Biodiversity Implementation in a Multi-Plot Context

Enhancing biodiversity in urban area development projects. A project developer's perspective.

Ravelijn van Laar
19-01-2024

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health

health
well-being

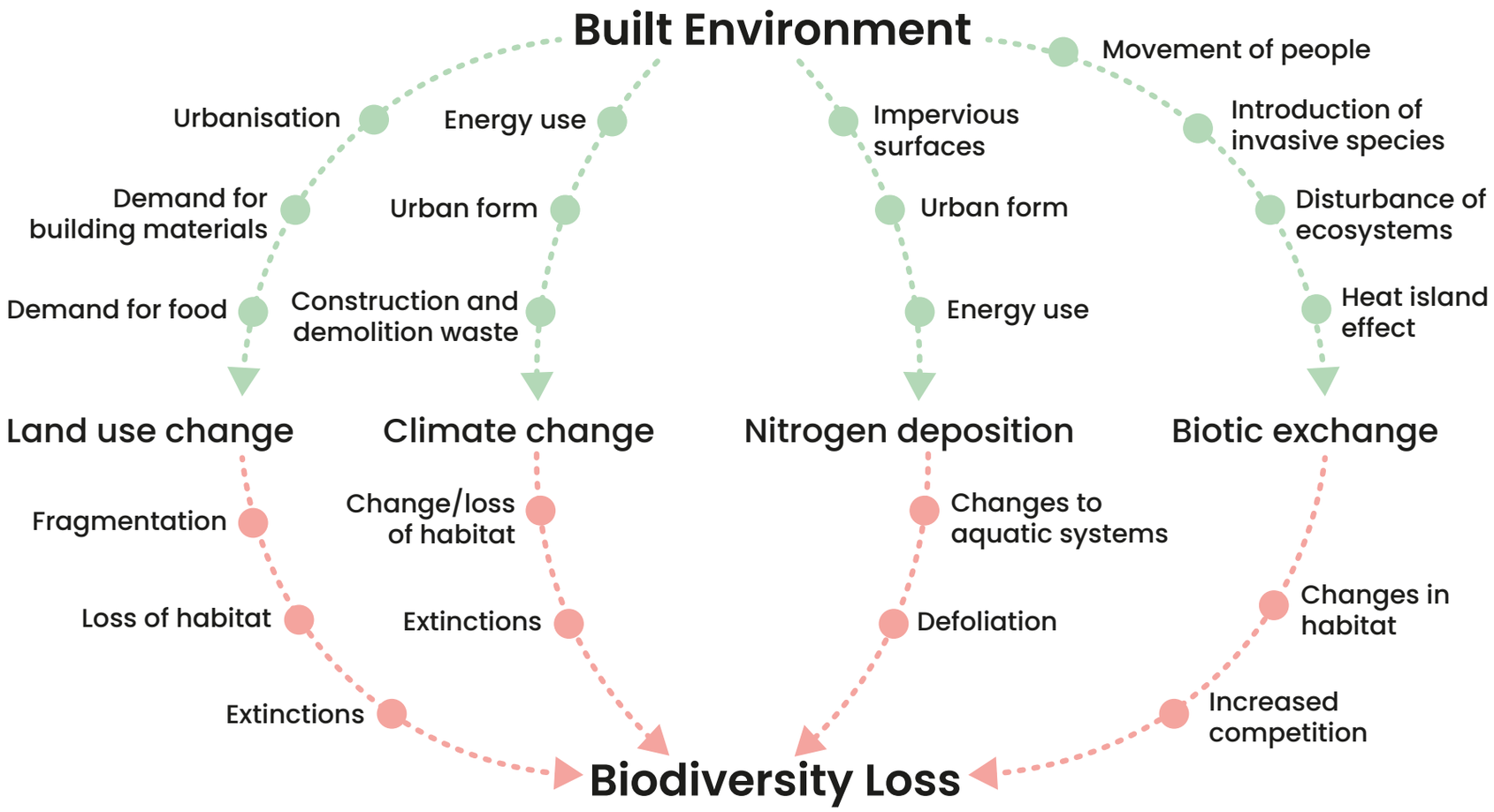

health
well-being
climate adaptation


health
well-being
climate adaptation
pest reduction

health
well-being
climate adaptation
pest reduction
heat stress

Content

Introduction



Pedersen Zari, M., & Mainguy, G. (2014a). Built environment drivers of biodiversity loss. Ecosystem Services Analysis in Response to Biodiversity Loss Caused by the Built Environment. https://journals.openedition.org/sapiens/1684

Built Environment

Biodiversity Loss

Project developer

Project developer

a company or individual responsible for planning, coordinating, and executing a project, often from its initial concept or acquisition to its completion.

project developers struggle with biodiversity implementation

Problem statement

project developers struggle with biodiversity implementation

=

focus on one-plot context

Problem statement

project developers struggle with biodiversity implementation = focus on one-plot context + biodiversity as afterthought

Problem statement

project developers struggle with biodiversity implementation = focus on one-plot context + biodiversity as afterthought + complexity biodiversity implementation

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project developers struggle with biodiversity implementation

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focus on one-plot context

+

biodiversity as afterthought

+

complexity biodiversity implementation

+

limited legislation and regulation

Problem statement

project developers struggle with biodiversity implementation

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focus on one-plot context

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biodiversity as afterthought

+

complexity biodiversity implementation

+

limited legislation and regulation

+

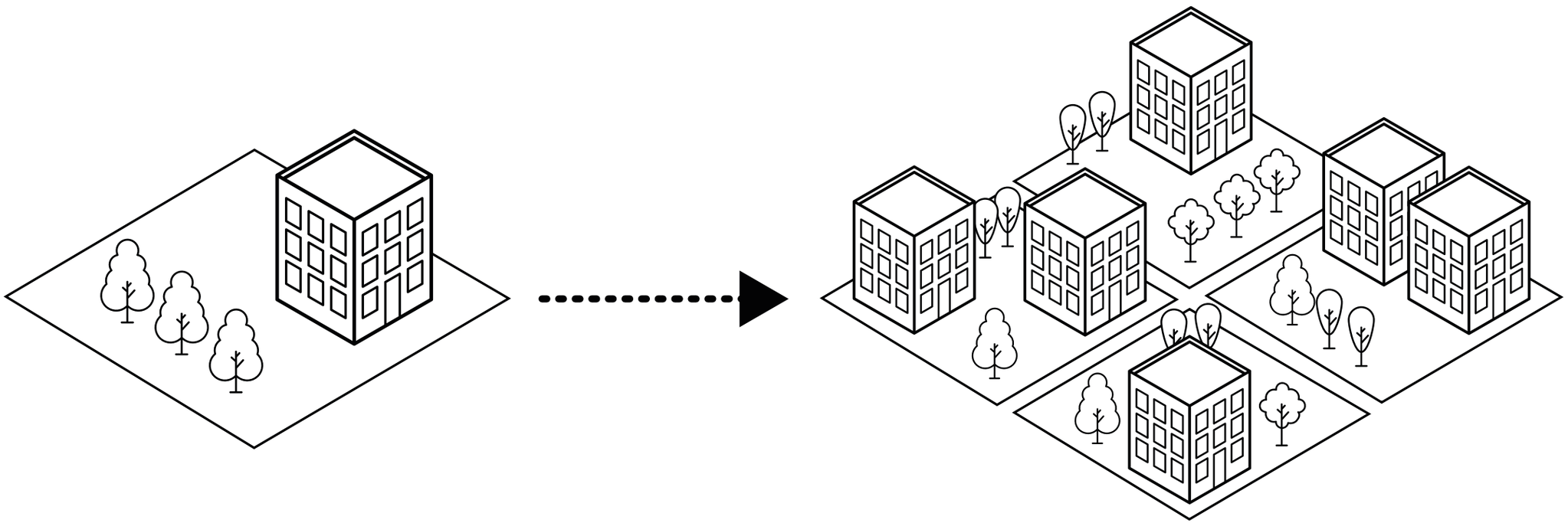
unclear stakeholder roles and risks

Problem statement

project developers struggle with biodiversity implementation = focus on one-plot context + biodiversity as afterthought + complexity biodiversity implementation + limited legislation and regulation + unclear stakeholder roles and risks

This research aims to...

develop an **implementation framework** that will encourage project developers to implement biodiversity in their projects in collaboration with other stakeholders



One-plot context

Multi-plot context

How can private project developers co-develop with others to enhance biodiversity across multiple plots in an urban area?

Research questions

How can private project developers co-develop with others to enhance biodiversity across multiple plots in an urban area?

SQ1. Which **design elements and principles** enhance biodiversity across multiple plots?

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SQ4. How should an urban area development **process** be designed for biodiversity implementation?

Research questions

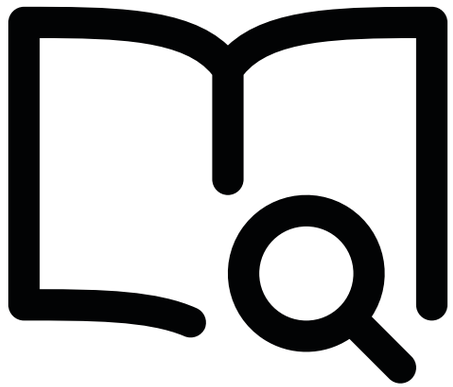
design elements and principles

stakeholder engagement

financial prerequisites

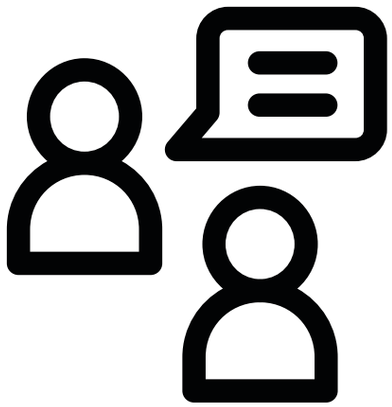
phasing

Methods



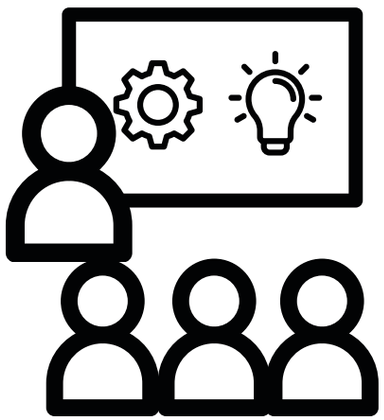
literature review

discover problem



expert interviews

define problem



workshop

develop solution

Methods

Literature review

Urban biodiversity

Urban biodiversity

the variation of living organisms and their interactions, found in particular urban areas.

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implemented through design elements aimed at enhancing, protecting, managing, and restoring.

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Biodiversity enhancement

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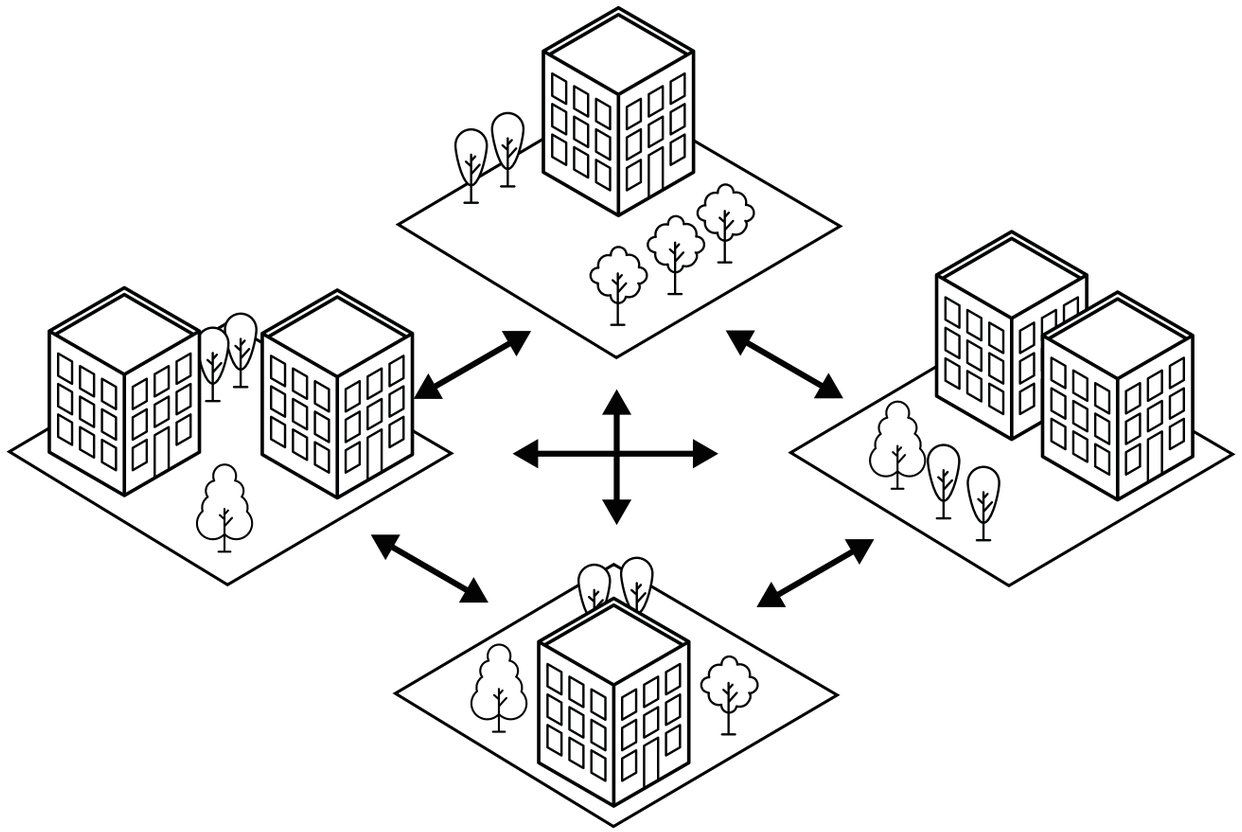
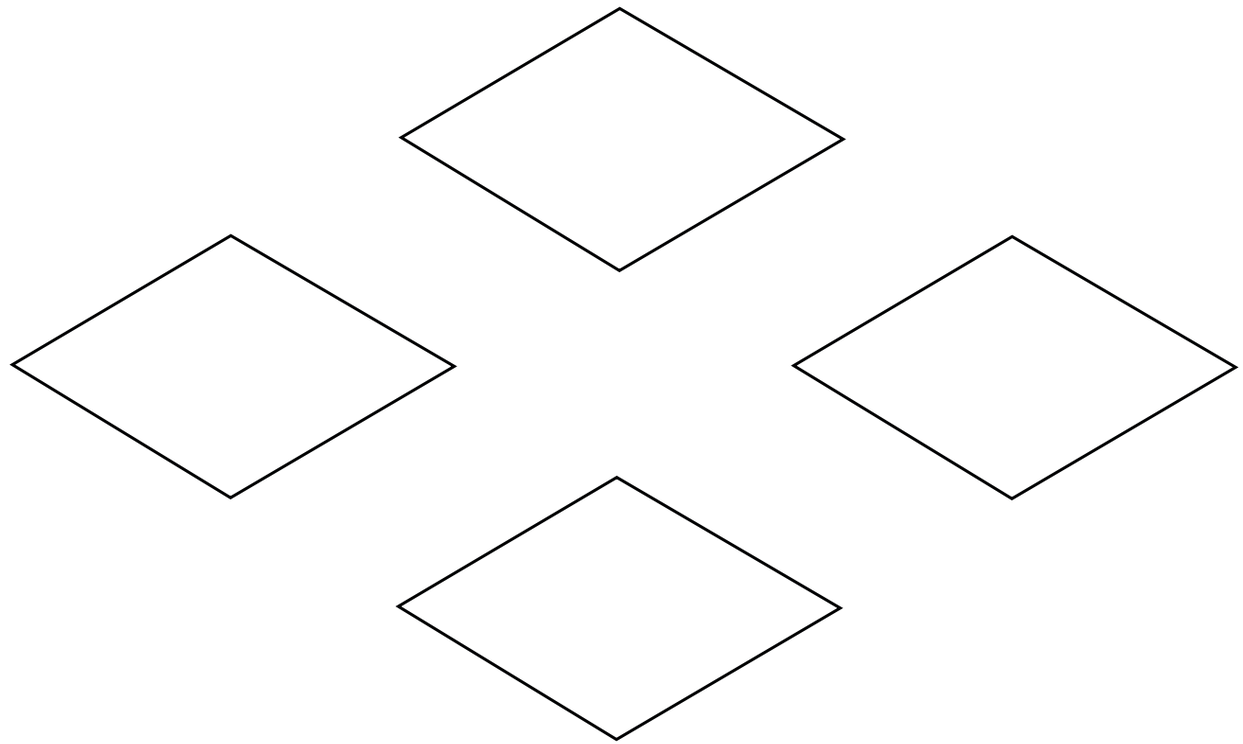
implemented through design elements aimed at enhancing, protecting, managing, and restoring.

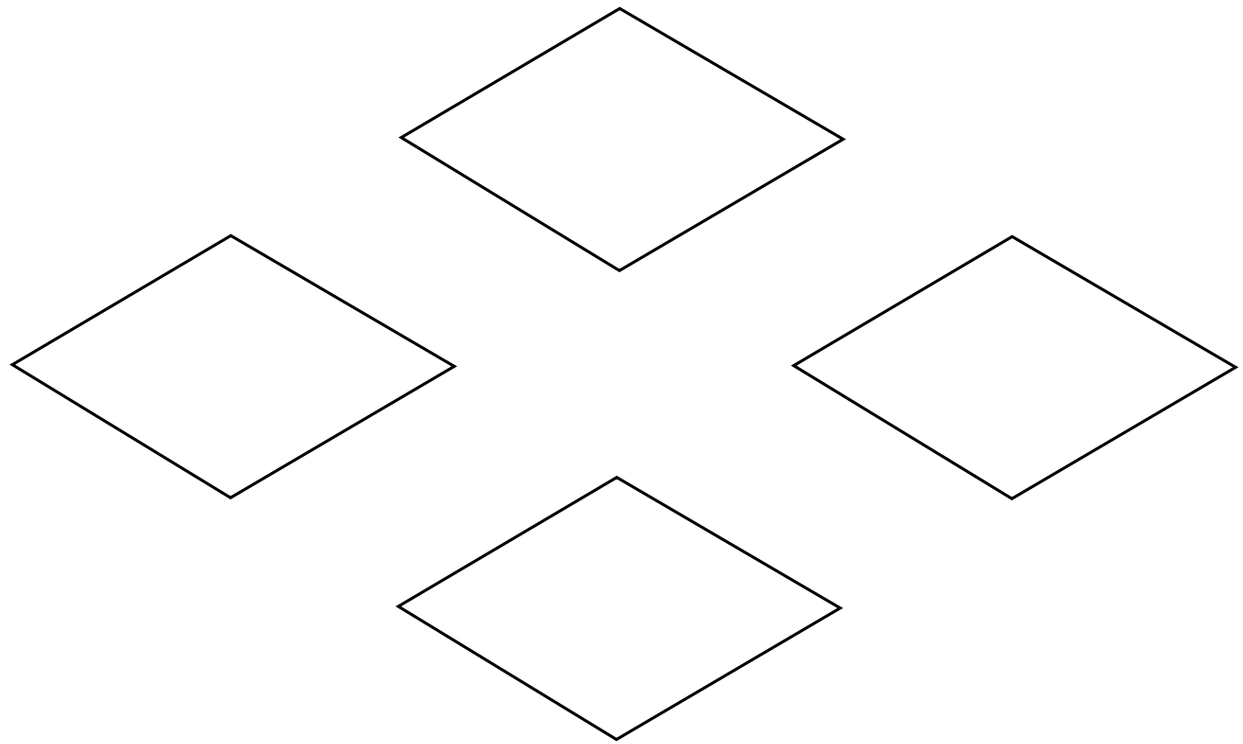
Biodiversity enhancement

more achieved in a multi-plot context, where buildings can create interconnected networks of green areas to facilitate species movement.

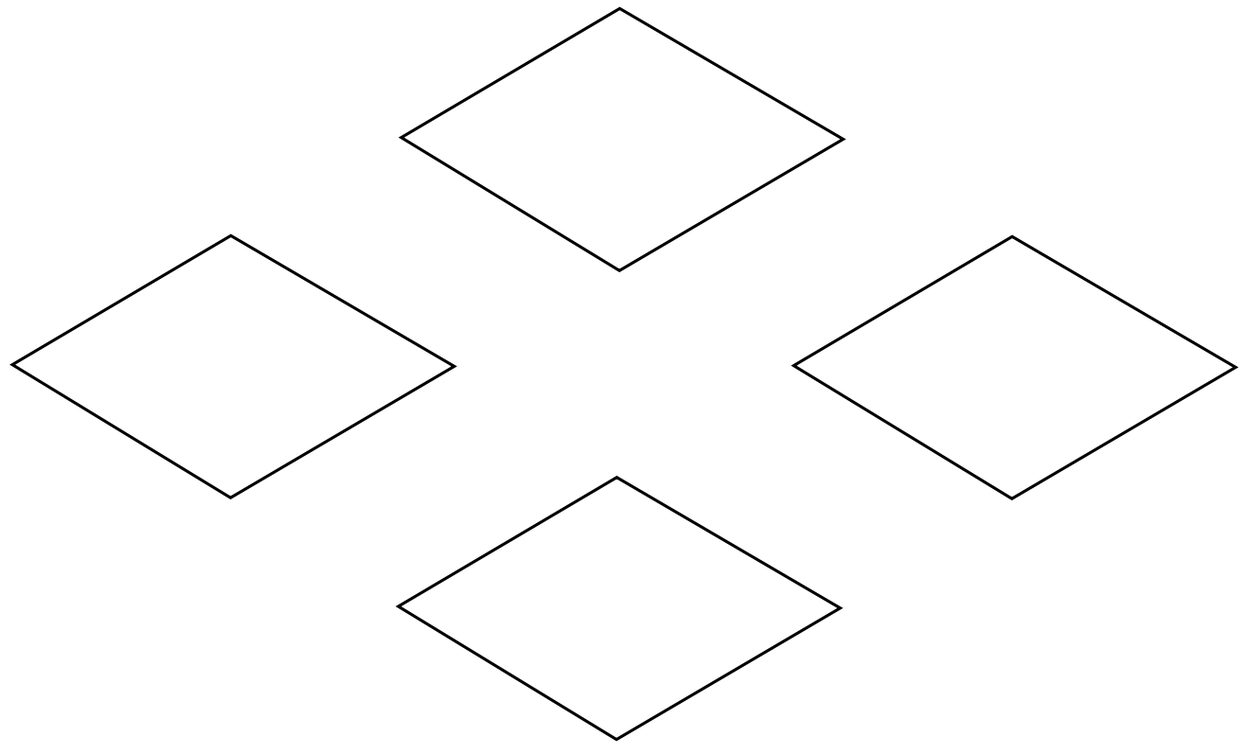
Plot collaboration





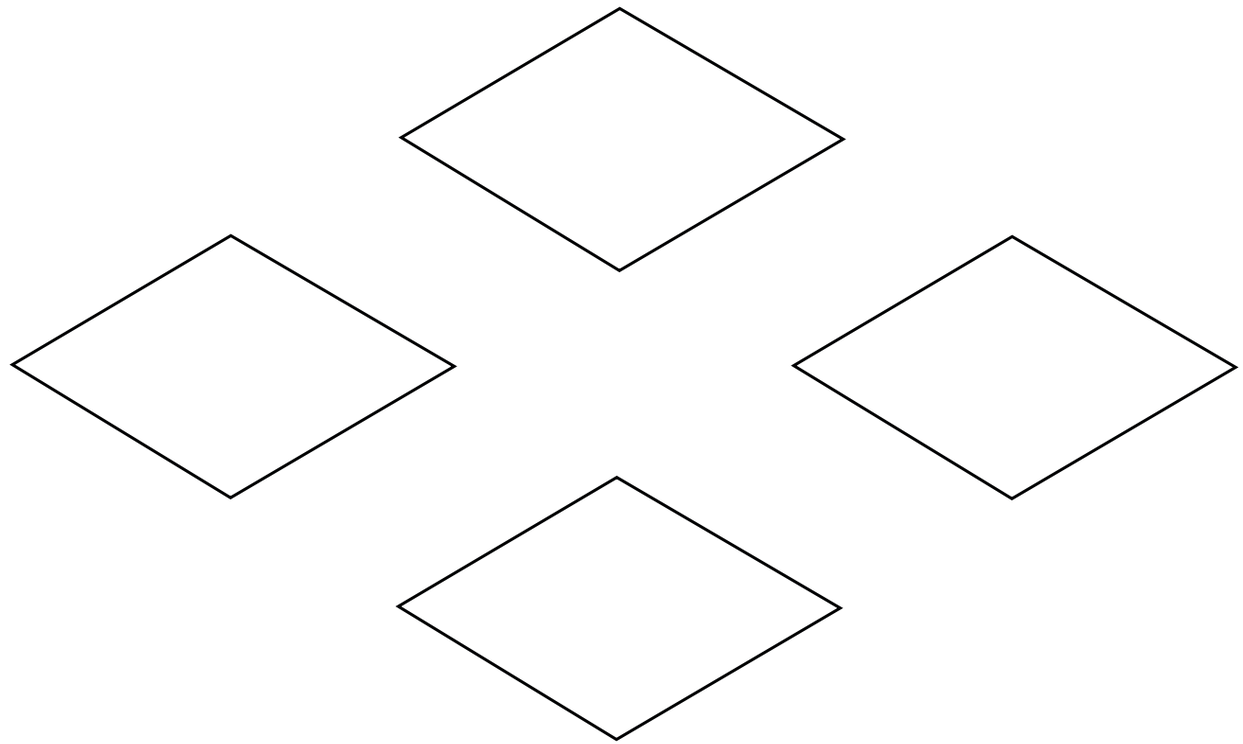


Urban area development



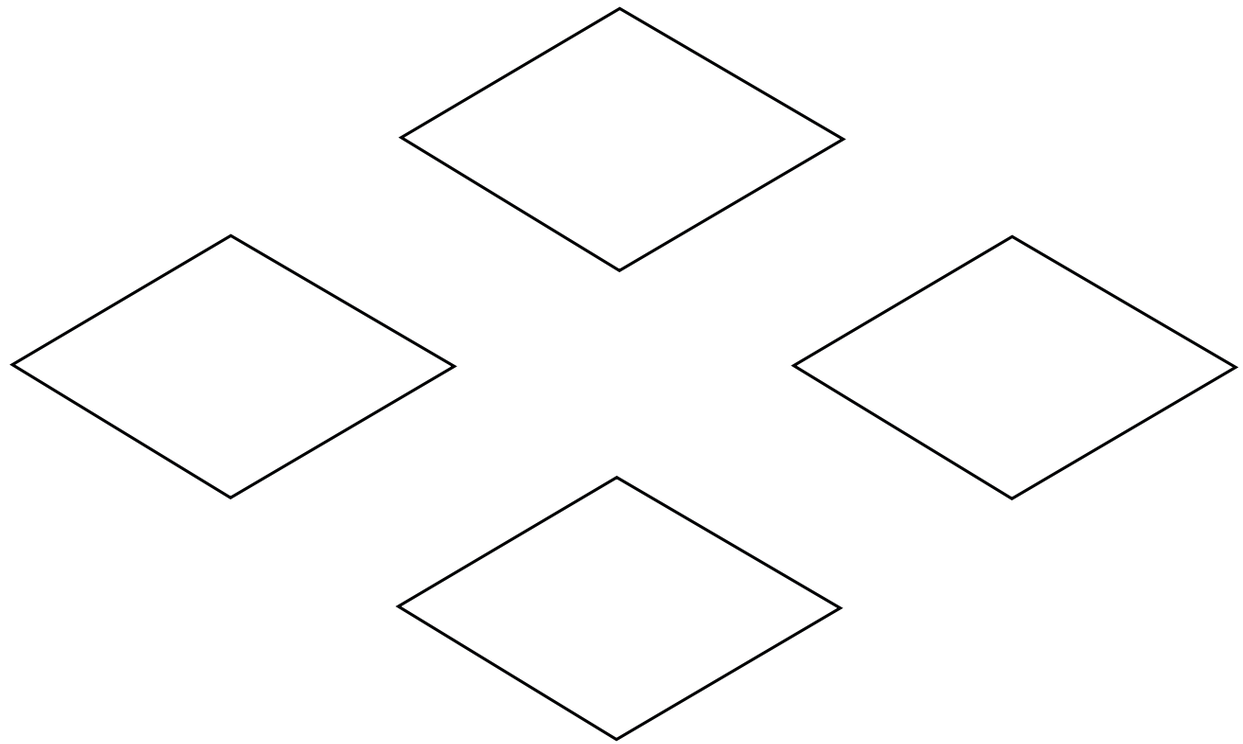
Urban area development

a complex, long-term process of physical adaptation of a specific location



Urban area development

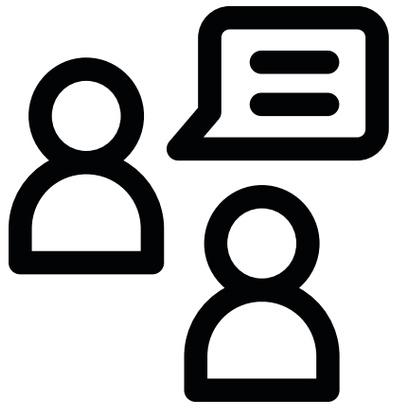
a complex, long-term process of physical adaptation of a specific location to meet socio-economic and spatial needs



Urban area development

a complex, long-term process of physical adaptation of a specific location
to meet socio-economic and spatial needs
through the collaboration of diverse stakeholders using various tools. (Heurkens, 2017)

Interviews



expert interviews

ecologists employed at:

universities

private firms

municipality

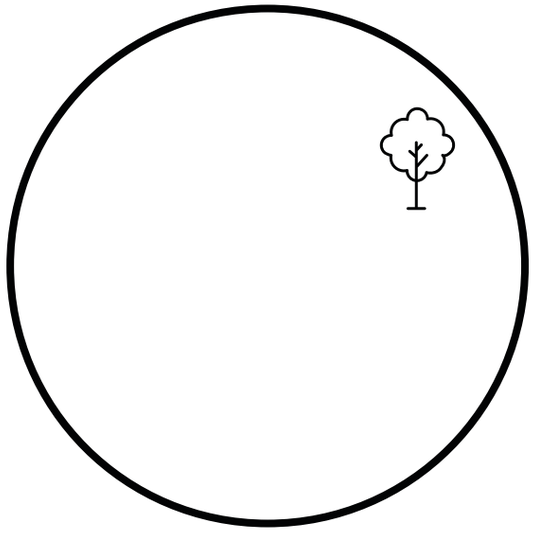
self-employed

Participants

Findings

multiple contributions

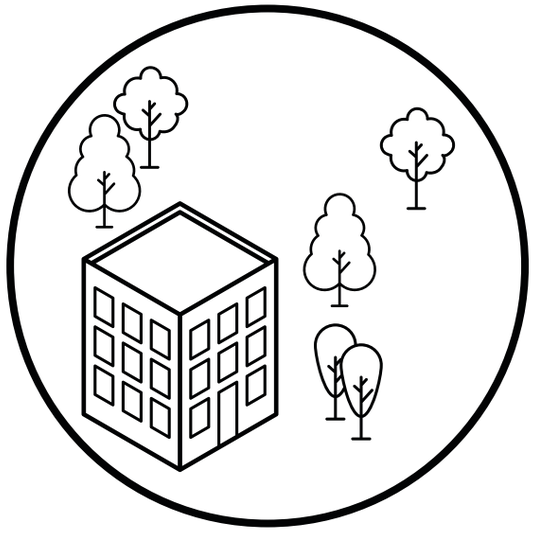
Findings: Design elements and principles



multiple contributions

analyse surrounding area

Findings: Design elements and principles

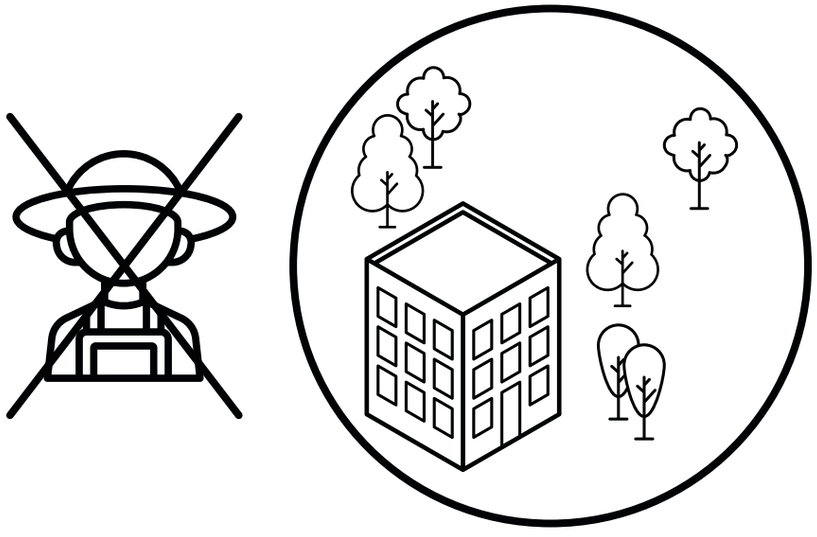


multiple contributions

analyse surrounding area

strategic positioning

Findings: Design elements and principles



multiple contributions

analyse surrounding area

strategic positioning

prioritise low-maintenance design

Findings: Design elements and principles

Findings: Stakeholder engagement

Findings: Stakeholder engagement

municipality

project developer

ecologist

green space manager

Findings: Stakeholder engagement

municipality

project developer

ecologist

landscape architect

green space manager

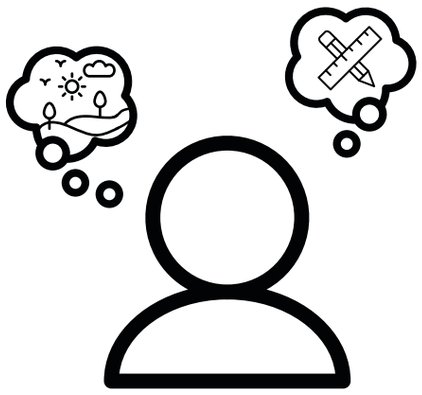
Findings: Stakeholder engagement

Findings: financial prerequisites

early prioritisation and integration

Findings: Phasing

Workshop



landscape architect

project developer

green space manager

ecologist and consultant

Focus group

		Urban Development Plan		Zoning plan	Delivery	
	Initiative and exploration	Plan formation and feasibility			Development and construction	Operation and maintenance
		Definition	Design	Preparation		
Municipality						
Project developer						
Landscape architect						
Ecologist						
Sustainability consultant						
Green space manager						

‘‘All stakeholders should establish a joint ambition on biodiversity at the start of a project.’’

“All stakeholders should establish a joint ambition on biodiversity at the start of a project.”

design elements and principles

joint ambition

“All stakeholders should establish a joint ambition on biodiversity at the start of a project.”

design elements and principles — joint ambition

stakeholder engagement — project developer fosters collaboration

“All stakeholders should establish a joint ambition on biodiversity at the start of a project.”

design elements and principles	joint ambition
stakeholder engagement	project developer fosters collaboration
financial prerequisites	look beyond financial measures

“All stakeholders should establish a joint ambition on biodiversity at the start of a project.”

design elements and principles	joint ambition
stakeholder engagement	project developer fosters collaboration
financial prerequisites	look beyond financial measures
phasing	ongoing monitoring and evaluation

Conclusion

SQ1. Which **design elements and principles** enhance biodiversity across multiple plots?

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biodiversity value depends on integration with surrounding area

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diversity prevails over quantity

SQ1. Which **design elements and principles** enhance biodiversity across multiple plots?

biodiversity value depends on integration with surrounding area

plot collaboration

diversity prevails over quantity

create a broad variety of habitats

SQ2. Which **stakeholders** are important for biodiversity implementation and what are their roles?

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5 key stakeholders: municipality, project developer, landscape architect, ecologist, green space manager

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intrinsic motivation of individuals

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5 key stakeholders: municipality, project developer, landscape architect, ecologist, green space manager

intrinsic motivation of individuals

changing nature of biodiversity ambitions

SQ3. What are the **financial prerequisites** of biodiversity implementation within the scope of an urban area development project?

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biodiversity implementation costs money

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early financial allocation

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early financial allocation

maintenance < > biodiversity enhancement

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biodiversity implementation costs money

early financial allocation

maintenance < > biodiversity enhancement

tension between financial considerations and environmental sustainability

SQ4. How should an urban area development **process** be designed for biodiversity implementation?

How can private project developers co-develop with others to enhance biodiversity across multiple plots in an urban area?

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varying roles, responsibilities, and priorities

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establish joint ambitions and agreements on biodiversity implementation

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establish joint ambitions and agreements on biodiversity implementation

assessment of environment and existing biodiversity

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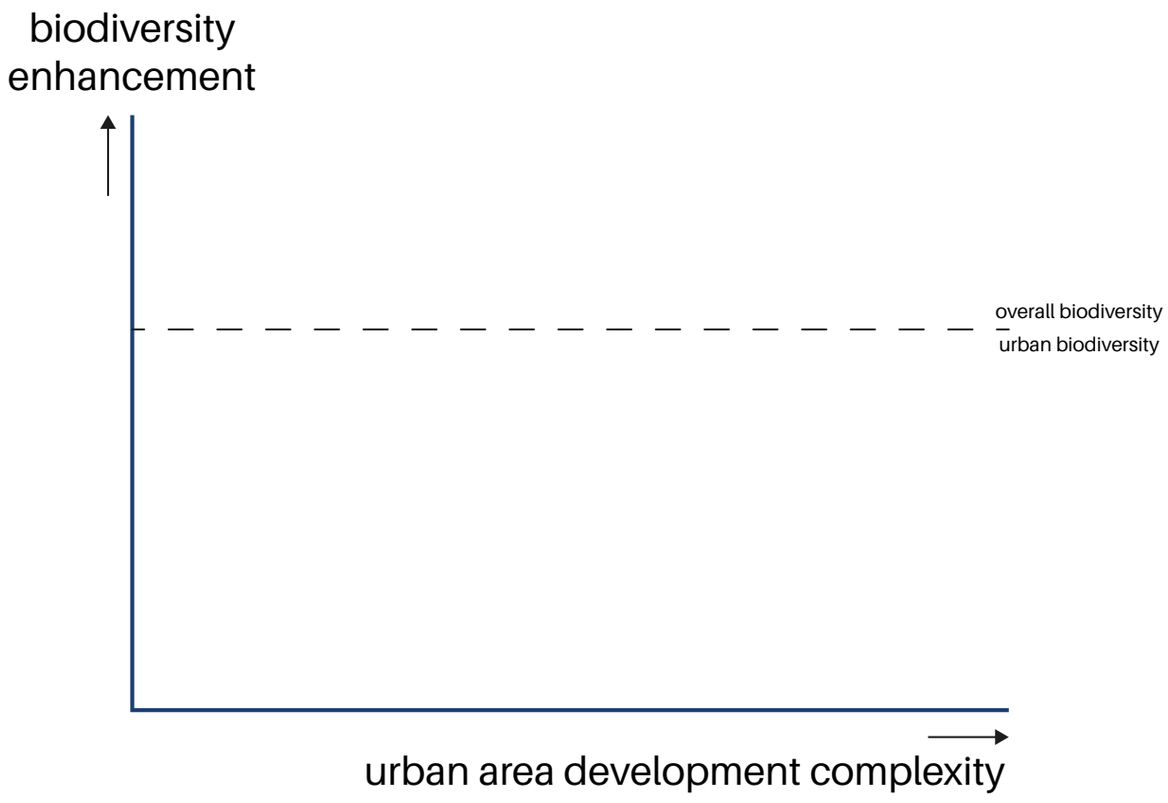
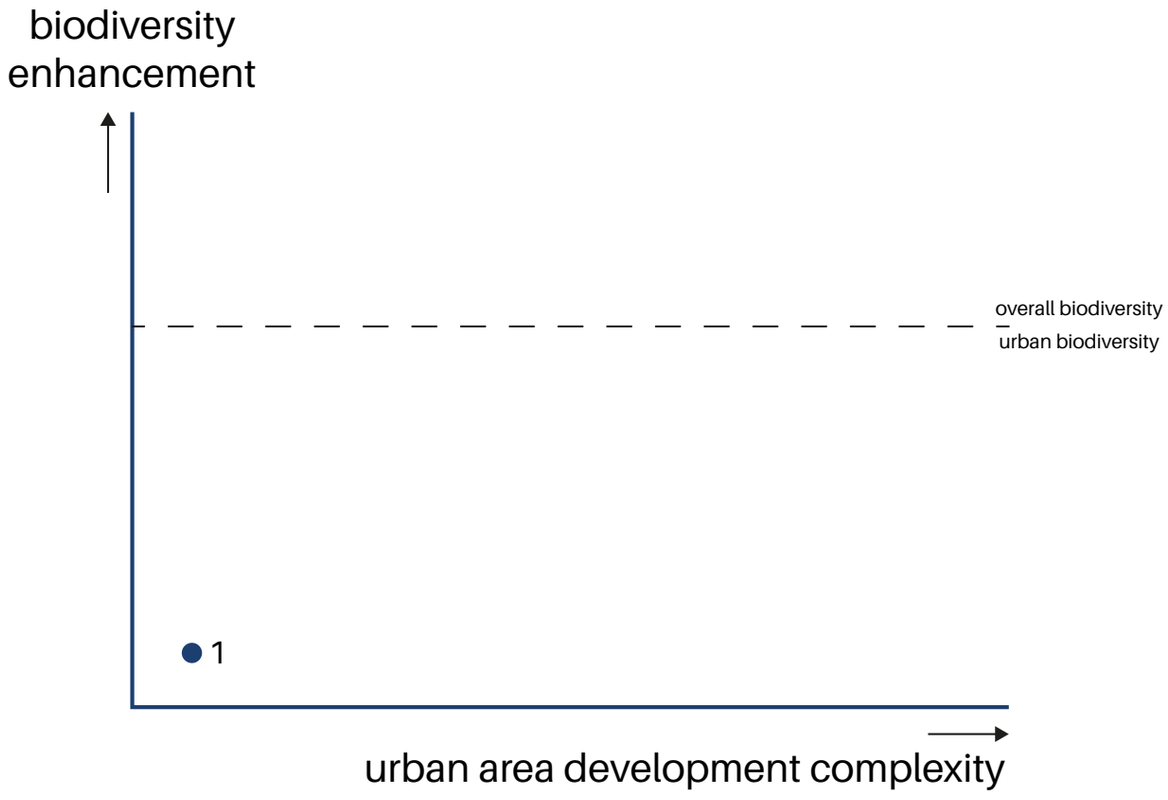
multi-plot context

Advice

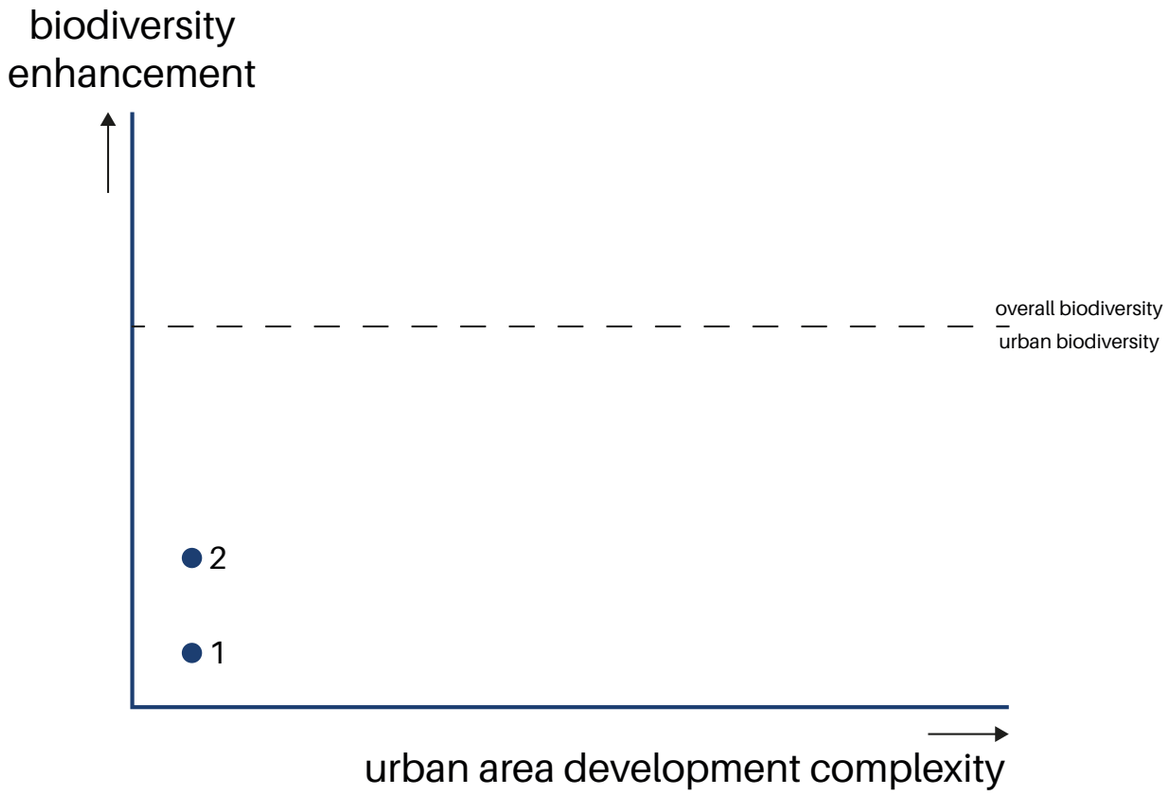


Biodiversity implementation framework



1 minimum requirements

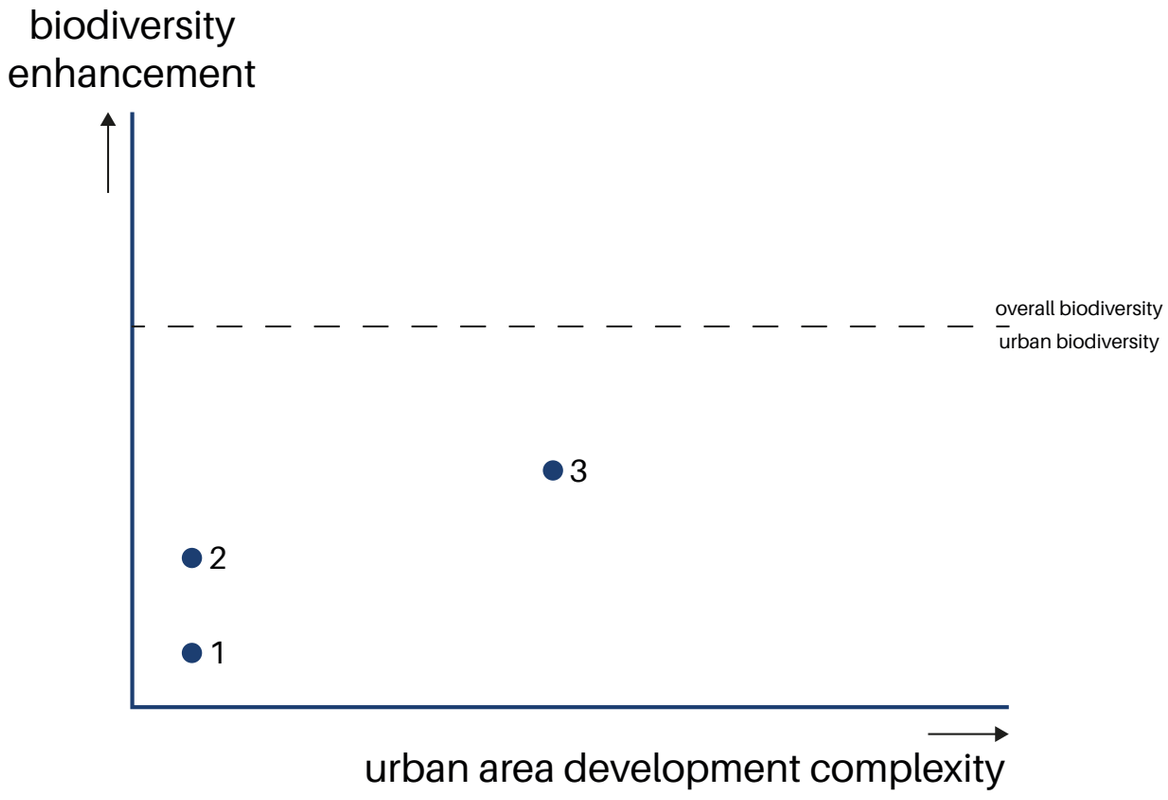
Biodiversity implementation framework



1 minimum requirements

2 one-plot enhancement

Biodiversity implementation framework

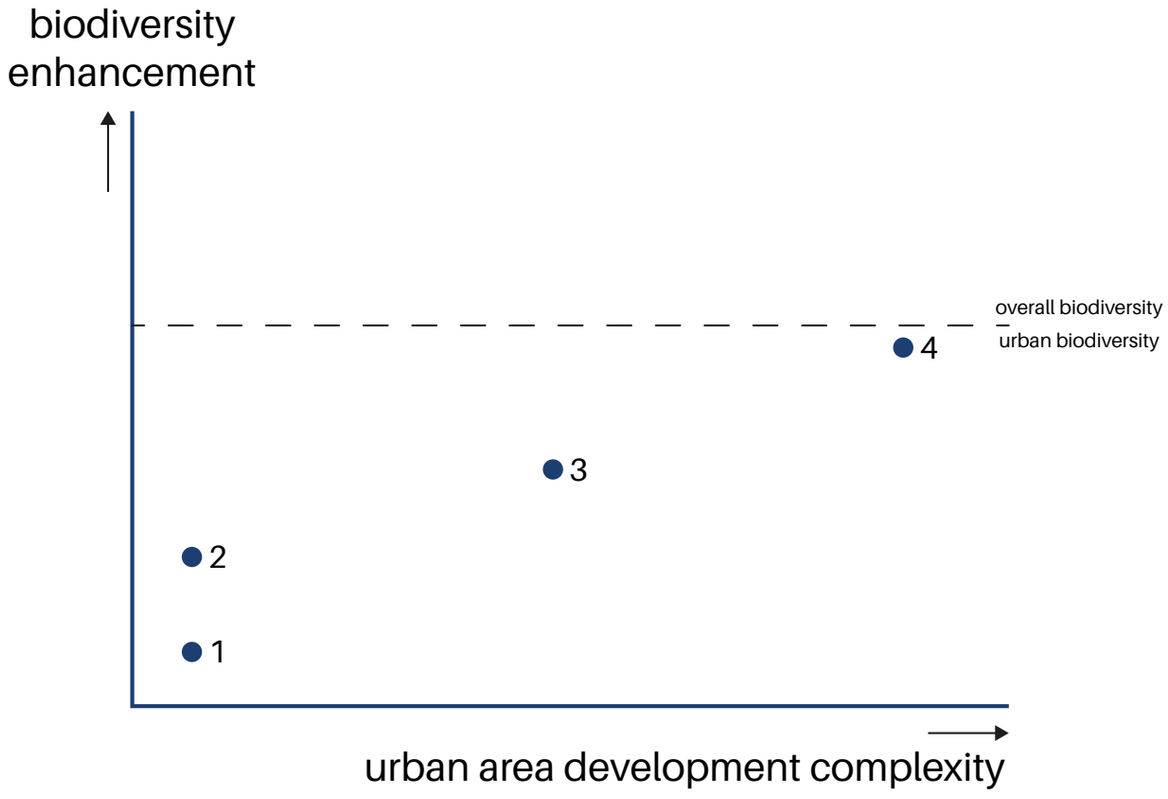


1 minimum requirements

2 one-plot enhancement

3 multi-plot enhancement

Biodiversity implementation framework



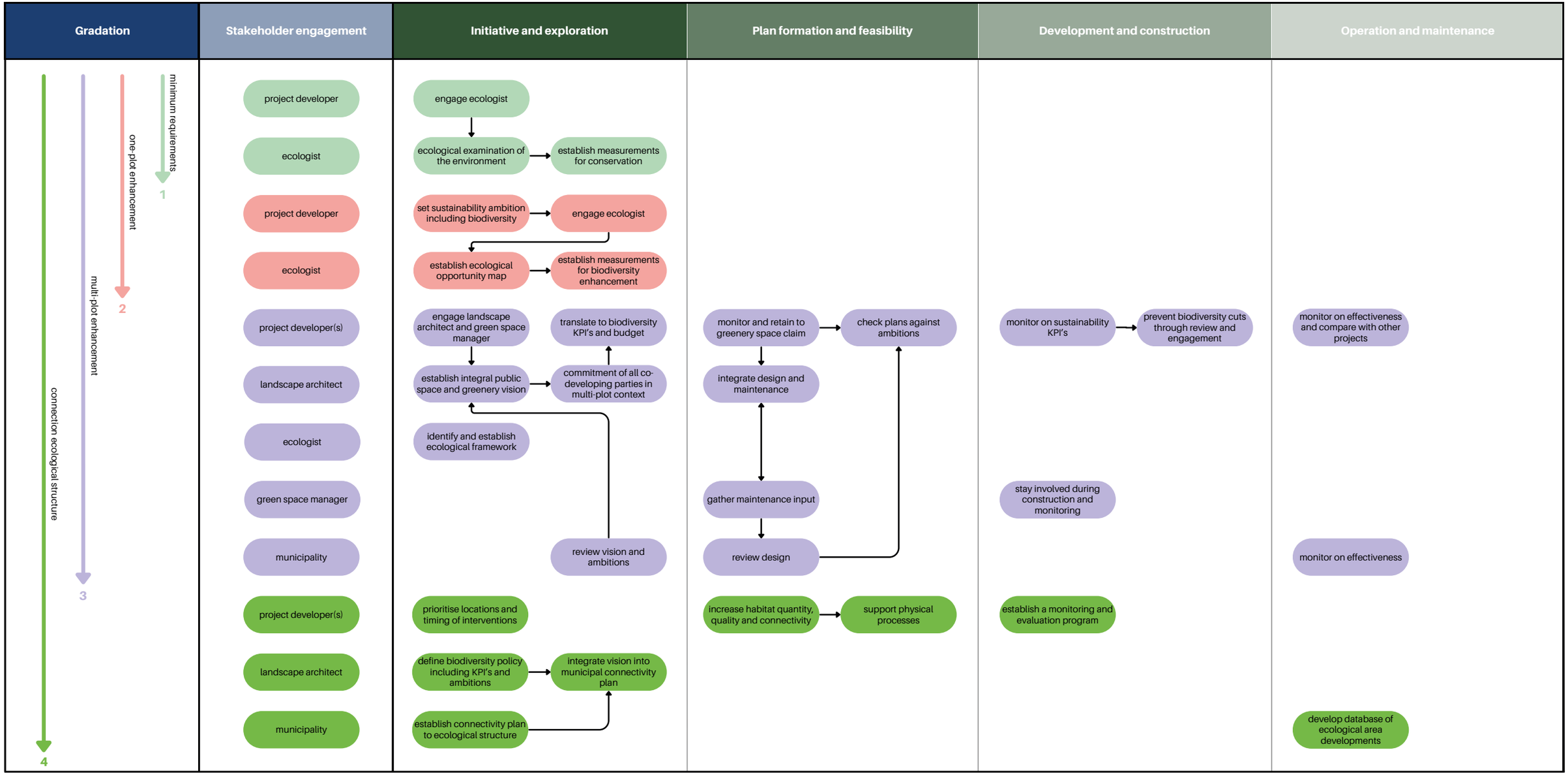
1 minimum requirements

2 one-plot enhancement

3 multi-plot enhancement

4 connection ecological structure

Biodiversity implementation framework


Gradation
Stakeholder engagement
Initiative and exploration
Plan formation and feasibility
Development and construction
Operation and maintenance
minimum requirements
1
one-plot enhancement
2
multi-plot enhancement
3
connection ecological structure
4
project developer
ecologist
project developer
ecologist
project developer(s)
landscape architect
municipality
ecologist
green space manager
municipality
project developer(s)
landscape architect
municipality
engage ecologist
ecological examination of the environment
establish measurements for conservation
set sustainability ambition including biodiversity
engage ecologist
establish ecological opportunity map
establish measurements for biodiversity enhancement
engage landscape architect and green space manager
translate to biodiversity KPI's and budget
establish integral public space and greenery vision
commitment of all co-developing parties in multi-plot context
identify and establish ecological framework
review vision and ambitions
prioritise locations and timing of interventions
define biodiversity policy including KPI's and ambitions
integrate vision into municipal connectivity plan
establish connectivity plan to ecological structure
monitor and retain to greenery space claim
check plans against ambitions
integrate design and maintenance
gather maintenance input
review design
increase habitat quantity, quality and connectivity
support physical processes
monitor on sustainability KPI's
prevent biodiversity cuts through review and engagement
stay involved during construction and monitoring
establish a monitoring and evaluation program
monitor on effectiveness and compare with other projects
monitor on effectiveness
develop database of ecological area developments

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Questions?

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