Who will pay for urban nature-based solutions?

Financing strategies and business models for urban NBS

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Nature-based solutions

‘Solutions that are inspired and supported by nature. They are cost-effective as they simultaneously provide environmental, social and economic benefits and help build resilience.’ (European Commission, 2016).

• Cost-effective interventions that can realize multiple sustainability goals at once

• "How to turn urban NBS into bankable opportunities, leveraging private capital flows?" (NBS Expert group to EC, 2015)

• Urban NBS deliver multiple types of value – but who will pay for it, and why?
Costs

- Maintenance of NBS has a different cost structure than grey infrastructure; stakeholders are hesitant to take these costs onboard.
- Lack of public funding available for urban NBS due to austerity, low economic growth or corruption.

Coordination

- NBS typically become cost-effective based on multiple benefits, but coordinating the co-funding of urban NBS is challenging.
- Mismatch between required investments into urban NBS and institutional investor demands.

Benefits

- Urban NBS compete for increasingly expensive urban space with real estate development, fueled by financial markets.
- Urban NBS lack convincing direct cash flows / financial return to investors.
- Effectiveness of urban NBS lacks evidence, and depends greatly on local (climate and urban) conditions.

Strategies

- Increase the cost effectiveness of urban NBS investments by integrating them into planned infrastructure and real estate projects.
- Develop, implement and enforce urban biodiversity no net loss regulation, including land value taxation.

- Position urban NBS as a mainstream climate change adaptation (CCA) intervention.
- Develop and apply knowledge tools that offer indicators, evidence, transparency and monitoring of urban NBS.
- Actively engage the (re-)insurance sector as the ‘missing link’ in upscaling urban NBS.
Indebted to nature
Exploring biodiversity risks for the Dutch financial sector
June 2020
Figure 3 The financial sector and ecosystem services dependencies per euro invested*
EUR billion

Type of financial institution
- Loans
- Shares
- Insurance funds

Financial asset class
- Real estate
- Loans
- Shares
- Insurance funds

Business process
- Food and fibre production
- Energy production
- Renewable energy
- Water and waste water treatment
- Land and nature
- Climate regulation
- biodiversity
- Ecosystem service

Ecosystem service
- Surface water
- Groundwater
- Urban water

EUR 100 billion

Sources: ENCORE, DNB
Dutch insurance firm stimulates green roofs
Key challenge: need for co-finance to realize urban NBS

- Urban NBS deliver multiple types of value; but different stakeholder are interested in different benefits

- Leads to 2 coordination problems:
  1. Valuation of multiple benefits (budget often earmarked for one benefit)
  2. Collaboration between multiple actors to co-fund and each reap benefits

- Calls for an collective business case – bundling benefits and actors
Business models “bundles” for urban NBS

Urban nature-based solutions create many types of value...

...but who will pay for it, and why?
Example: Green roofs

Infographic: Green Deal Green Roofs
https://www.greendealgroenedaken.nl/en-facts-values/
Example: co-financing green roofs to create a viable business model

**Costs**

- 25%: Water storage value (municipality/water board)

**Benefits**

- 25%: Roof damage reduction (insurance firm)
- 10%: Biodiversity benefit (NGO/foundation)
- 10%: Energy efficiency benefit (property owner)
- 25%: Aesthetic benefit (property owner)
- 25-50%: Water storage value (municipality/water board)
54 in-depth case studies of urban NBS
8 business model types identified

<table>
<thead>
<tr>
<th>Business Model Type</th>
<th>Example</th>
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</table>
| Risk reduction model                      | Isar plan, Munich
Atlantis Water Fund Pilot, Cape Town                                    |
| Green densification model                 | Parc Marianne, Montpellier
Eco-Valley, Tianjin                                                         |
| Local stewardship model                   | Roadside tree concept, Leipzig
Square meter for butterflies, Edinburgh                                      |
| Urban offsetting model                    | Urban Forest Fund, Melbourne
Beekeeping at AUDI Hungary, Györ                                           |
| Vacant space model                        | Pla Buïts urban gardens, Barcelona
Winter ice at The Forks, Winnipeg                                          |
| Green health model                        | Food for Good, Utrecht
Newcastle Park Trust, Newcastle                                               |
| Green education model                     | School gardens, Györ
Belvedere college urban farm, Dublin                                          |
| Green heritage model                      | Park museum Vrana, Sofia
Chinampas agriculture, Mexico City                                           |
### Business models

<table>
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<th>Models 1-4</th>
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#### Value Proposition
- **What is being offered in the market? Who is the customer?**

#### Value delivery
- **What resources are needed? What network?**

#### Value capture
- **What costs are being made (or prevented)?**

#### Enabling conditions & risks
- **What conditions enable this business model to be effective? What risks are there?**

### Risk reduction
- **NBS interventions are valued for their ability to reduce climate risks (and costs) such as flooding, extreme heat and drought.**

### Green densification
- **Urban real estate developers develop NBS along with housing and commercial buildings, targeted at quality of life of residents/employees (green roofs, gardens).**

### Local stewardship
- **Local small plots of nature (and single trees) are valued by citizens who are willing to protect and support nature in their neighborhood.**

### Green health
- **The therapeutic and health value for citizens of interaction with urban NBS is valued by (mainly) non-profit and public actors.**

#### Additional notes:
- **High, irregular costs prevented in case of extreme weather; insurance products remain accessible and attractive, can grow the market.**
- **Real estate projects often generate high returns; use part of this to integrate NBS into building project. Expectations of higher sale prices / rents / occupation.**
- **Many donations from citizens and firms; transaction costs and campaign costs can be lowered by implementing digital monitoring/platform.**
- **This model requires expertise on how green spaces need to be designed and used to support citizen health. Just stating “green is healthy” will not be enough.**
### Business models

<table>
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<tr>
<th>Value Proposition</th>
<th>Urban offsetting</th>
<th>Vacant space</th>
<th>Education</th>
<th>Green heritage</th>
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<tr>
<td>What is being offered?</td>
<td>When green-blue urban space is lost to real estate or infrastructure development, a “no net loss” program can incentivize or require offset investments into urban NBS elsewhere in the city.</td>
<td>Government steps back and provides space for local initiatives and (social) entrepreneurship in (temporarily) underused urban public space.</td>
<td>Urban NBS are set up and managed in support of environmental education, allowing young, urban citizens to engage with food and nature, usually through urban farming / gardening.</td>
<td>A green region, city or neighborhood creates value through its green cultural heritage which attracts tourists, residents and businesses.</td>
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</tbody>
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| Value delivery | A reliable governance structure needs to be in place to earmark funds obtained from building activities for NBS investment (i.e. a designated fund). | Governments can support through in-kind services and by (temporary) allocation of urban space; volunteer and community groups organize themselves bottom-up. | Using NBS as a form of education requires governance support from a specific school or school network. It also requires expertise on how to teach with an urban NBS. | Actors need to acknowledge the cultural value that is embedded in this green NBS. It also needs to combine cultural and ecological expertise to deliver this joint value. |

| Value capture | The cost of offsetting biodiversity is internalized in larger real estate or infrastructural development projects, and paid out of the revenue or tax stream that is created. | Facilitates private actors to develop meaningful activities at low cost (low land rent), which enables (social) entrepreneurship even at low/no revenue. | Cost-effective and interactive way to implement sustainability education, enriching other subjects and nutritional knowledge in children, as well. | A green cultural space can benefit from volunteers, networks and public financing. Value-added cultural produce and ticket / tour sales can provide income. |

| Enabling conditions & risks | An offset mechanism should not become a “wildcard” to build on high quality green-blue spaces, but should be used as a last resort. It requires availability of green spaces to invest into. | Closing temporary plots can destroy social capital built up in communities. Prevent through alternative location, integrate into urban development strategy. | Guidance, monitoring and expertise is needed from school teachers or staff. Adds to workload of sometimes already overburdened school teachers. | Cultural heritage needs to be equally accessible so entry prices may not be too high. Both ecological and cultural expertise is needed to deliver this model. |

**Models 5-8**
Risk reduction model

- Investments into NBS to prevent higher costs in the near future (increasing risks due to climate change)
- Drought, flooding, extreme heat can be mitigated through NBS
- Insurance sector can potentially play a role (example Interpolis)
Green densification model

- Investments into nature as part of new real estate development
- Realizes new housing stock while adding nature to the city
- Increased quality of life; strong building requirements needed

Riverbed in Parc Marianne. Photo credits: Anja Werner
• Citizens and local businesses voluntarily provide resources to enhance or maintain nature in their local surrounding
• Time, money, space
• Can be facilitated by municipality or third party (NGO, enterprise, crowdfunding platform)
How to organize collaborative funding?

Case: Melbourne, urban forest fund

- Increased # deaths **due to extreme heat** led to ‘Urban Forest Strategy’
- Offsetting **biodiversity loss** by infra & real estate
- **Bundling** municipal funding across departments
- **50% subsidy** for citizens/businesses who want to green their property
More resources

- Short videos about business models and the dialogue tool: [www.naturvation.eu/businessmodels](http://www.naturvation.eu/businessmodels)

- MOOC @Coursera: Urban Nature

- Downloadable business model puzzle (dialogue tool)
THANK YOU!

www.naturvation.eu
The Business Model Puzzle
a dialogue tool for financing urban NBS
Why a puzzle?

Urban nature-based solutions create many types of value...

...but who will pay for it, and why?
Play the puzzle in 3 steps

1. Choose a type of NBS or a specific case
   i.e. street trees, green roofs, sustainable drainage systems) or a specific project you are working on in your city or neighborhood.

2. Identify the values it creates, for whom ('puzzle')
   Use the puzzle pieces: who values what? Use empty pieces if you want to add additional benefits

3. Mix & match NBS business models
   Use your puzzle template to select NBS business models from the Catalogue that could be used for upscaling your NBS.
Identify the values it creates, and for whom?

Use the **puzzle pieces**: who values what? Use empty pieces if you want to add additional benefits (or write with a pen).

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