How to finance Nature-Based Solutions?
Emerging themes from a catalogue in development

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NATURVATION

NATure-based Urban innoVATION

• Horizon 2020, 4-year project financed by the European Commission
• 6 Urban Regional Innovation Partnerships (URIPs), including 14 European project partners (universities, municipalities & other)
  • UTRECHT – GYOR – BARCELONA – MALMO – LEIPZIG - NEWCASTLE
• Goal: improve our understanding of the value of nature-based solutions, enabling innovation in this domain; enabling / upscaling nature-based solutions in urban areas.

Advanced assessment of NBS + Identification of critical factors shaping urban innovation → NATURVATION partnerships, knowledge platforms, processes and tools will build momentum for the systemic integration of NBS
What are Nature Based Solutions?

Defining Nature-based solutions

Living solutions inspired and supported by nature that simultaneously provide environmental, social and economic benefits and help to build resilience.

Solutions that bring more nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions.
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Approach: top-down and bottom-up
Bottom-up NBS interventions studied

- Malmo: Seashore (*Havsstrand*) green roof project
- Leipzig: Urban Tree Programme (Adopt a Tree)
- Newcastle: A business model for park maintenance
- Newcastle: city centre beekeeping (Bee Strategy)
- Melbourne: Urban Forest Fund
- Gyor: AUDI Hungary bee programme
- Gyor: School gardens
- Amsterdam: Booking.com headquarters*
- Amsterdam: Neighbour green roof crowdfunding*
- Edinburgh: John Muir Pollinator Way
- Edinburgh: Square meter for butterflies
- Utrecht: Municipal subsidies for green roofs*

*not an official NATURVATION WP4 intervention*
How to finance urban NBS? Emerging findings

- External, profit-seeking finance does not play a role in the interventions studied
  - Perhaps real estate developer MKB (using innovation grant)

- Finance is provided by public bodies, private organisations and communities/citizens
  - ...and often combinations

- The value proposition for urban NBS depends on who is providing financing:
  - **Public bodies**: de-risking (water retention, urban heat)
  - **Private firms**: real estate value capture & stewardship
  - **Citizens/communities**: symbolic & educational
<table>
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<th>Types of value</th>
<th>Public organisations</th>
<th>Source of investment</th>
<th>Private organisations</th>
<th>Communities / individuals</th>
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<td>Water retention</td>
<td>Municipal subsidies to stimulate green roofs</td>
<td>Investment into green roofs as part of building requirement</td>
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<td>Health value</td>
<td>UFF: Matched funding for tree cover on private urban areas</td>
<td>Increased employee health through multifunctional green roof</td>
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<td>Biodiversity</td>
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<td>Stewardship</td>
<td>Funding for bee health monitoring (Urban Observatory)</td>
<td>Adopting biodiversity goals</td>
<td>Crowdfunding of neighbouring roofs with a view</td>
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<td>Monitoring</td>
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<td>Investment into bees as immission monitoring indicators</td>
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<td>Aesthetic value</td>
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<td>Green roofs for added customer value (i.e. higher rent)</td>
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<td>Symbolic value</td>
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<td>(Adopt) meaningful / specific trees, bees and gardens; tree mapping</td>
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<td>Educational value</td>
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<td>Gardens, plots, bees for building (child) awareness &amp; stewardship</td>
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<td>Social capital</td>
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<td>Reducing anti-social behaviour using bees; donations for common cause</td>
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<td>Sale of produce</td>
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<td>Honey sales</td>
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Structural conditions / challenges observed

- Implementation risk (green roofs)
  - Carrying capacity of roofs
  - Longevity / maintainance
- Scale of NBS investment
  - Small scale initiatives unbankable?
  - Fine-grained action / maintainance
- Return on NBS investment unclear
  - No return, but lower risk (flooding, eat)
  - Energy efficiency (GR) not mentioned
- Private land ownership in urban areas
  - Final decision lies with private parties
- Government priorities (CO2 / energy)
  - Solar versus green roofs
- Impact and monitoring
  - Does it have intended effect?

- Roof scans
- Leasing contracts
- Syndicate / connect
- Local commitment
- ‘Bootstrapping’
- Prioritize after hazard
- Quantify energy savings
- Incentivize (subsidies, taks breaks, regulation)
- Include in policy objectives
- Evaluate impact for upscaling
Possible financial instruments for NBS (TBD):

- **Individuals / communities**
  - Donation & reward crowdfunding
  - Lease (greening as a service)
  - Subsidies / tax breaks for households
  - Access to bank loans?
  - Mortgage incentives (like Energy label)

- **Private organisations**
  - Bank loans / equity (real estate development)
  - Institutional investors (pension funds)

- **Public organisations**
  - Bank loans
  - Green bonds
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Sustainable business model archetypes (Bocken et al., 2014)
~1000 case studies in the Urban Nature Atlas (www.naturvation.eu)
Developing insights through case study research on urban NBS

- Identifying challenges, solutions and promising pathways for forms of governance, policy, finance and innovation that enable the upscaling of NBS for improved urban sustainability
Leipzig’s ‘Adopt-a-tree’ program
Leipzig’s tree-adoption program

- High levels of air pollution & noise levels
- Rapid urban development and relaxing State legislation towards tree protection
- **Value proposition:** symbolic meaning of a tree
  - “[the tree] is no longer anonymous”
- High cost/competition for space
- Online tree registry
- Citizen engagement = key
Havsstrand
(Seashore)
Malmö, Sweden

Seashore extensive green roof

Western Harbour, new development
Malmo’s green roof Seashore project

- Developing **new green roofs types** on buildings:
  - Richer **biodiversity**, embedded in local environment
  - Attractive view all year round—increasing **customer value**

- Partners:
  - MKB - biggest real estate firm of Malmo (22,500 appartments)
  - Vegtech, green roof expertise development
  - Vinnova – innovation programme Swedish government

- Challenge:
  - Working with private land owners
  - Citizens **not yet present** for consultation

- Benefit: springboard for innovation (Vegtech)
Newcastle’s new business model for park maintenance
Newcastle’s new business model for park maintenance

- Developing **new business models for parks** under austerity (90% budget cuts)
- Free to access and publicly owned, but ‘balance its books’
- **Lower costs** through volunteering by citizens
- **Increased revenue** through events, cafés and retail concessions; car parking; commercial property lease; licencing (dog walking, outdoor fitness); woodland burials; renewable energy assets
- **Contradictions**: accountability, creeping privatisation
  - “A park is one of the only remaining spaces for all people to be without feeling like they need to pay money”
Melbourne’s Urban Forest Strategy

Map: Explore the tree data

Individual tree data for City of Melbourne trees is presented below. Pan and Zoom into different areas of Melbourne, click on tree symbols to reveal details, and select between different locations and filters.
Melbourne’s Urban Forest Strategy

- Extreme hot weather
  - Death of several hundred people
  - Degraded health of city’s urban forest (partly removed)
- ~75% of land privately owned
- Urban Forest Strategy launched: increase canopy cover & diversity
  - Calculating tree value per tree (I-Tree Eco)
  - Urban Forest Visual (email a tree)
  - Urban Forest Fund: building partnerships, matching investment by private land owners