

# How to make the transition to timber cities sustainable?

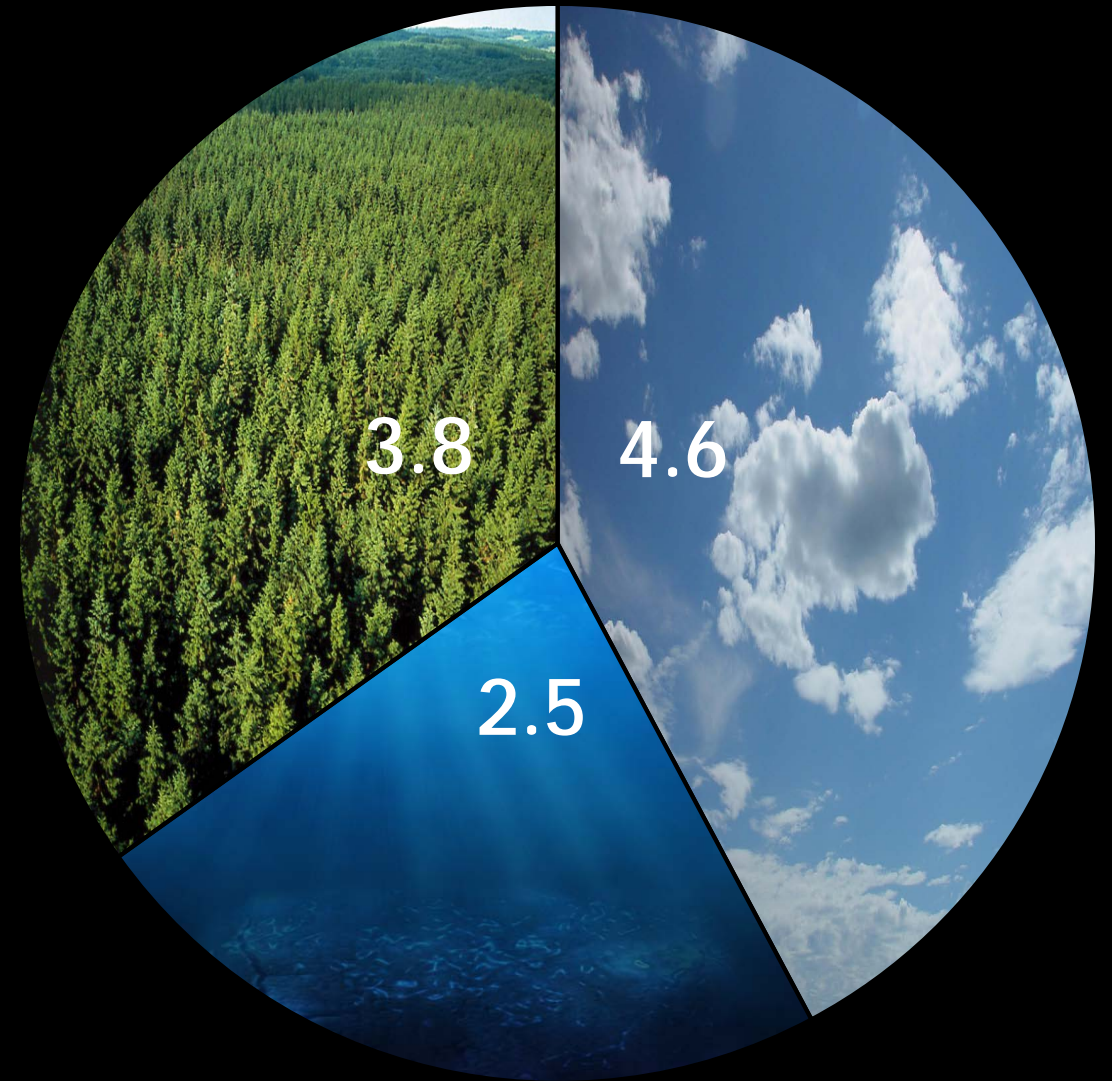
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11 Gt C per year =





# Forests

**Globally** (2001 – 2010)

Old growth 0.66-0.96 PgC per yr

Regrowing stands 1.03-1.96 PgC per yr



An aerial photograph of a dense forest. The trees are mostly green, but there are significant patches of brown and orange, indicating dead or dying trees. The brown patches are scattered throughout the forest, with some larger areas of dead trees. The overall appearance is one of a forest under stress or disturbance.

# Forest disturbances

**North America (2005-2008)**

Droughts 1.2 million ha

Beetle outbreaks 6-7 million ha per yr

Klein and Hartmann, Science, 2018



A dense forest of tall evergreen trees, likely spruce or fir, with a misty atmosphere. The trees are green and densely packed, filling the frame. The lighting is soft, suggesting early morning or late afternoon, with a slight haze or fog in the background.

# Forests ↔ Climate

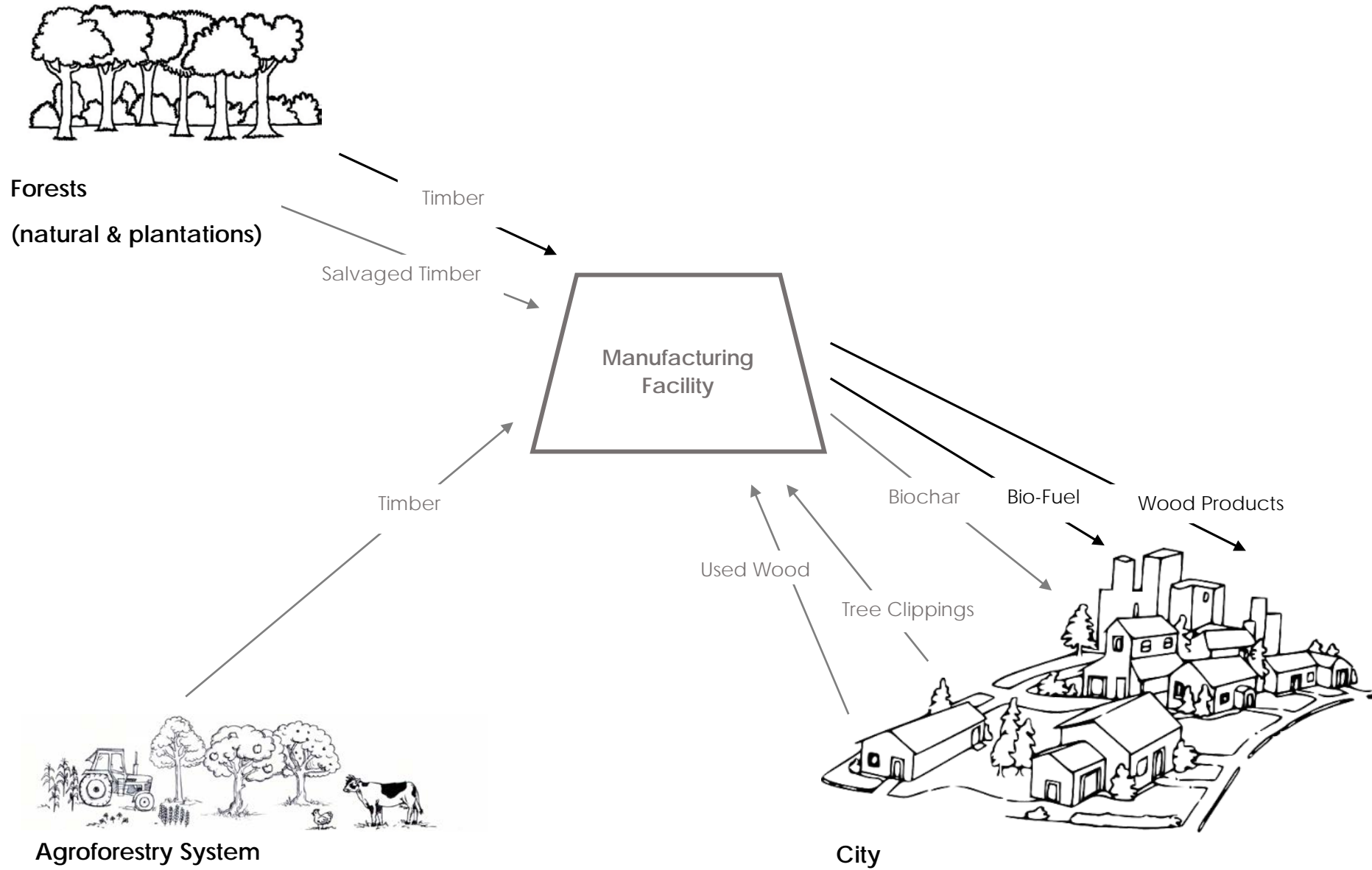
CO<sub>2</sub>  
NO<sub>2</sub>, CH<sub>4</sub>, VOC  
Albedo  
Water



## **The best strategy:**

adapting European forests to future changes in climate with the goal of provisioning wood products and other ecological services

Luyssaert et al., Nature, 2018



**Forests**  
(natural & plantations)

Timber

Salvaged Timber

**Manufacturing Facility**

Timber

Bio-char

Bio-Fuel

Wood Products

Used Wood

Tree Clippings



**Agroforestry System**



**City**

# How to make the transition to timber cities sustainable?

Adapt forests – monitor & manage the forest carbon pump

Adapt manufacturing – diversify inputs and outputs