

Designing urban green infrastructures for carbon capture

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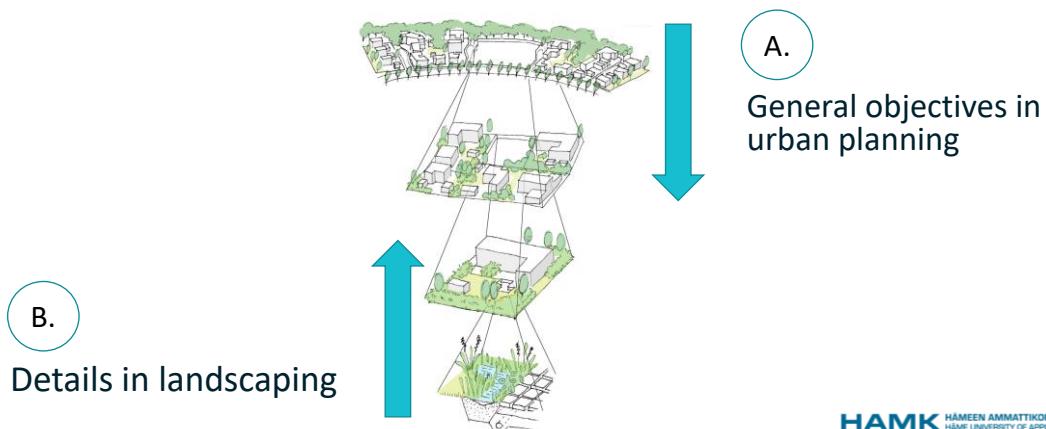
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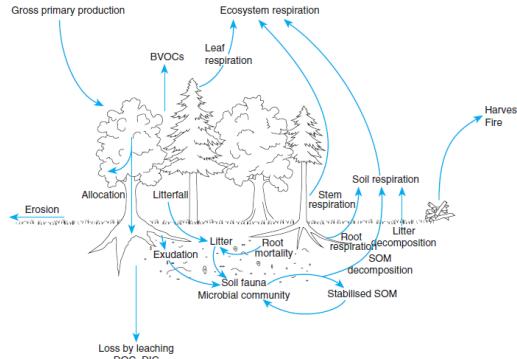
Urban planning, design and carbon-smartness



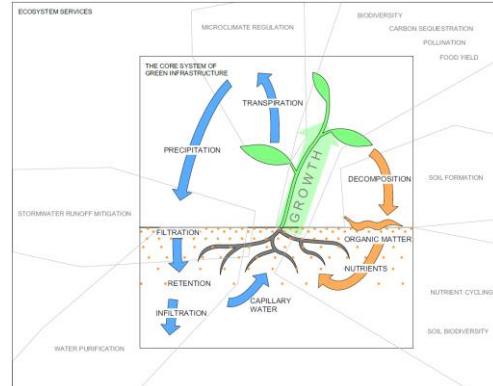
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The core system of plant growth and carbon cycle



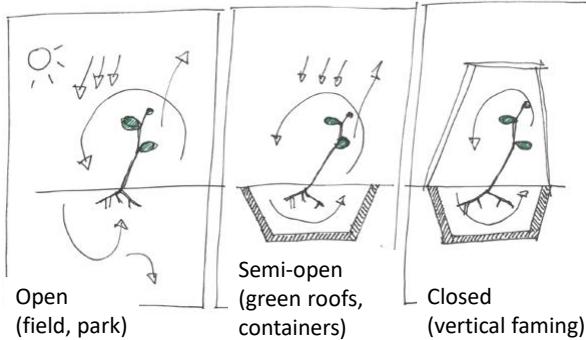
Schulze et al. 2019. *Plant Ecology*, Springer. p. 545.



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Different environments for plant growth

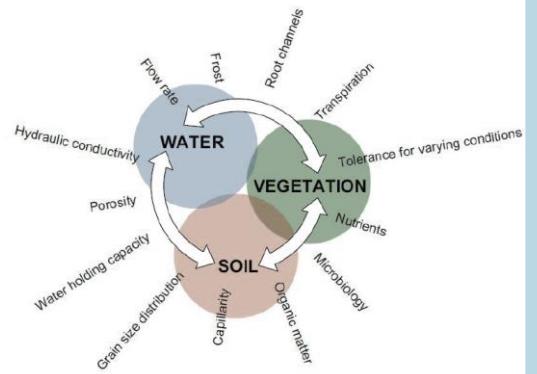
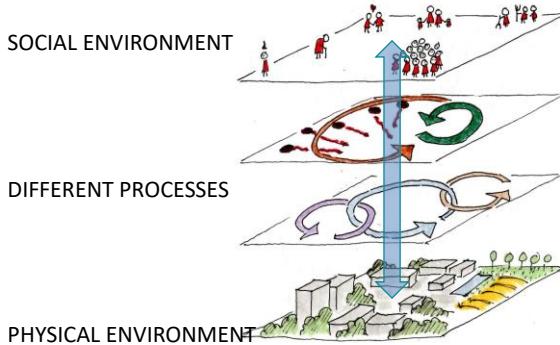


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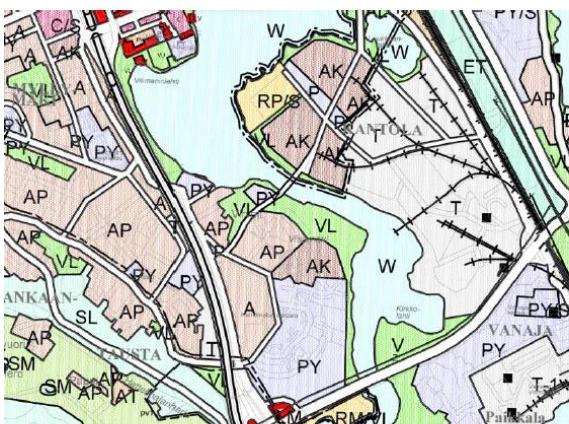
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Urban environment as a system



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Land-use and the urban green

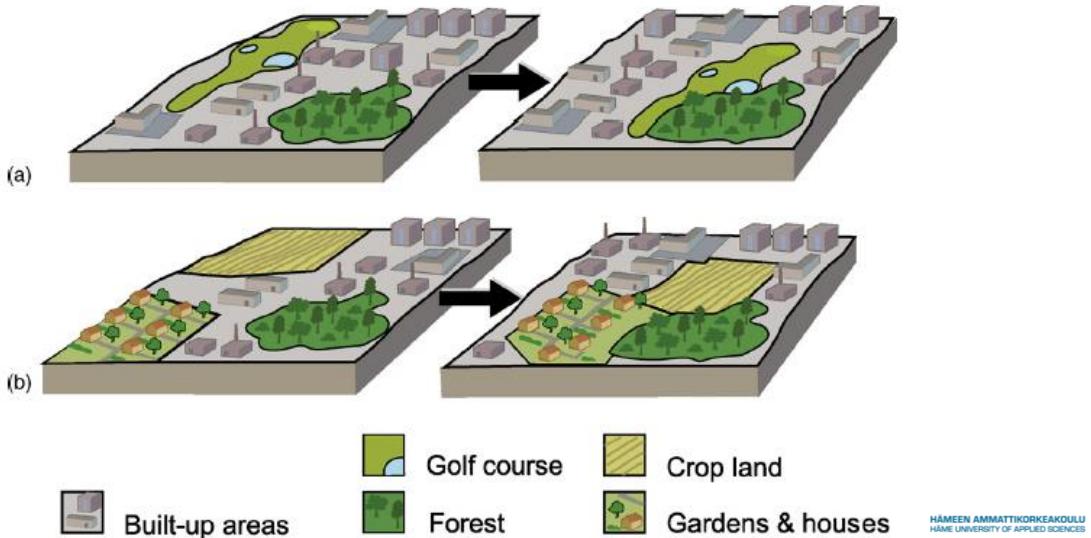


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Bing maps

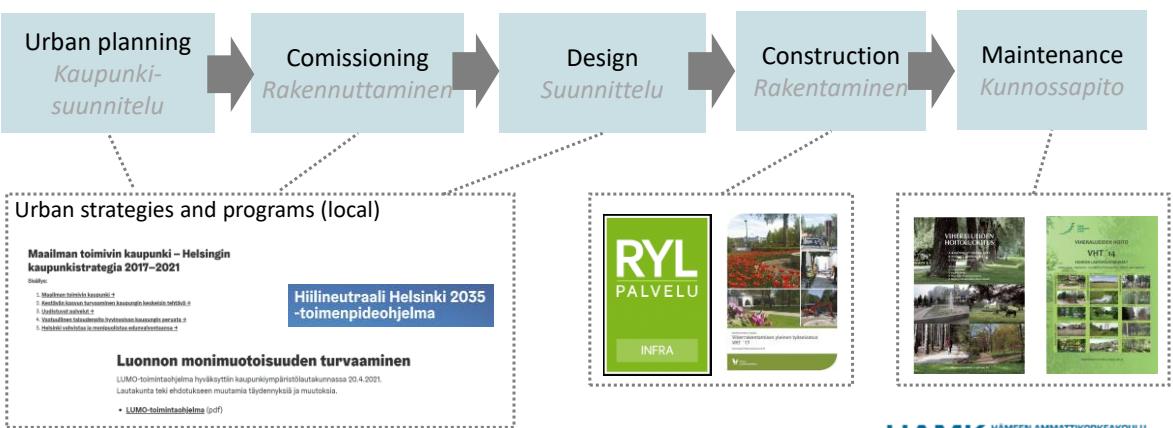
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J. Colding / Landscape and Urban Planning 81 (2007) 46–55



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Implementation chain of green spaces



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Carbon and the implementation process of urban vegetation

	Design	Landscape construction	Maintenance
Vegetation	<ul style="list-style-type: none"> • Favouring Multilayered vegetation • Providing of appropriate conditions for growth 	<ul style="list-style-type: none"> • Recognizing vegetation as living material • Intensive maintenance to support the growth 	<ul style="list-style-type: none"> • Monitoring and predicting plant growth • Early identification of damages
Soil	<ul style="list-style-type: none"> • Permeable surfaces, Minimizing the exchange of soil masses • supporting microbiological activity in all soils 	<ul style="list-style-type: none"> • Avoiding soil compaction (choice of machinery, construction methods) 	<ul style="list-style-type: none"> • Continuous addition of OM (e.g. the use of site-specific clippings) • Avoiding bare soil surfaces

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What is the aim of using biochar?

A.

To improve the growth

that improves the carbon draw down

B.

To improve carbon storage in the soil

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What needs to be defined when using biochar in landscaping?

1. From which material is biochar made?
2. What substance is used to turn off pyrolysis?
3. What is the particle size to use?
4. How is biochar loaded with nutrients?
5. How much to use?
6. What is the soil matrix that biochar is mixed? Mixture or layers?

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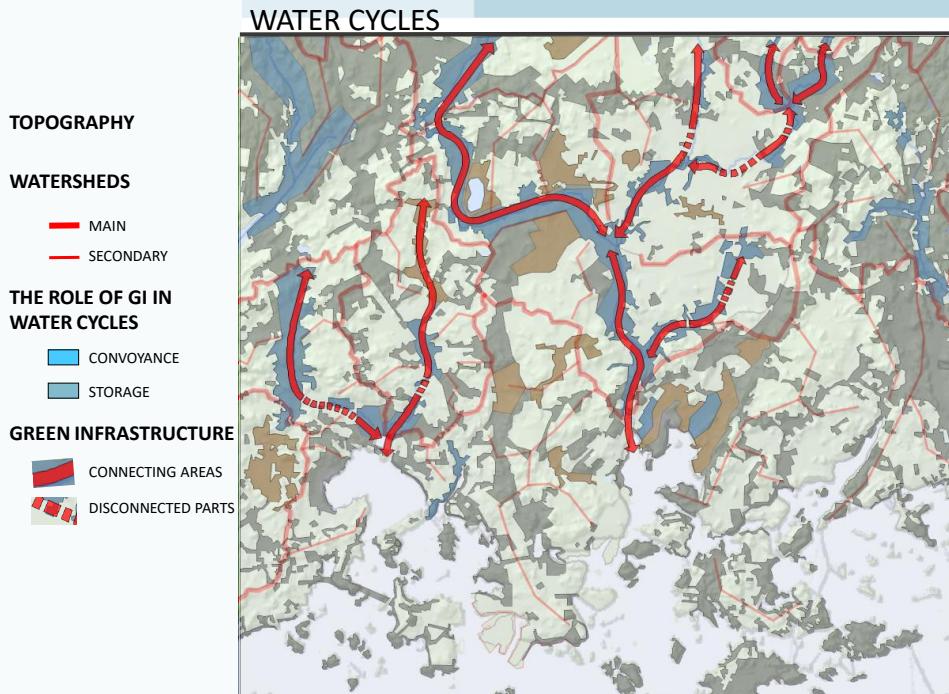
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What then?

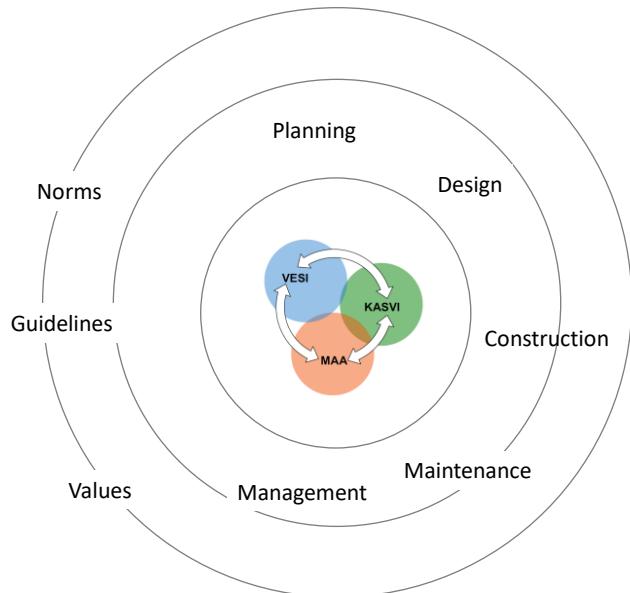
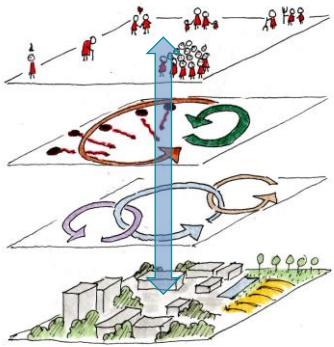
- The role of urban planning is to fix the broken parts of natural cycles
- Landscape design needs to concentrate on growth conditions (not only vegetation)
- As biomass production increase the maintenance needs to generate new on-site solutions to use clippings, twigs, and branches

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