

# Using industrial ecology to design integrated technology policies to promote sustainable food consumption and production in highly dense urban environment

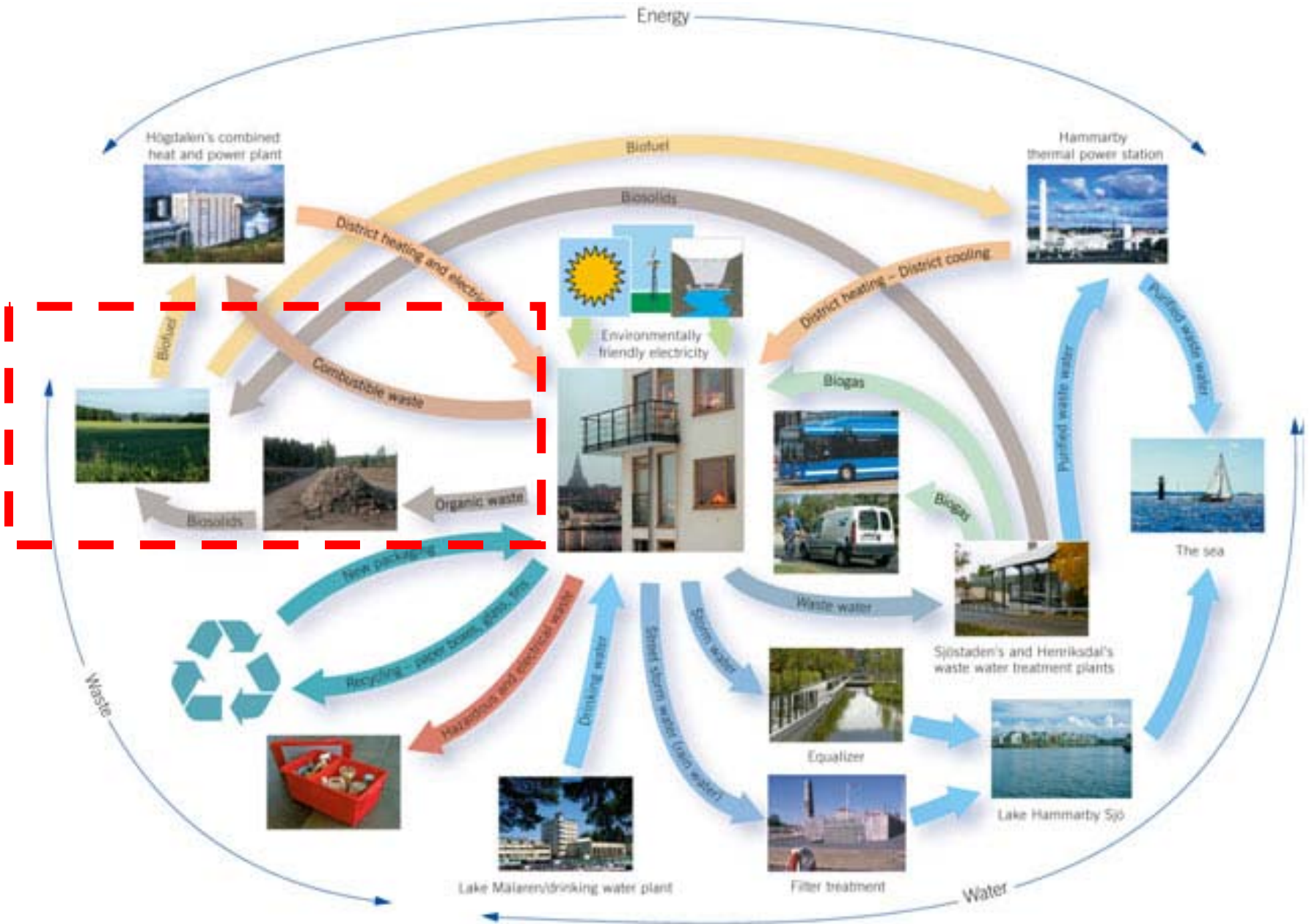
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# BRIEF DESCRIPTION OF INDUSTRIAL ECOLOGY

- Shifting of industrial processes from **linear (open loop) systems**, in which resource and capital investments move through the system to become waste, to **a closed loop system** where wastes become inputs for new processes (“wastes equal food”);
- Approaches are usually:
  - Material and energy flow analysis;
  - Dematerialization and decarbonization;
  - Technological change and the environment;
  - Lifecycle assessment;
  - Design for environment;
  - Extended producer responsibility;
  - Eco-industrial parks;
  - Product-oriented environmental policy;
  - Eco-efficiency, and so on...





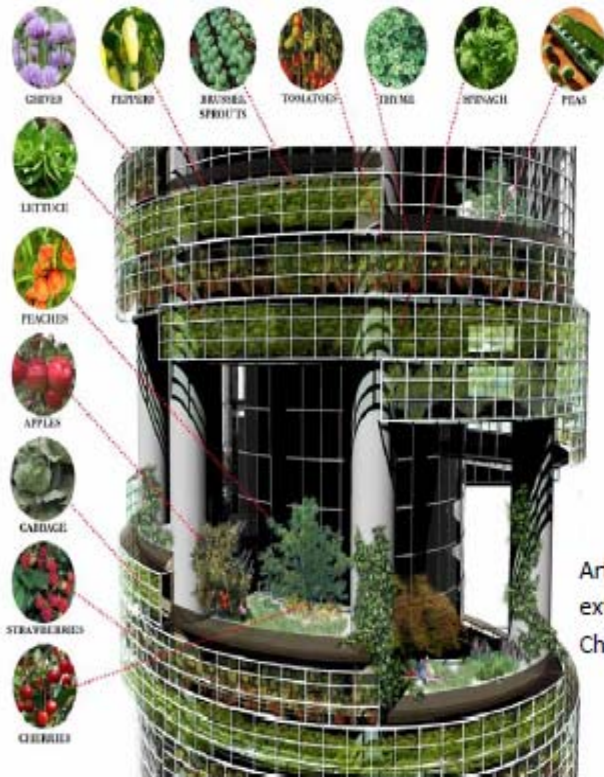
A genuine attempt at moving towards a circular urban metabolism: Hammarby Sjöstad, Stockholm.

# WASTE MINIMIZATION VIA EXCESS-FOOD DISTRIBUTION NETWORK

Food  
distribut  
cente.

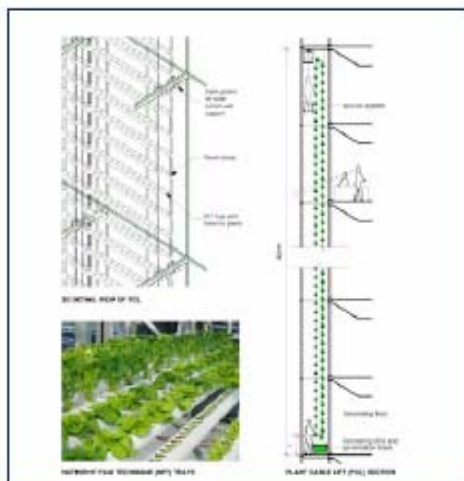


# Using double skin façade as urban farms and local carbon sequesters.



Artistic impression of extensive use of Green Chimney in a skyscraper.

Possible design details of deployment of Green Chimney as building façade.



Biodigester and generator



CO<sub>2</sub> channelled into Green Chimney



Green Chimney



Biomass recycled as energy feedstock for biodigester and generator

Green chimney enhances the growth of food crops.

Green chimney enhances the growth of ornamental but high value-add plants.



Figure 1. Flow diagram showing the utilization of Green Chimney, and artistic impressions of different application scenarios in building facades.