EUROPEAN FOREST INSTITUTE

Biocities and Circular Bioeconomy in the 21st Century

Urban Forests and Nature Based Solutions for Climate Change Mitigation and Well-Being of Citizens

Dr. Robert MAVSAR

European Forest Institute

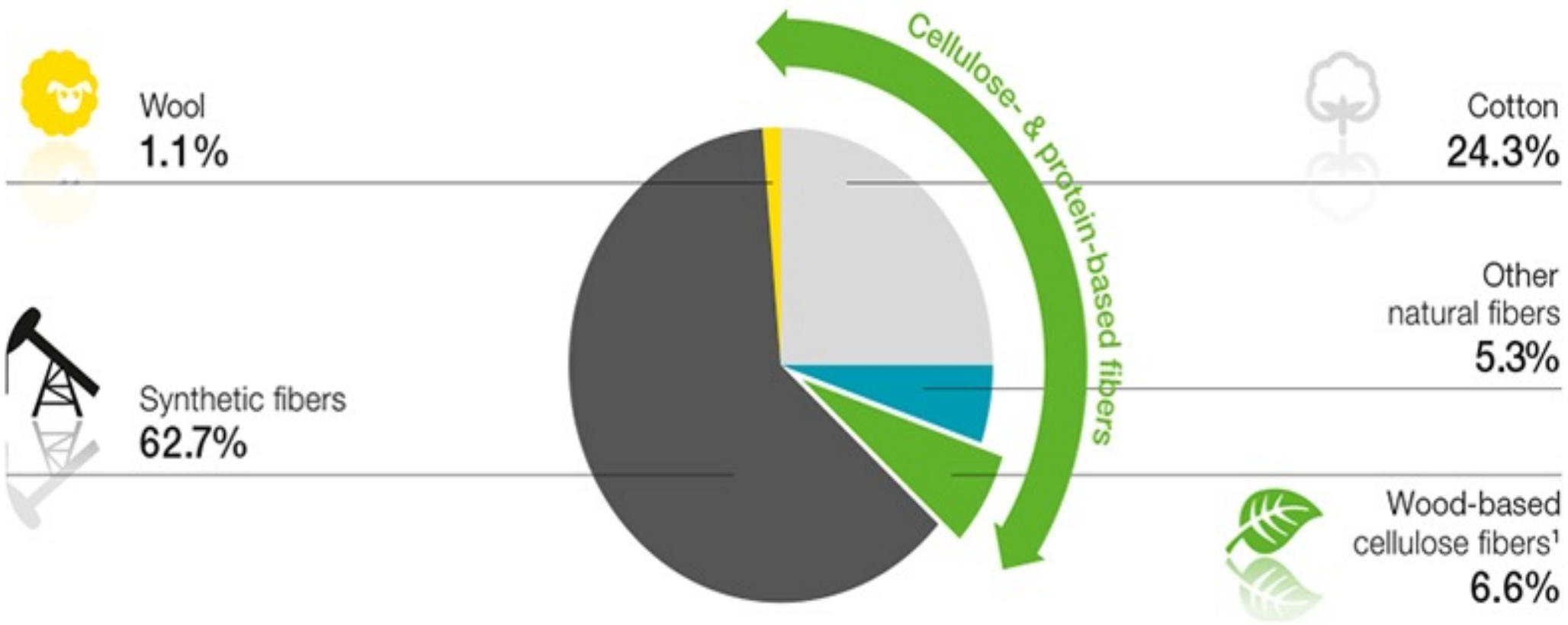
Birth of cities

- Cities emerged as the most efficient system for social interactions, for developing culture and innovation, being precisely separated from their surrounding regions and landscape.

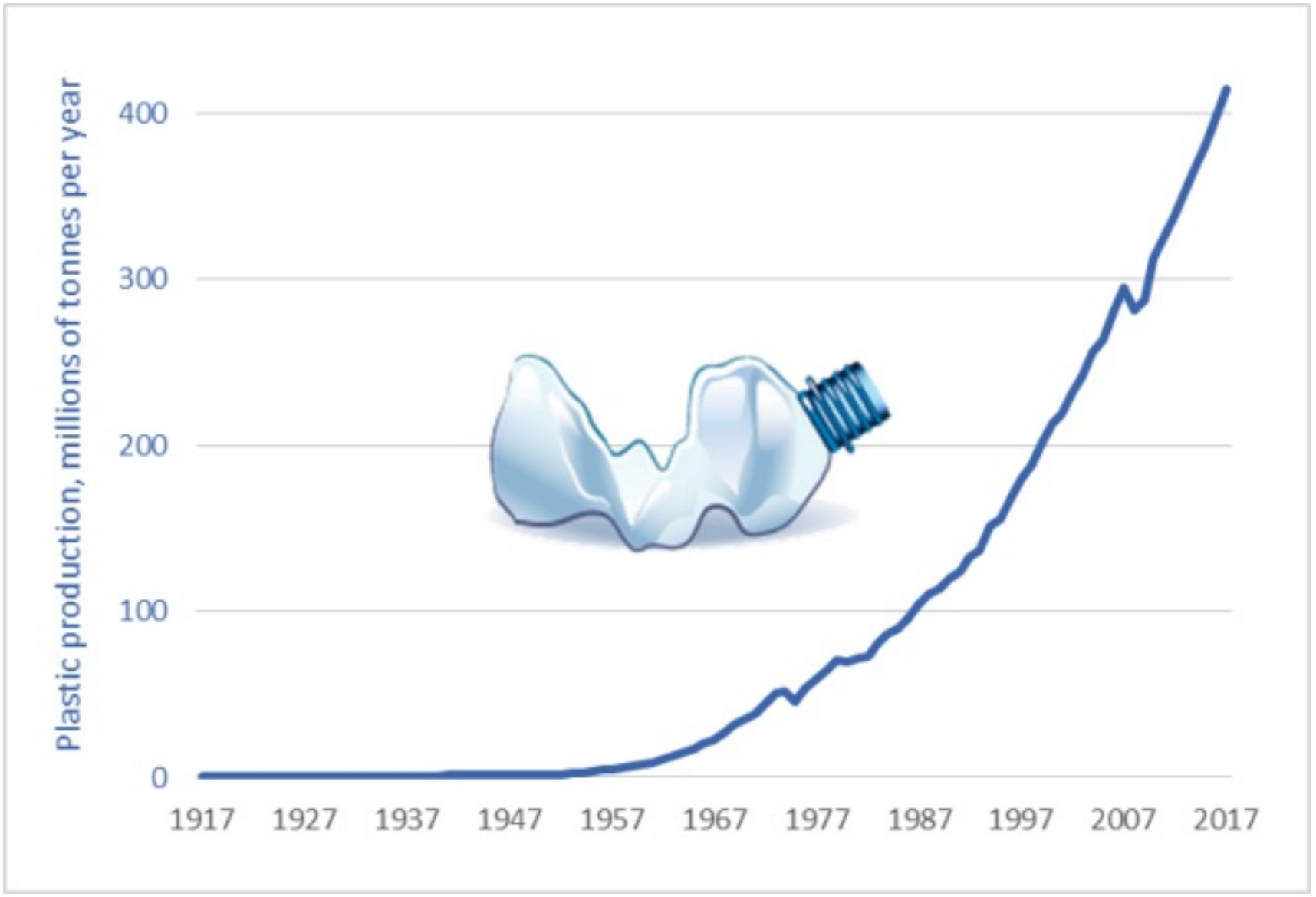
3% land, 55% population, 66% energy,
70% greenhouse gas emissions

- Urbanization has an unbearable pace for the planet.
- An urgent call for a global transformative approach.
- Cities are cause of the environmental crisis but.....should also contribute to the solution!

Textiles sector
90 M tn global production



Sources: ICAC, CIRFS, TFY, FEB, Lenzing estimates

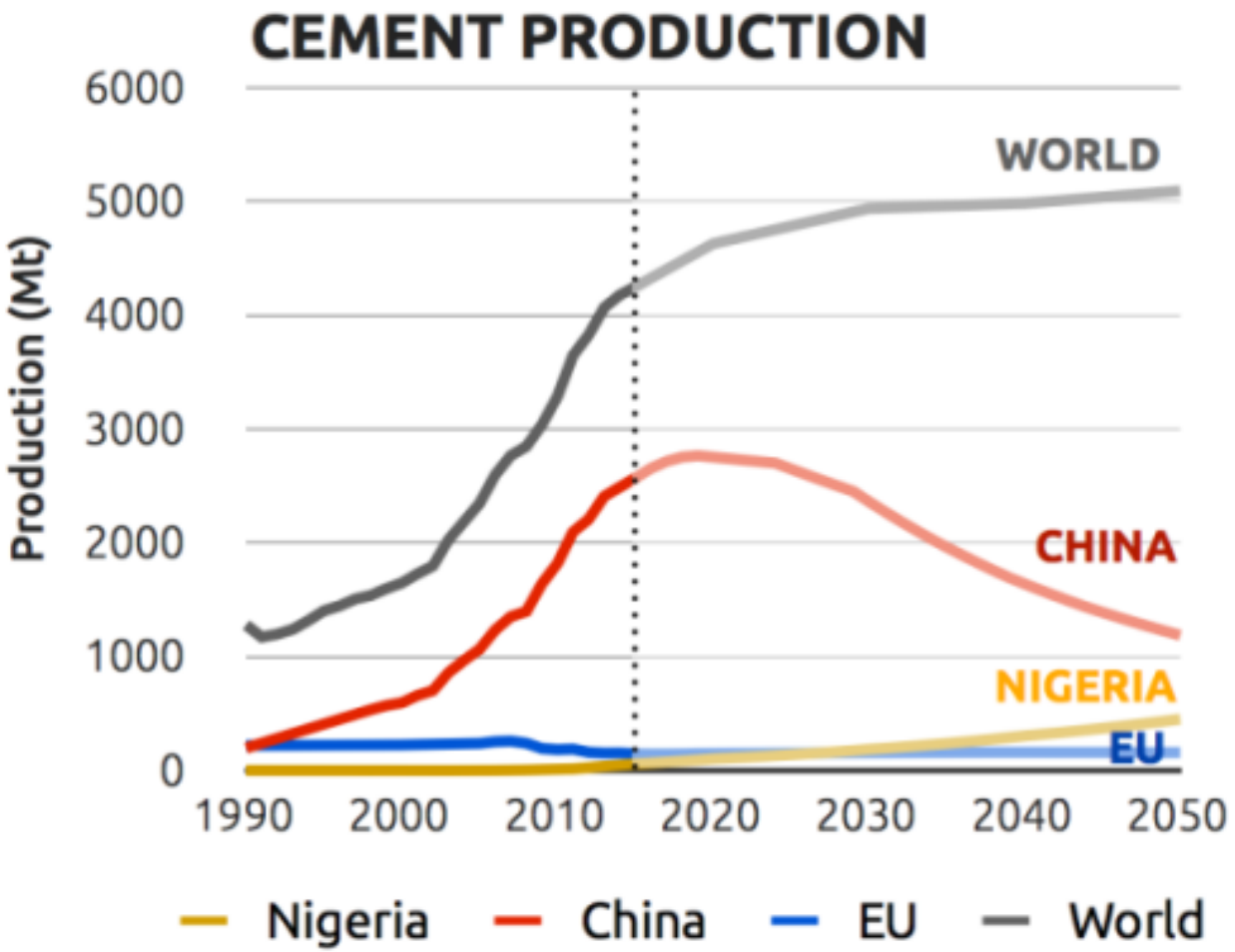


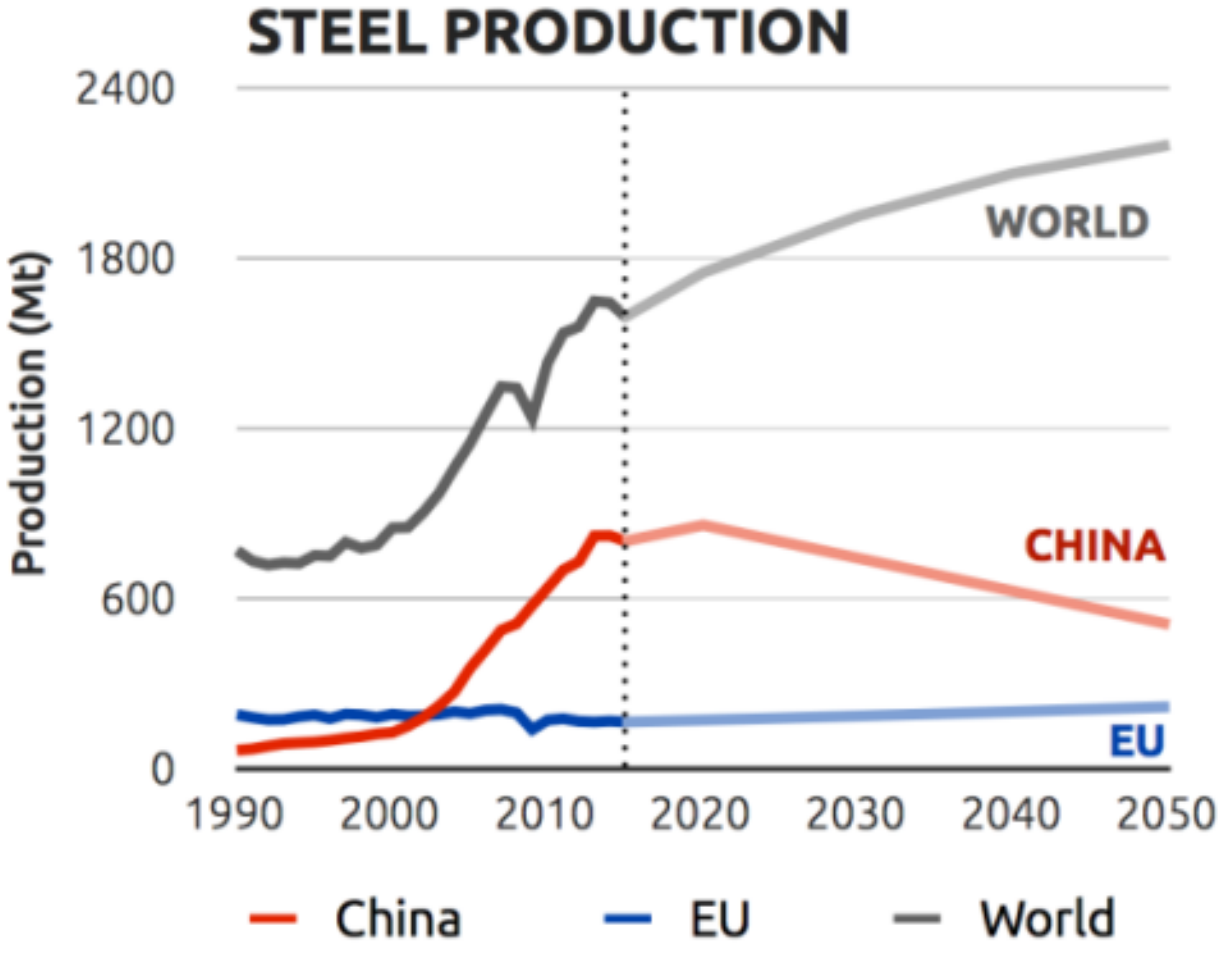
The plastics sector

400 M tn

"5th country" in emissions

Reducing, reusing, recycling, renewable alternatives and bioplastics

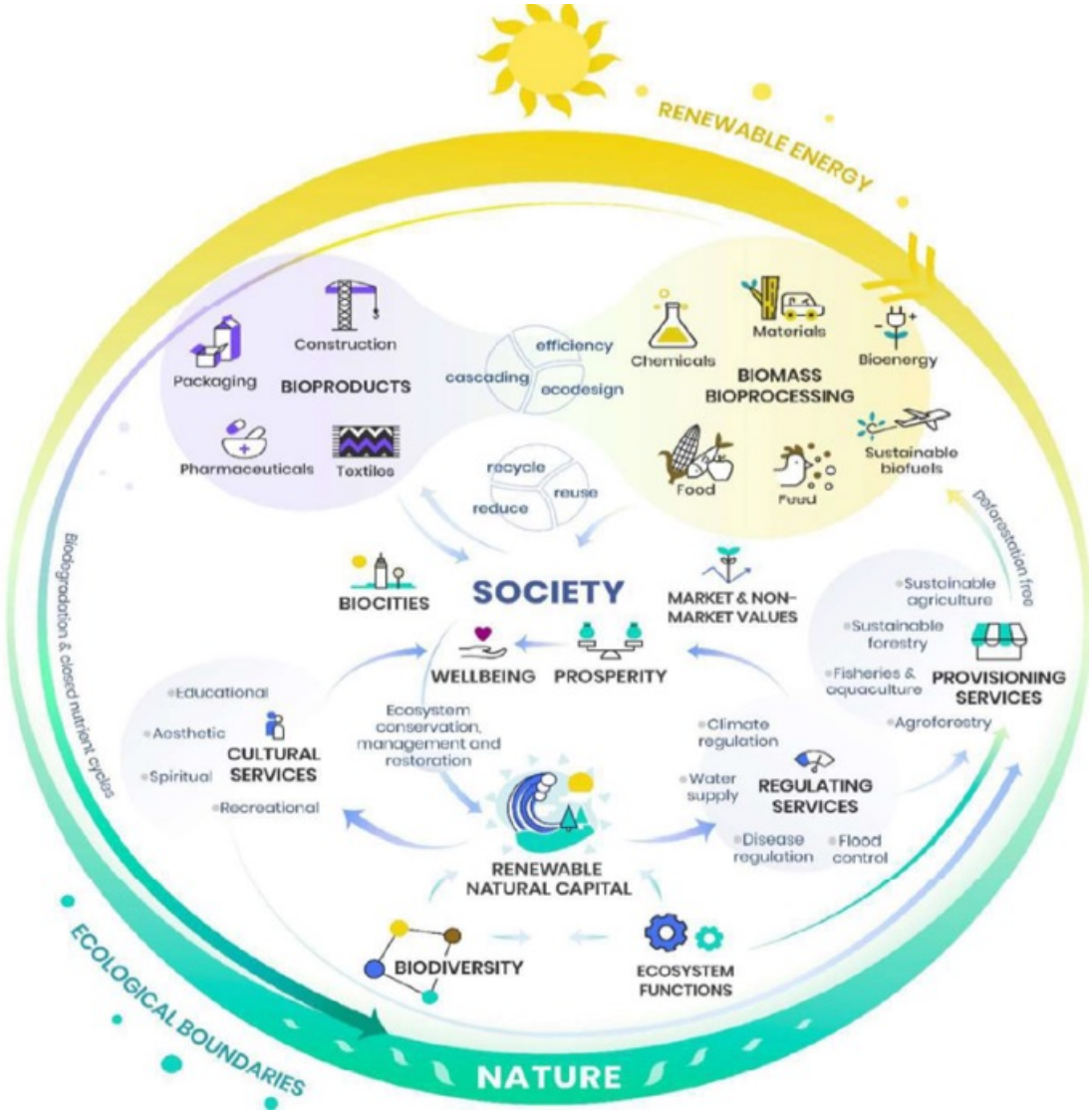

CEMENT PRODUCTION
Production (Mt)
6000
5000
4000
3000
2000
1000
0
1990
2000
2010
2020
2030
2040
2050
WORLD
CHINA
NIGERIA
EU
Nigeria
China
EU
World


STEEL PRODUCTION
Production (Mt)
2400
1800
1200
600
0
1990
2000
2010
2020
2030
2040
2050
WORLD
CHINA
EU
China
EU
World

A new paradigm of cities = Biocities

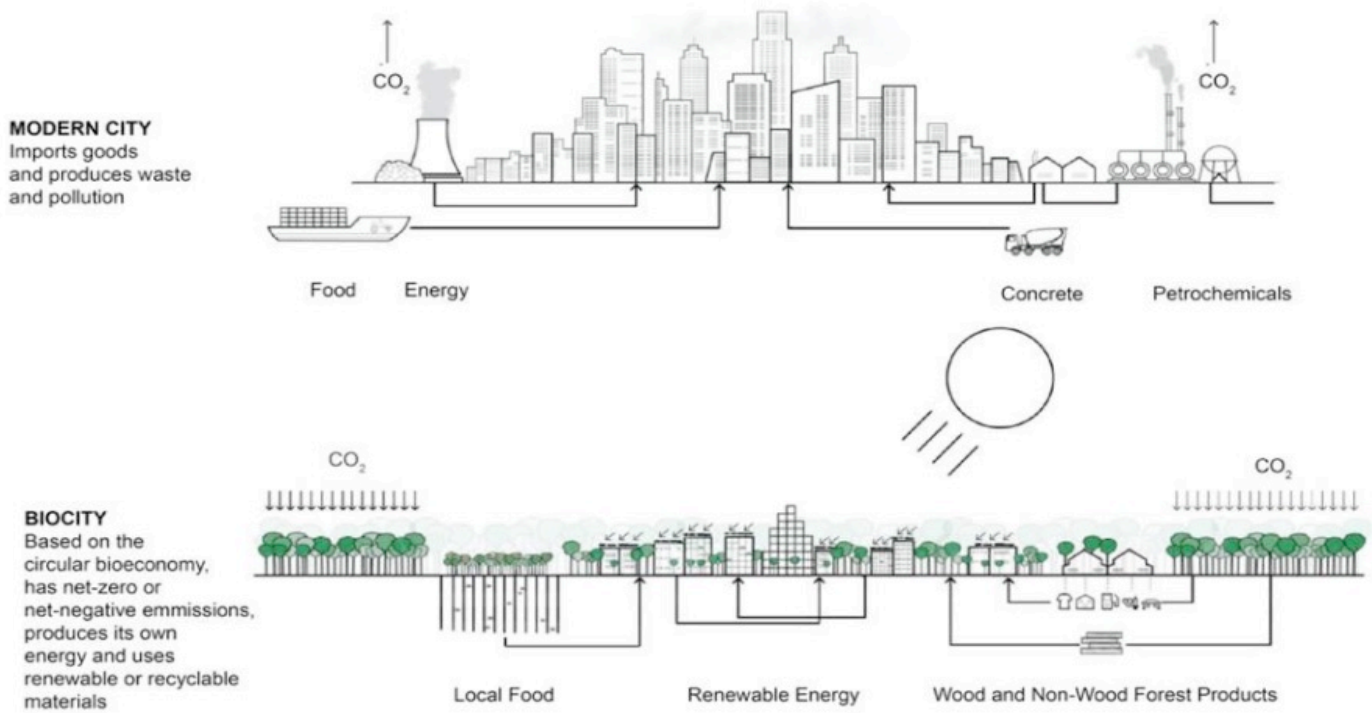
A paradigm change: towards Biocities

- cities that promote life.
- A holistic, integrated approach to circular, bio-based economy.



BioCities

like natural (forest) ecosystems based on fluxes of renewable matter and energy, storage of Carbon, conservation of biodiversity.



Biocities

Urban Forestry

Timber Construction

Urban Agriculture

Circular Bioeconomy

Green Public Space

Urban Health

Green infrastructure – urban forestry

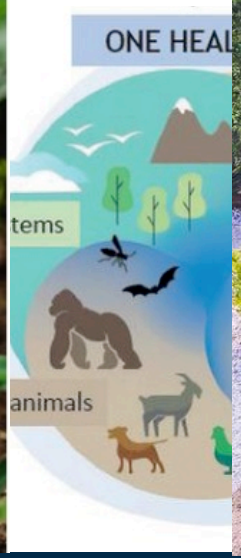
Urban forestry is the art of planning, managing and caring single trees and tree population settings.

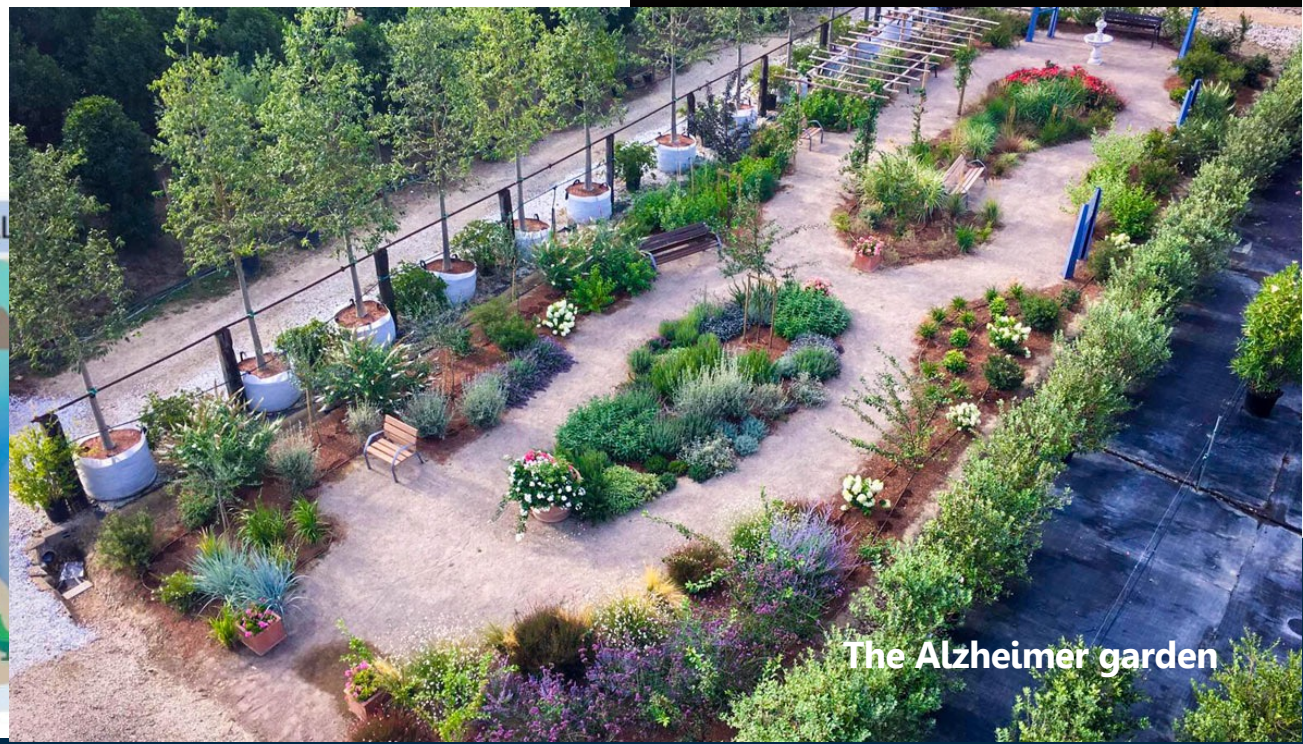
Health

- Health linked to amount, accessibility, quality of natural environment.
- Mechanisms: immune balance, reduced neurological disorders, physical activity, restoring attention.
- Positive effects on different ages (from children to elderly).
- Health and economic equity, with cost reduction of Health Services.
- Urban planning is a powerful public health tool (i.e. by transforming public spaces, by adapting buildings).


The indoor generation


Biodiversity and immune system

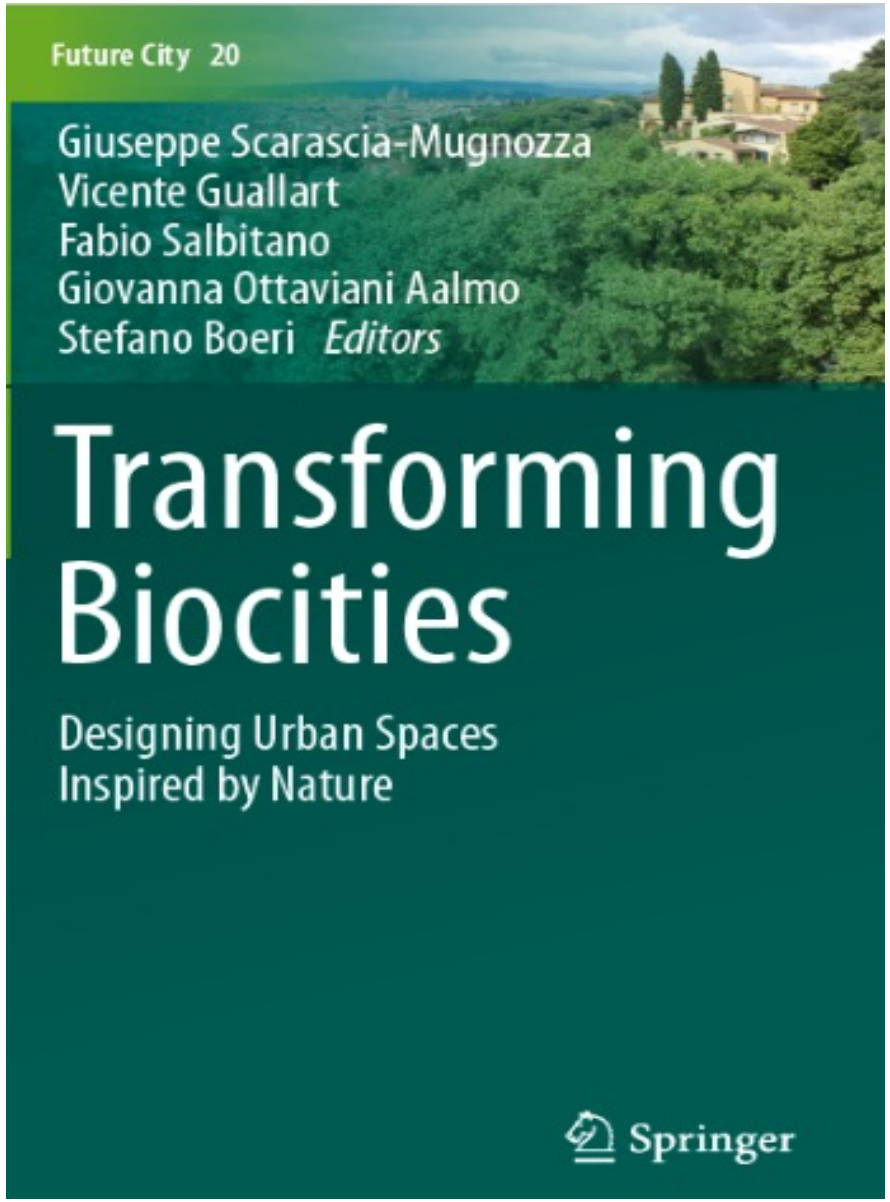



The Alzheimer garden

Key facts on wood for constructions

- Only 3% of the total mass of buildings materials used in the EU derive from biomass feedstocks.
- 2/3 of this share account for wood materials
- EU's renovation plan, New European Bauhaus initiative, Circular Economy Action plan, have acknowledged the potentials of bio-based products in reducing the overall carbon footprint of the construction sector.
- The new EU Forest Strategy emphasizes resource-efficient production of long-lived circular building materials to replace carbon-intensive and fossil-based ones to *turn the construction sector from a source of GHG emissions into a carbon sink.*

Sources: EEA and EFI


Future City 20
Giuseppe Scarascia-Mugnozza
Vicente Guallart
Fabio Salbitano
Giovanna Ottaviani Aalmo
Stefano Boeri Editors
Transforming Biocities
Designing Urban Spaces Inspired by Nature
Springer