



**Ponderful**  
PONDS FOR CLIMATE

**BELGIUM** 

## **PONDSCAPE : PIKHAKENDONK**



Pond Ecosystems for Resilient Future Landscapes in a Changing Climate

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# WHAT IS A PONDSCAPE ?

## DEFINITION

A pondscape is a network of ponds with spatial proximity (“connectedness”) and the surrounding landscape matrix.

The boundaries of a pondscape may be determined by physical or ecological settings (a valley, a catchment, a set of ponds in a nature reserve) or even determined by societal or political criteria (urban ponds, provincial or national boundaries).

## PRESSURE/THREATS ON PONDS AND PONDSCAPES

50-90% of pond have been lost from European countries over the past century. Furthermore, ponds are largely neglected in water- and nature-related national and EU policies and strategies, including the EU-WFD.

## WHY IS IT IMPORTANT TO PROMOTE THEM ?



### BIODIVERSITY ENHANCEMENT

Largely neglected and generally undervalued, ponds are remarkably important for biodiversity conservation. Pondscapes represent biodiversity hotspots.



### DISASTER RISK REDUCTION

Ponds and pondscapes play a fundamental role in mitigating flooding and also constitute a water reserve to fight fires.



### HUMAN HEALTH

Ponds and pondscapes provide a wide range of co-benefits for human societies such as support for human health and quality of life, spaces for physical activities, or social interaction, but also aesthetic experiences and educational and recreational activities.



### CLIMATE CHANGE MITIGATION AND ADAPTATION

Given their abundance and their high productivity, ponds influence markedly the carbon cycle by acting as both carbon sinks and sources.



### WATER MANAGEMENT

Pondscapes provide a water reserve that is particularly important in the context of water scarcity. It is particularly useful for watering animals and for irrigation.

# CONTEXT

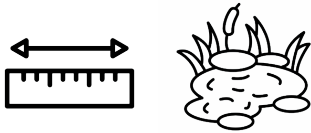
The landscape in Pikhakendonk consists largely of meadows scattered in a dense network of old hawthorn hedges and some forest patches. It contains multiple small ponds, of which several have been recently created as part of a translocation project of Crested newt. The pondscape is a NATURA 2000 area and is internationally recognized for its population of Large pimpernel (*Sanguisorba officinalis*).



**Name of the pondscape :** Pikhakendonk + Boortmeerbeeksbroek  
**Name of neighboring large town (in a 30 km radius):**  
Mechelen (87'000 habitants)  
**Bioclimatic zone :** Atlantic

## Dominant land use :

Pondscape - extensive grazing, meadows and forest patches  
Surrounding environment - agriculture, urban, grasslands, forest patches



**Pondscape area :** 5 km<sup>2</sup>  
**Pond : number:** 62  
**density:** 12/km<sup>2</sup>  
**surface areas :** 10 to 200 m<sup>2</sup>  
**depths :** 10 to 55 cm  
(some ponds dry during summer period)  
**ages :** 5 to >100 years

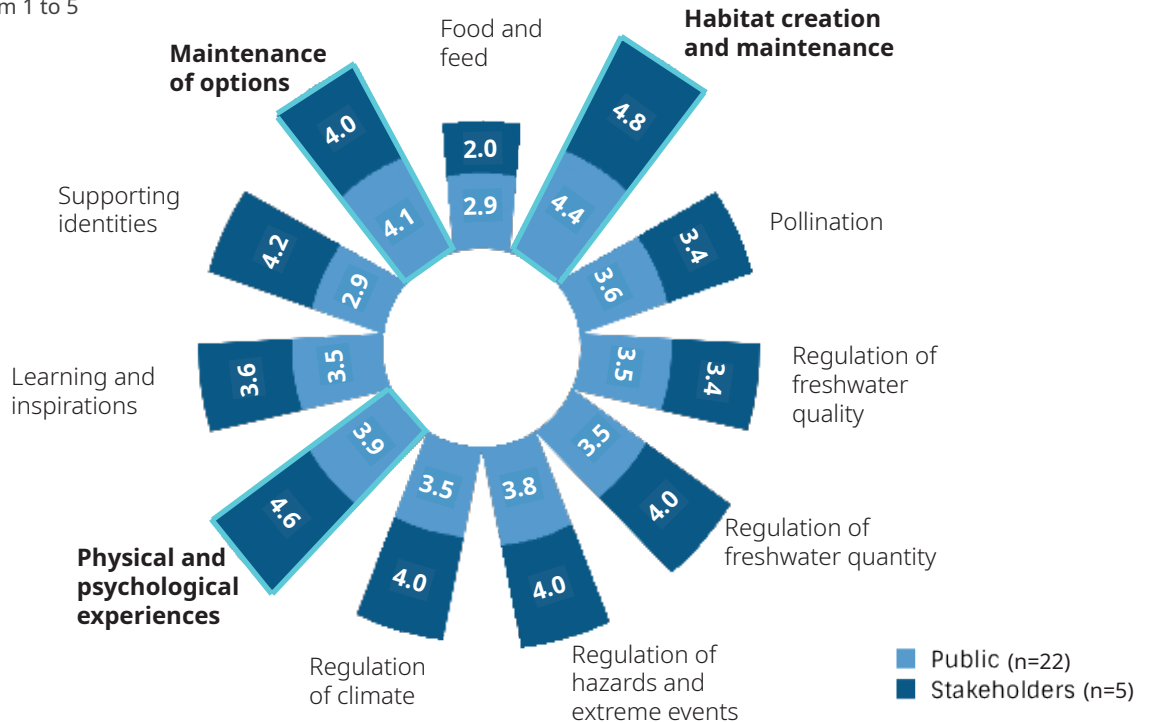
**Land owner :** Private, Farmers, Natuurpunt (NGO)  
**Land manager :** Farmers and Natuurpunt (NGO)  
**Public access :** 85 % of the area is accessible  
**Public amenities :** gravel roads, walking paths, picnic tables



# LOCAL COMMUNITY EXPECTATIONS

## The 11 Nature's contribution to people (NCPs)

Scale : scores from 1 to 5



The expectations rely mainly on (i) the provision of habitats for biodiversity and (ii) the direct use of these natural areas by people (physical and psychological experiences).

# LOCAL POLICIES

The landscape in Pikhakendonk largely consists of meadows scattered in a dense network of old hawthorn hedges and some forest patches. Pikhakendonk is internationally recognized for its population of Large pimpernel (*Sanguisorba officinalis*). Because of its overall high nature values, the region is designated as NATURA 2000 area (BE2300044).

The nature conservation NGO 'Natuurpunt' currently manages 74 ha of land for purposes of biodiversity conservation, of which 60 ha are formally designated as nature reserve. The management is directed towards biodiversity conservation in both terrestrial and aquatic habitats, and strongly relies on a local team of volunteers, assisted by professional Natuurpunt employees. Agreements with local farmers are used for mowing vegetation and extensive grazing by cattle. Pikhakendonk contains multiple small ponds, of which several have been recently created as part of a translocation project of Crested newt (*Triturus cristatus*). A number of old ponds and ditches has been restored through dredging and reprofiling of shores to enhance habitat suitability for aquatic communities.

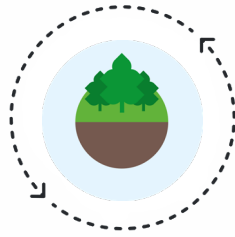
Natuurpunt owns 74 ha of the land in the pondscape, of which 80% is formally designated as nature reserve

**74ha**

The pondscape is a NATURA 2000 area because of its high international importance (large population of Large pimpernel)

The pondscape hosts a translocated Crested newt population

# MAIN CHALLENGES AND OBJECTIVES



## BIODIVERSITY ENHANCEMENT

Multiple terrestrial and aquatic organism groups, including Crested newt and Large pimpernel.



## HUMAN HEALTH

A place for walking, short hikes and nature observation.



# NATURE BASED SOLUTIONS (NBS)

New pond creation and their management are here the Nature-based Solutions put in practice to address the two identified societal challenges.

## NEW POND CREATION

2016-2022

Creation of 7 new ponds (approximately 100m<sup>2</sup>), primarily aimed at promoting Crested newt

## PONDS AND PONDSCAPE MANAGEMENT

- Protection status as Natura 2000
- Fencing a subset of ponds to prevent cattle access
- Pond restoration by deepening existing ponds to increase hydroperiod length (2022)
- Profiling and dividing previously larger pond and ditch into several small ponds
- Increase pond density to enhance habitat connectivity for amphibian populations
- Threatened species translocation (Crested newt)



- Maintenance of trails for walking, biking and hiking
- Creation and maintenance of information boards



# NATURE CONTRIBUTIONS TO PEOPLE AND MEASURED INDICATORS



## AQUATIC BIODIVERSITY

### SPECIES RICHNESS

Aquatic plants : 55

Amphibians : 7

(*Bufo bufo*, *Pelophylax bedriagae*, *Triturus cristatus*, *Pelophylax ridibundus/kurtmuelleri*, *Rana temporaria*, *Ichthyosaura alpestris*, *Lissotriton vulgaris vulgaris*)

### AMOUNT OF

Conservation priority species (N) : 1

Species on Habitat Directive Annexes (N): 1\*

*Triturus cristatus* (Amphibians)

Invasive alien species (N): 1

### FLAGSHIP SPECIES :



*Triturus cristatus*

# NATURE CONTRIBUTIONS TO PEOPLE AND MEASURED INDICATORS



## LEARNING AND INSPIRATION

Number of biodiversity monitoring teams visiting the pondscape.

4

3

Number of studies on population dynamics of Crested newt (study by INBO and Natuurpunt), and a study on the colonization of newly created ponds by cladocerans (study by KU Leuven).



## PHYSICAL AND PSYCHOLOGICAL EXPERIENCE

Number of people visiting the pondscape (leisure, tourism, fishing, nature watching etc.) (nb/year)

109'500

85%

Area inside the pondscape accessible to the public

Self-reported satisfaction and well-being (scale 1 to 5)

3.2

### Most popular activities :

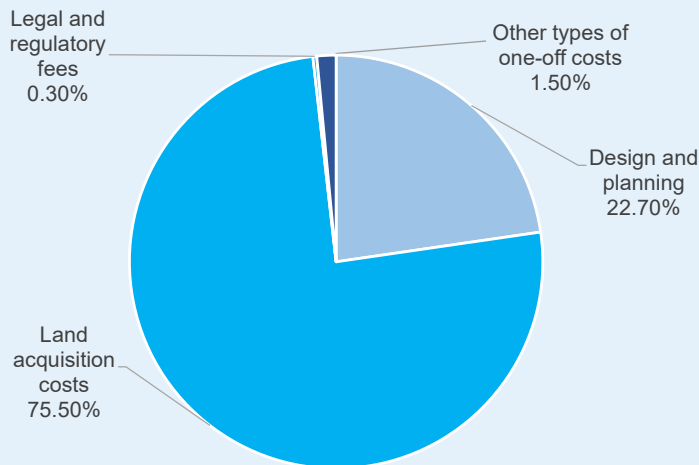
hiking (46%), idleness (13%), biking (11%), wildlife observation (11%)

# COSTS AND BENEFITS ANALYSIS

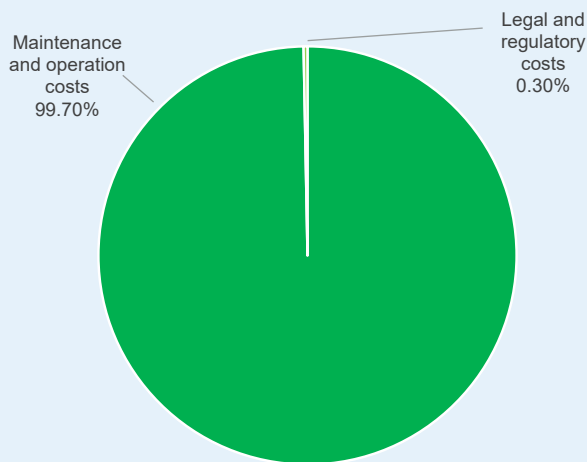
## OVERALL COSTS ASSESSMENT



### SHARE OF COSTS FOR NBS ACTION

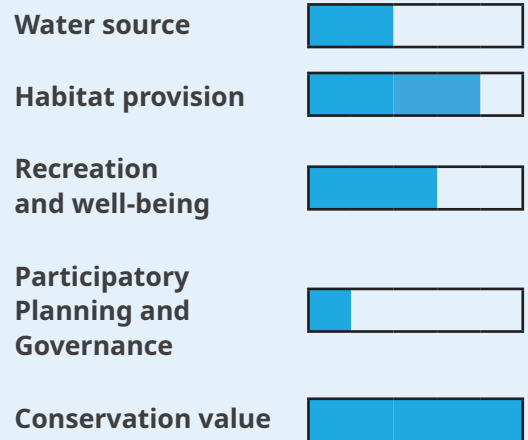


Relative cost of NBS creation measures



Relative cost of ongoing NBS management measures

## BENEFITS ASSESSMENT



### SUITABLE FINANCE INSTRUMENTS TO REDUCE THE GAP

- ✓ 1. Voluntary contributions /donations
- ✓ 2. Subsidies
- ✓ 3. Grants

## REMAINING THREATS

1. Changes in hydrology linked to climate change, which results in shorter hydroperiods that undermine successful amphibian conservation.



# SUCCESS STORY AND TRANSFERABILITY

## TRANSLOCATION OF CRESTED NEWT POPULATION

In 2016, an existing population of Crested newt from a close by location (Zennegat, approximately 15 km away) was translocated to the pondscape on demand of the Flemish government in close collaboration with ANB (Agency for Nature and Forests) and INBO (Research Institute for Nature and Forest). The translocation was needed as the original habitat of this Crested newt population will largely disappear due to planned large scale river restoration management actions in the valley of river Dijle (SIGMA-plan Dijle). In addition to the initial translocation of adults from the original population, a scientifically supported breeding program was established by INBO (Research Institute of Nature and Forests). Juveniles (3205 individuals) bred in captivity were released in several ponds in the pondscape over multiple subsequent years (2017-2020).

The population dynamics of the translocated newt population is regularly monitored by INBO and Natuurpunt. At this stage, in 2023, the translocation seems to be successful, as multiple ponds host Crested newt and the newly established population seems to reproduce successfully in multiple ponds in the pondscape. Such NBS is a good example for the translocation of Crested newt to other pondscales that include suitable habitats that are highly isolated, preventing natural colonization to occur.



## ACTIVE AND ONGOING MANAGEMENT OF THE PONDSCAPE

Ongoing management of the pondscape for several decades following a management plan. This management plan successfully enhances both terrestrial and aquatic biodiversity by maintaining key landscape features, such as small-scale grasslands surrounded by hedges and multiple farmland ponds. Management actions involve pond creation, pond restoration, grassland management and periodic cutting back of hedges. Only a fraction of the pondscape is owned and managed by NGO Natuurpunt, but local farmers also contribute to biodiversity management. Natuurpunt applies an active land buying policy to enlarge the total area under strict protection status. Such NBS approach requires continuous funding, which is strongly facilitated by the fact that the region is designated as NATURA 2000 area. The additional formal designation of land as nature reserve also contributes to the long-term protection of biodiversity in the region.





HANDBOOK :



APPENDIX :



## PHOTOS CREDITS

*Triturus cristatus*, p. 5, p.8 © Pieter Jan Alles  
Pikhakendonk, cover 2, p.8, back cover © Wim Dirckx

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