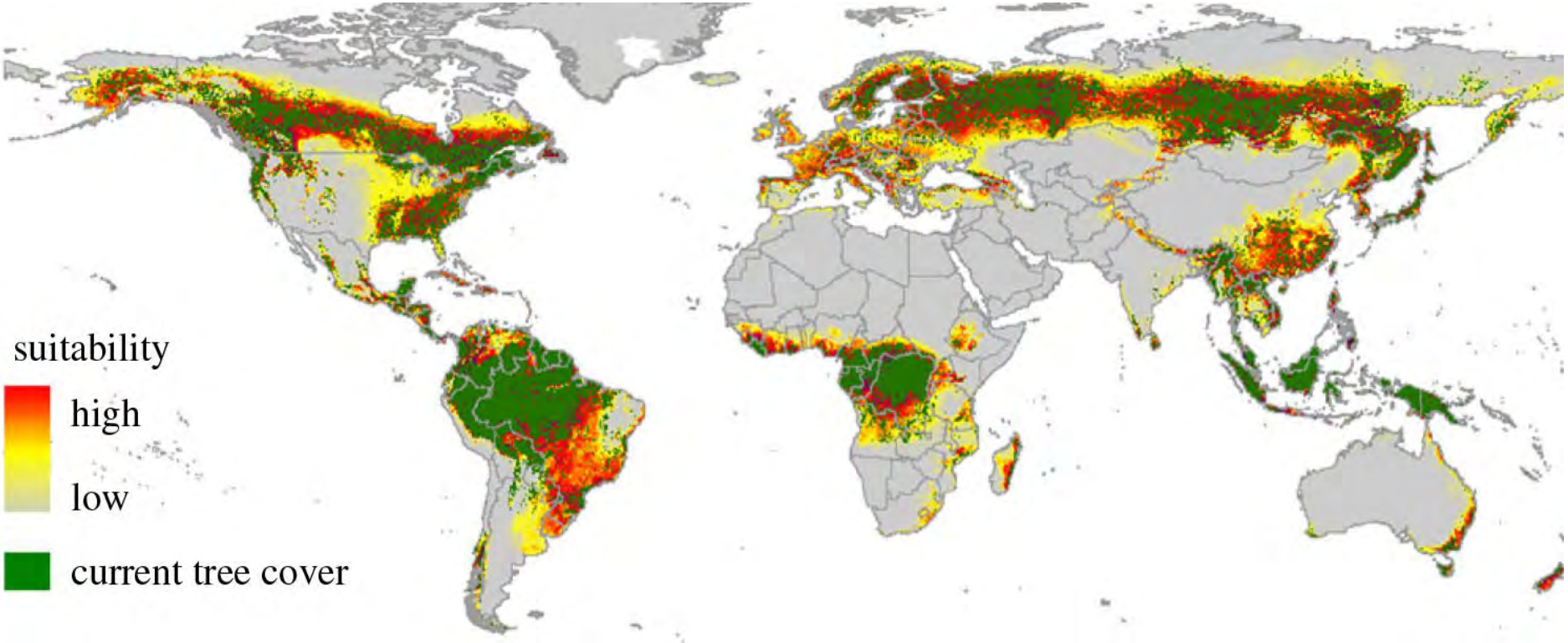
The fight against climate change waits for Climate Forestry. Target: move 150 billion tn C from atmosphere to forests, before year 2100 (Hansen 2017)

Example of Land Use Change: treeless, deforested, annually plowed, overgrazed land areas in Ethiopia

However, all Ethiopian forests have not been overplowed or overgrazed. There is a key to practical Climate Forestry

Possible areas for Climate Forestry - Green: current tree cover. Red and Yellow: enough rainfall. Gray: irrigation needed (except arctic cold areas and high & cold mountain areas)

The greatest opportunity in: Sahara + Sahel



Experiences from irrigation forestry

Two lines of Climate forestry

Agroforestry and Eucalyptus-forestry (both including irrigation)

Agroforestry

Like Faidherbia albida, Malawi (ICRAF)

Target for Carbon stock 10 kg C/m2

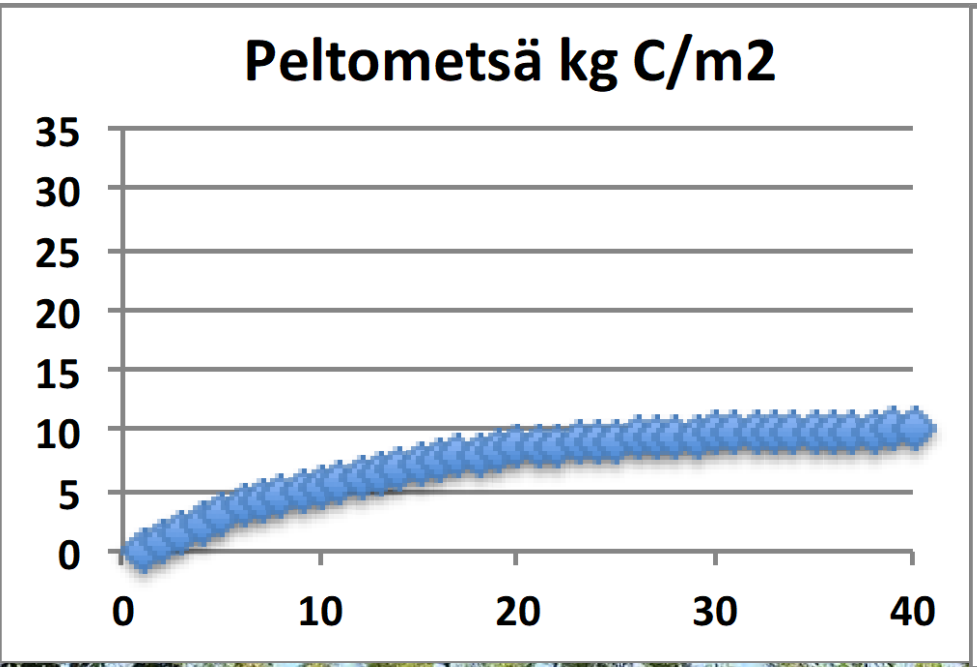
Eucalyptus forestry

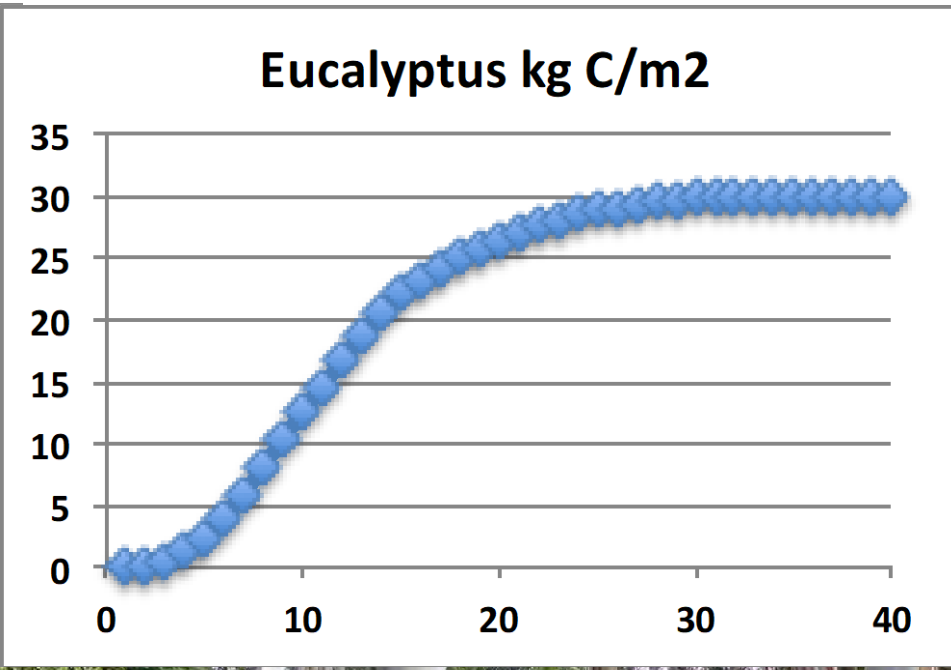
Like Eucalyptus grandis, Western Ethiopia

Target for Carbon stock 30 kg C/m2

Accumulation of Carbon stock, 40 years

C in stemns, branches, roots and soil (down to 1 meter) (peltometsä = agroforest)





Climate forestry combination: Sahel belt and Sahara desert

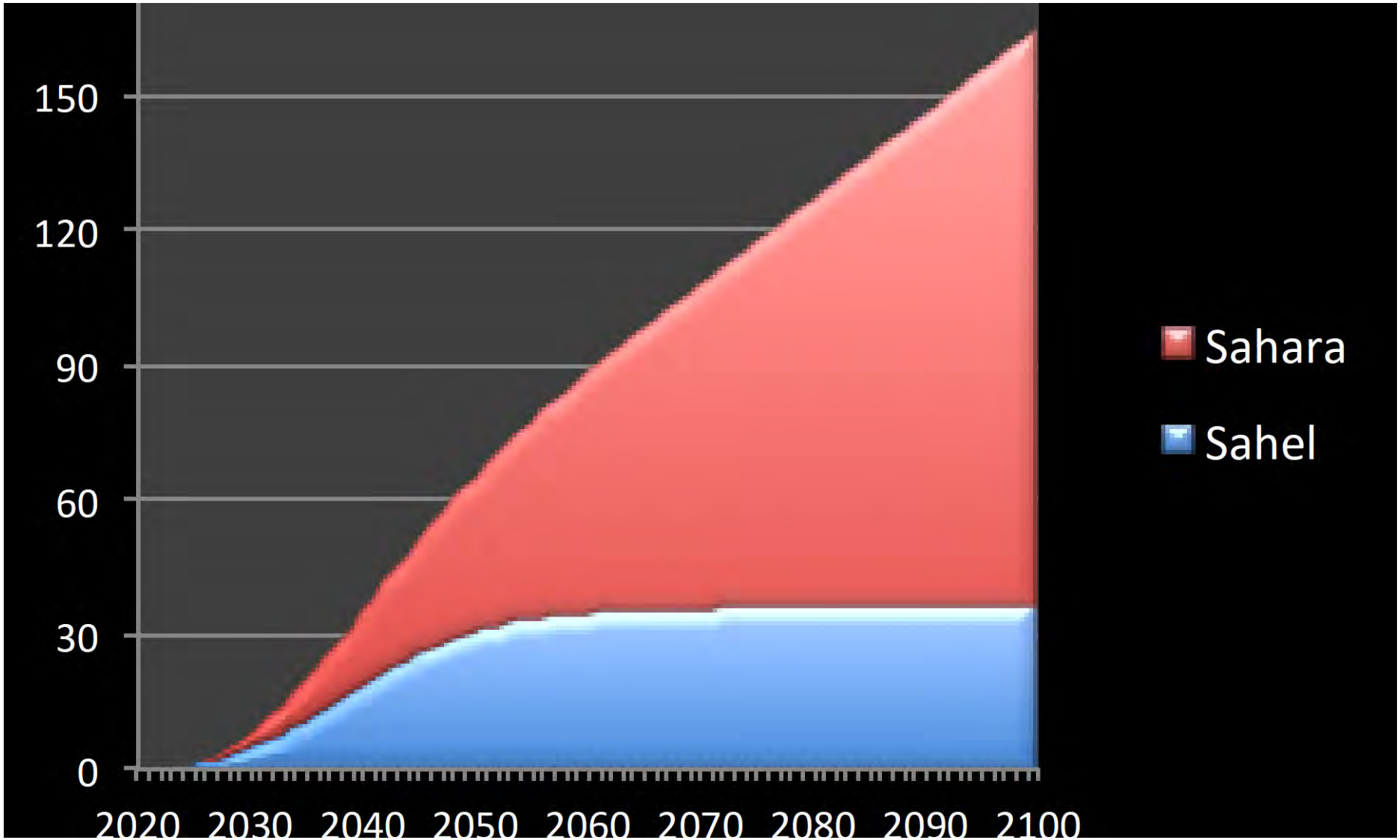
Sahel 2,4 million km2

- (Total Sahel 3,1 milj. km2)
- 75 % agroforestry
- 25 % Eucalyptus forestry
- 20 years short rotation, one block per year, totally
- 120 000 km2/year
- Rainfall area 200-400 mm/v
- With irrigation over 500 mm/v

Sahara 6,0 million km2

- (Total Sahara 9,2 milj. km2)
- 25 % agroforestry
- 75 % Eucalyptus forestry
- 80 years rotation, one block per year, totally
- 75 000 km2/year
- Rainfall 50-100 mm/v
- With irrigation over 500 mm/v

We can cross the target - move 150 billion tn C - in the year 2092 !



In the coming Climate fonferences: do not forget the forests

- In the wide global open areas the Climate Forestry is becoming more and more important because the reduction of fossil CO2 emissions could not stop the increase of CO2 in the atmosphere.
- More info in the book (in Finnish, English translation ahead)

Thank you,

Veli Pohjonen