



**ECOSYSTEMS**  
**IN AN URBANISING WORLD**  
*challenges and opportunities for symbiosis*

**Join the conversation! 26 August 2018 at the World Water Week in Stockholm**

SESSION 1 | 11.00-12.30

*Working with nature to restructure urban fabrics: **local solutions***

SESSION 2 | 14.00-15.30

*Aiming for green cities: **planning and governance***

SESSION 3 | 16.00-17.30

*Sofa discussion: **envisioning the road ahead***



# ECOSYSTEMS IN AN URBANISING WORLD

*Session 1: Local solutions to rebuild the urban fabric*

chaired by Guillermo Donoso and moderated by Cléo Lossouarn

**26 August 2018 11.00-12.30, Stockholm City Conference Centre (NL Pillar Hall)**

**Key Note**

Yolanda

Kakabadse

Advisory Council

**Pitches on Nature-Based Solutions across the World**

Christina Wikberger, City of Stockholm • Rewad Ashour, OBAID Integrated Solutions • Loan Diep, University College London • Deepthi Wickramasinghe, University of Colombo • Dave Murray, Canadian Water Resources Association



An aerial photograph of a village built on a hillside. A suspension bridge crosses a river in the foreground. The houses are built on the slope, and there is a road running along the top of the hill. The text 'Key Note: Yolanda Kakabadse' and 'Advisory Council WWF LAC' is overlaid on the image.

# Key Note: Yolanda Kakabadse

## Advisory Council WWF LAC

**Seminar 9: Ecosystems in an Urbanising World**  
**Stockholm World Water Week 2018**

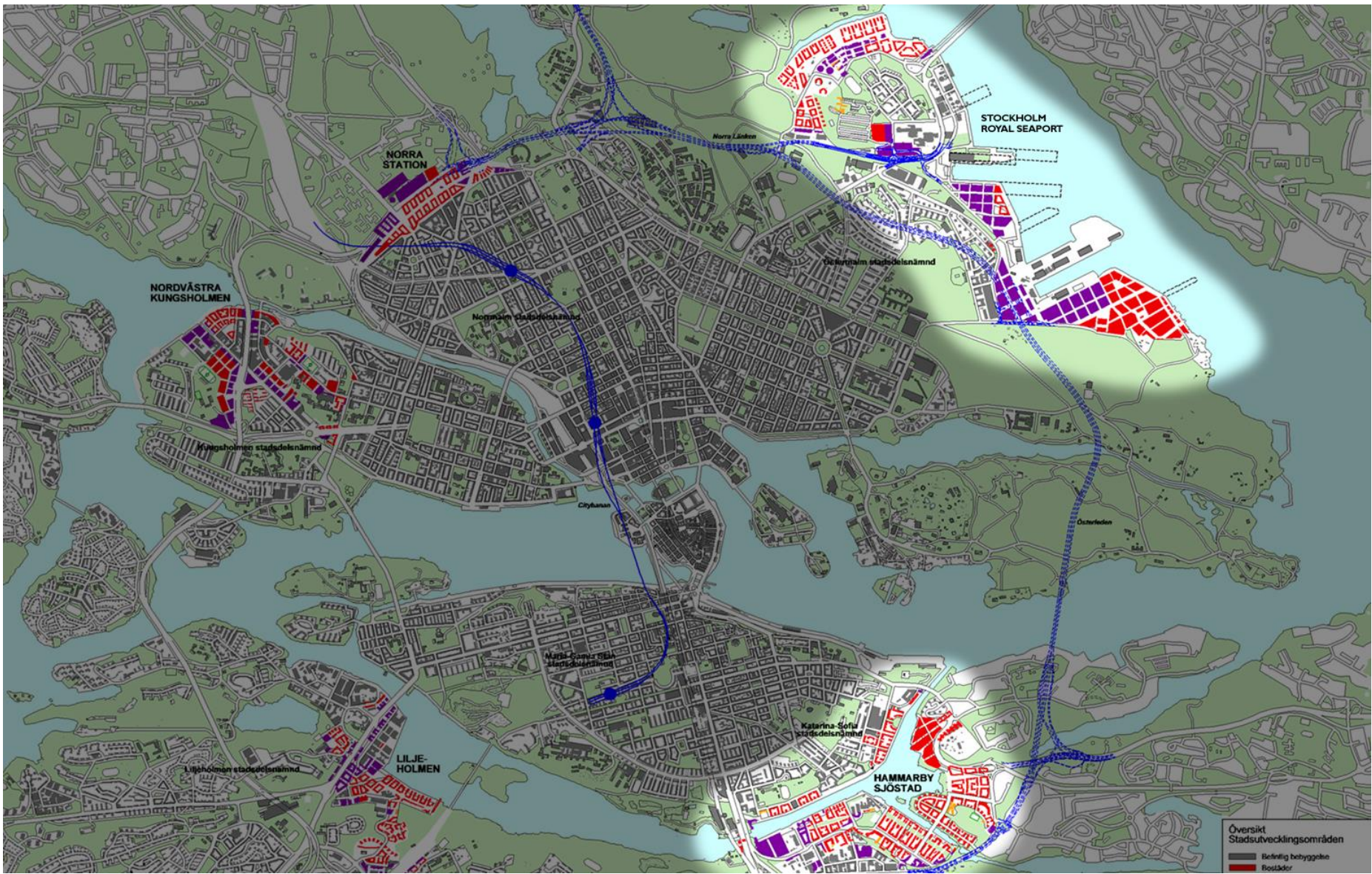
# Let nature do the work!



Stockholm International Water Week 2018

26 augusti 2018

Christina Wikberger, City of Stockholm



Stockholms  
stad



# 2010

Gasworks area

Container terminal

Port

Oil depot

# 2030

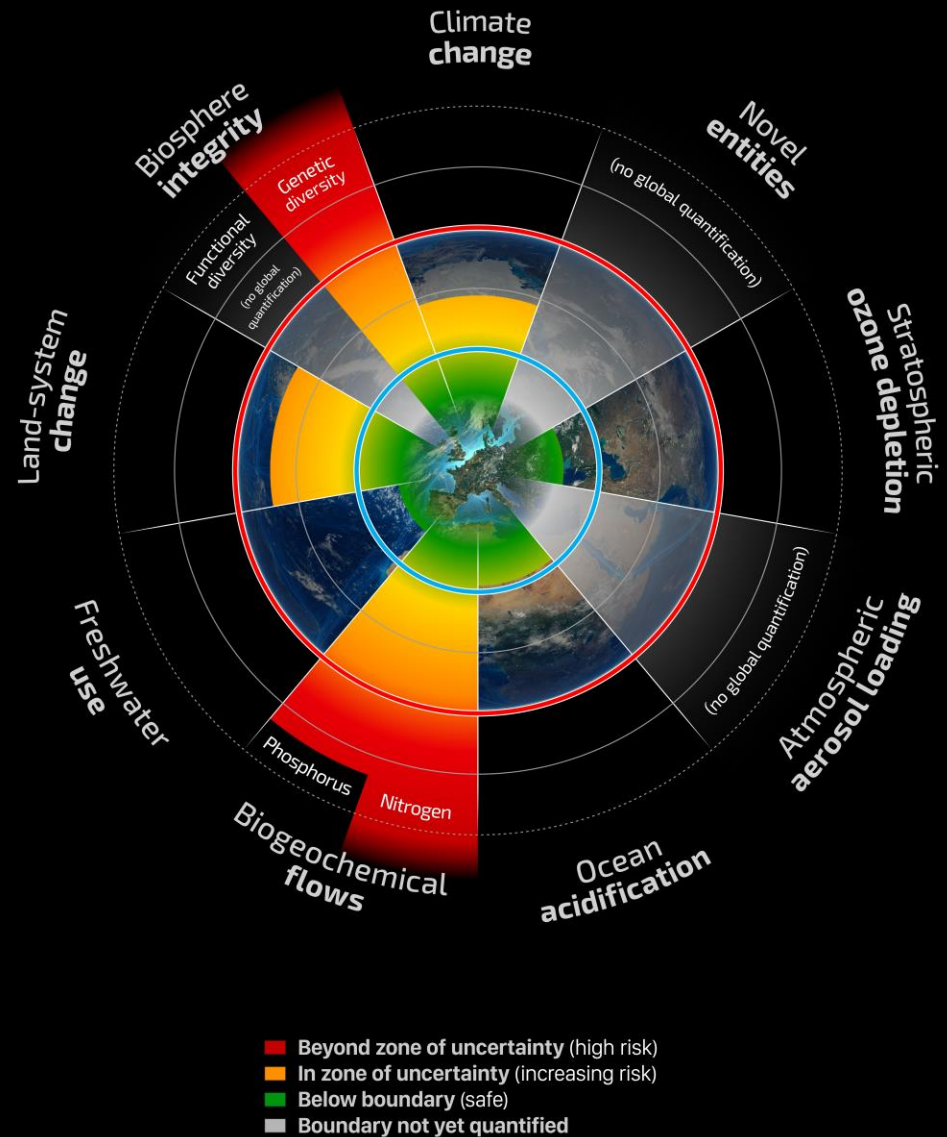
- 236 hectares urban sustainable district
- 12,000 new homes
- 35,000 new work places
- 600,000 m<sup>2</sup> commercial space
- Modern port and cruise terminal
- Walking distance to city centre

# City and nature

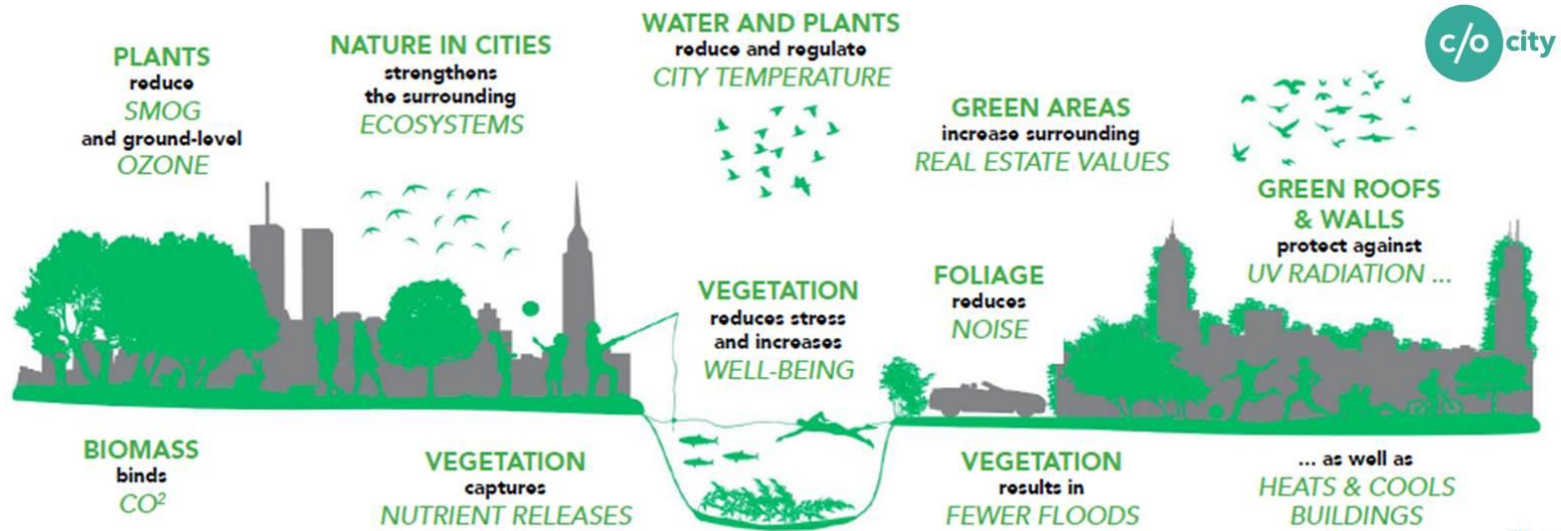
- Urbanization
- Climate changes
- Degraded ecosystems

## Planetary Boundaries

A safe operating space for humanity



# Urban ecosystem services



(Illustration: C/O City)





**Passive decoration → Active component**

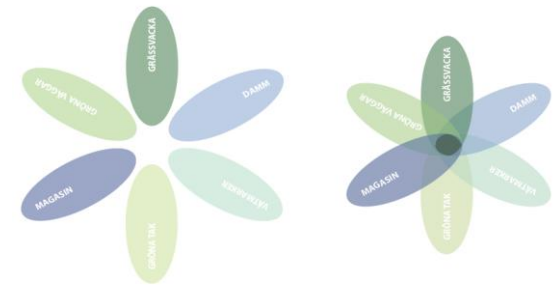


**Stockholms  
stad**

# Royal Seaport target: A city district which is green and adapted to climate changes

## Let nature do the work!

- Stormwater as a resource
- Strengthen the ecosystem
- Green Space Factor





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**UCL**  
Centre for

Urban Sustainability  
& Resilience



**UCL**

# Green Infrastructure in Dense Cities

Loan DIEP  
University College London (UCL)

26<sup>th</sup> August 2018



*Source: Skyscraper City*

# Green infrastructure for informal settlements?

- Gaps in knowledge
- Density
- Informality and services

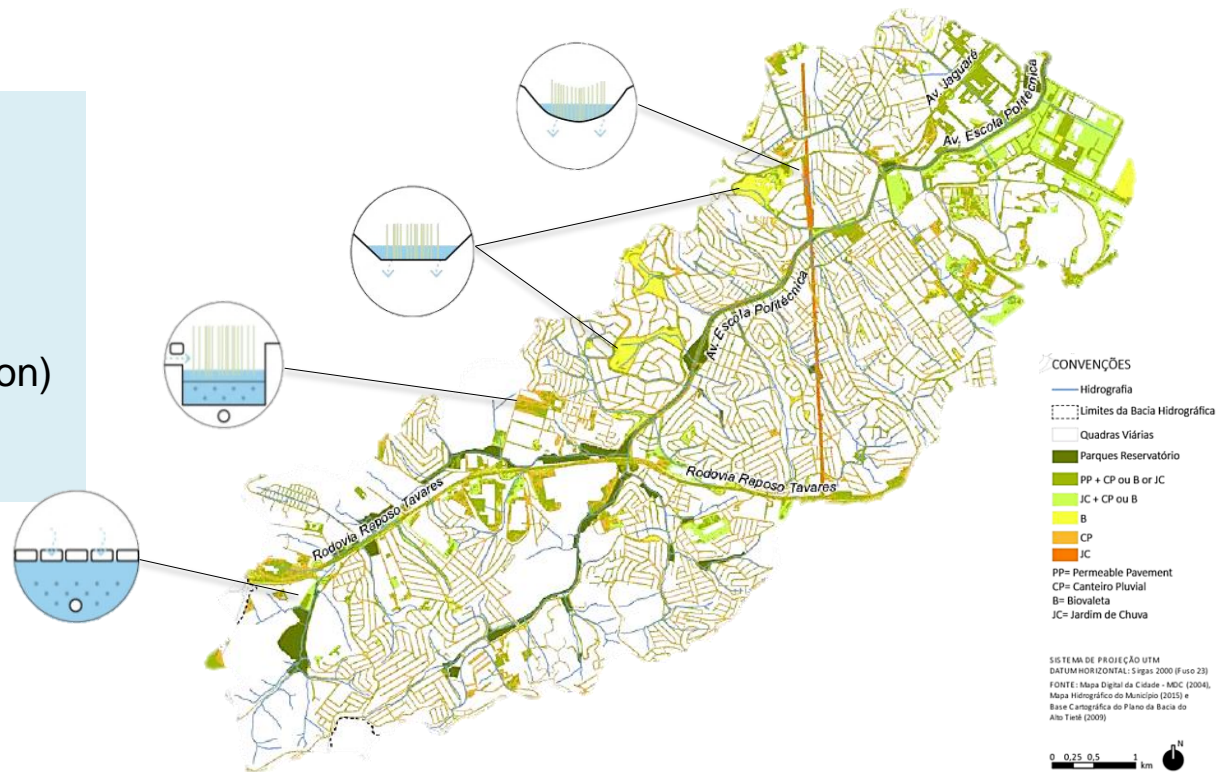


(Source: FGV)

# São Paulo: Designing with the terrain

## ‘Slum networking’

- Rain gardens
- Bio-swales
- Permeable pavements
- Ponds (retention, detention)
- Etc.

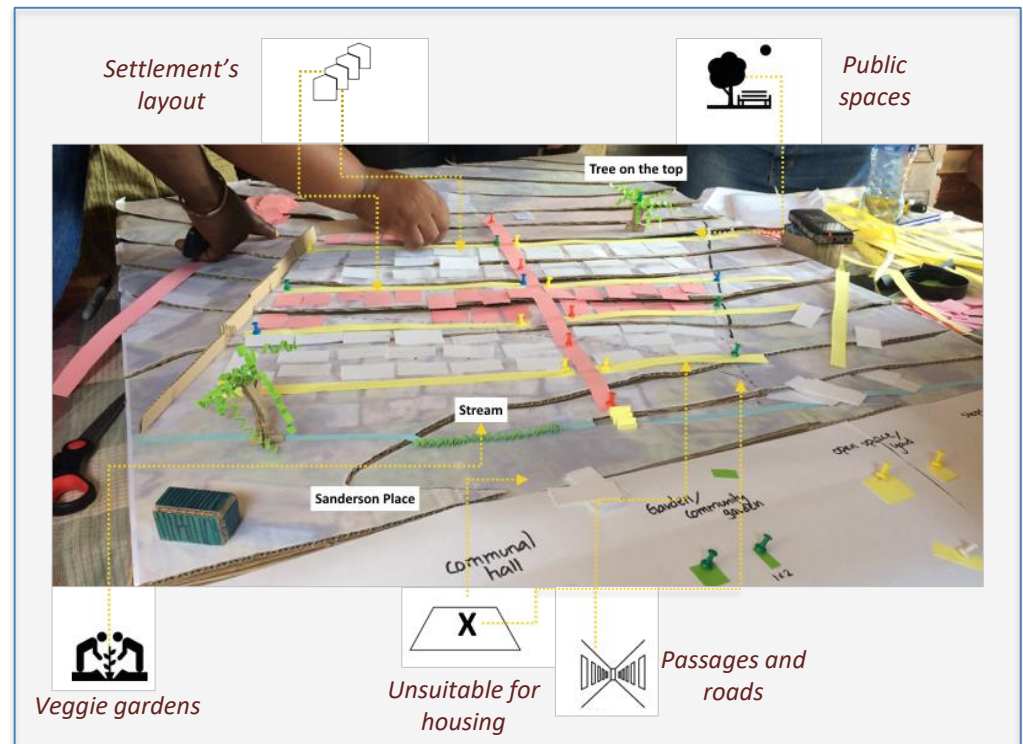


Adapted from *Águas Claras*, 2017

# Durban: Searching for livelihood opportunities

**What closed-loop environmental systems?**

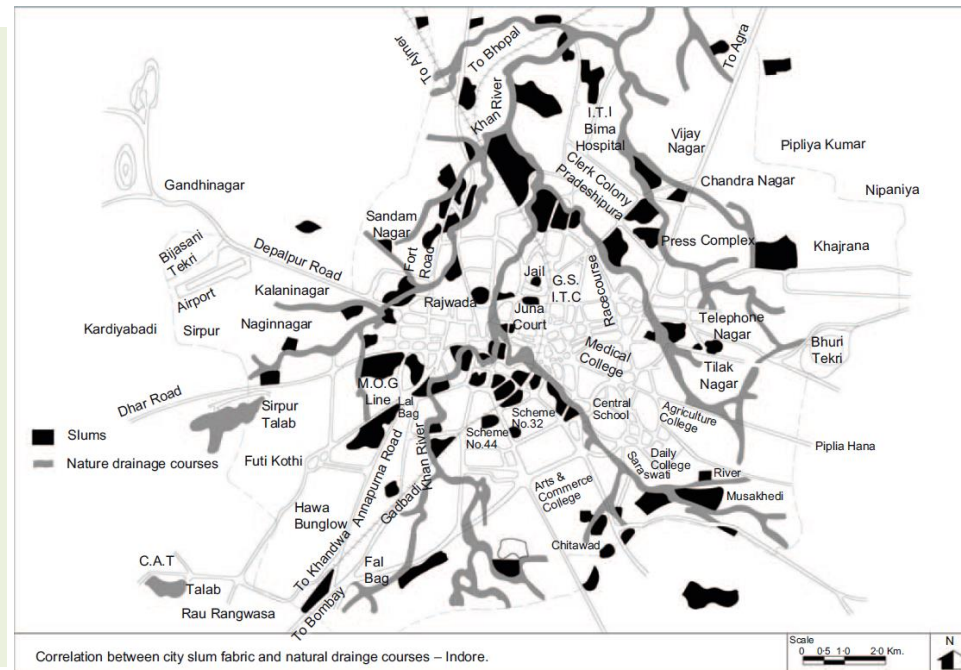
Urban farming and wastewater treatment



# Take away points

1. **What:** Multifunctional spaces for environmental conservation and services
2. **Goal:** Spatial integration
3. **Tools:** Mapping and participatory exercises

“Treating the city slums as an urban net”



(Source: Parikh et al., 2012)





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# Floods find their own path:

A case study from Kelani river basin,  
Sri Lanka

Deepthi Wickramasinghe,

Lasantha Manawadu and

Damithri Chathumini

University of Colombo, Sri Lanka



Going against nature brings serious consequences.

Destroying habitats, invading ecosystems and altering natural balance could superficially be beneficial and rewarding.

**But at what cost?**

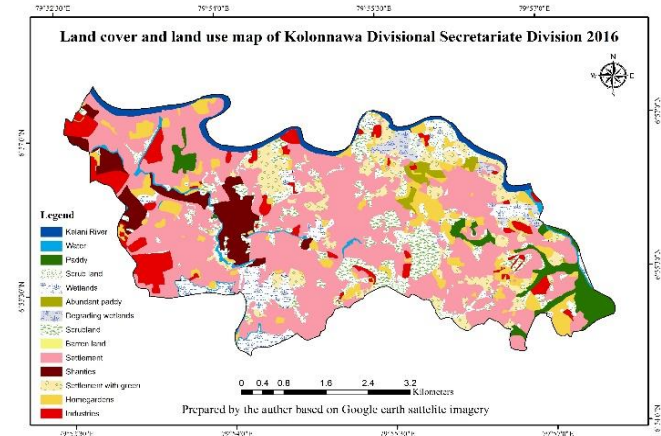
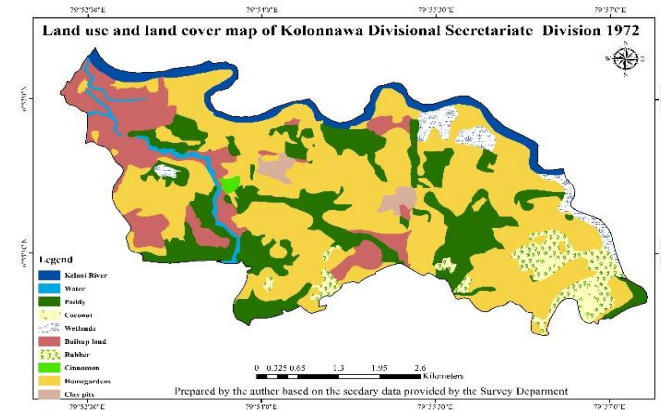


## Area of the present study:

- Rapid increase in urban population, expanding city
- Heavily altered and encroached wetlands, marshes and bare lands losing 50 % on natural landscapes in the last 4 decades

## Results ????

When the river flooded, water has flown to all the areas where wetlands were once existed and at present under built up landscape



# Looking back and thinking ahead .....

Risks of filling up, encroaching and building over wetlands in the low elevation areas.

Benefits of maintaining healthy wetlands which can be readily included in developmental plans to enhance urban resilience to flood disasters.

## Message:

Integration of wetland management in urban landscape planning to enhance natural defenses against flood disasters.





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KERR WOOD LEIDAL  
consulting engineers



CWRA ACRH

Canadian  
Water  
Resources  
Association

Association  
Canadienne  
des Ressources  
Hydriques

# Urban Creek Restoration in Canada

If you don't monitor you may  
not learn from your mistakes!

Dave Murray, P.Eng.

World Water Week 2018

# Why do Urban Restoration?

24

Restores the water cycle back to a natural balance while improving the city's amenities by effectively managing water and promoting green infrastructure

Colin Thorne, University of Nottingham

Engineering and Physical Sciences Research Council (EPSRC),

- ❖ Protects the hydrological and ecological values of the urban landscape
- ❖ Provides resilient and adaptive measures to deal with floods



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**CWRA** **ACRH**

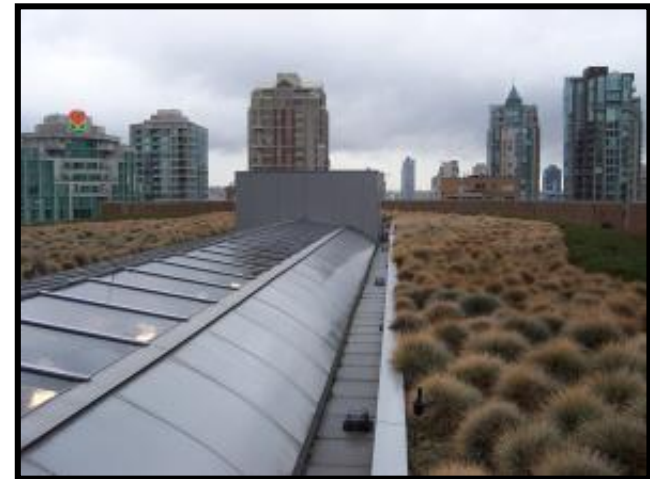
Canadian  
Water  
Resources  
Association

Association  
Canadienne  
des Ressources  
Hydrauliques



# Benefits of Ecosystem Services

- ↓ Reduced Energy Use
- ↑ Reduced CO<sub>2</sub>
- ↑ Improved Air Quality
- ↑ Increased Property Value
- ↑ Improved Flood Reduction
- ↑ Improved Recreation
- ↑ Improved Water Quality



# Benefits of Urban Stream Restoration

**Ecology**

**Economics**

**Hydraulics**

**Social**

**Community**

**Climate  
Adaptation**

Carbon Reduction

**Regulatory**



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Hydriques

# The Importance of Monitoring



Why did we die?



If plants could only talk!

## City of Calgary Riparian Monitoring Program

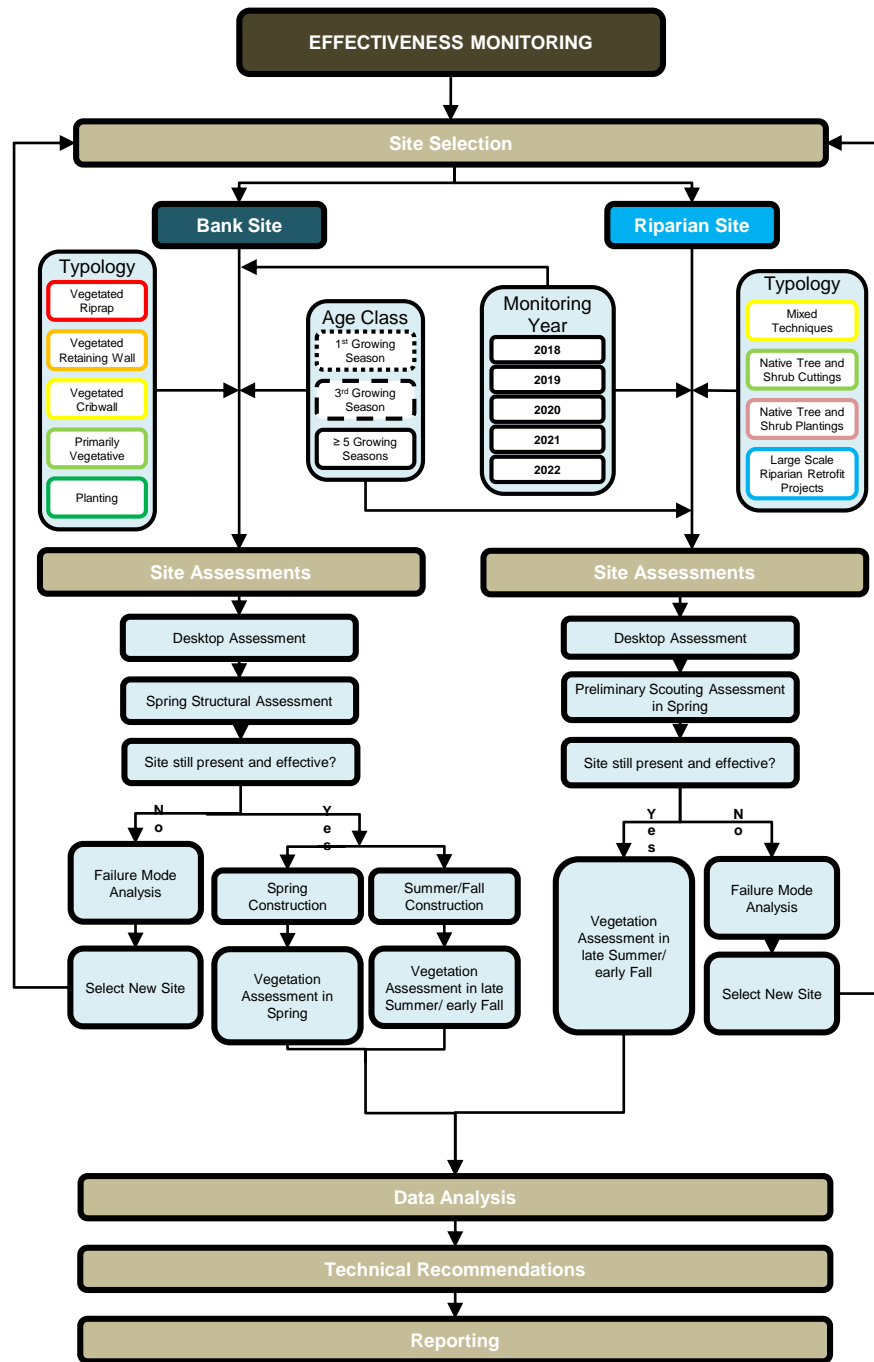
5 year Monitoring Plan for 200 sites  
Scientifically rigorous



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**CWRA** **ACRH**  
Canadian Water Resources Association  
Association Canadienne des Ressources Hydrauliques



# Daylighting Thain Creek, 2000



City of North Vancouver



ASSOCIATION OF CONSULTING  
ENGINEERING COMPANIES  
BRITISH COLUMBIA



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consulting engineers

# Bowker Creek Restoration 2015

DISTRICT OF  
**OAK BAY**



**Bowker  
Creek**

URBAN  
WATERSHED  
RENEWAL  
INITIATIVE



Making a difference...together



Greater  
**VICTORIA**  
School District

**Jody Watson, CRD**  
**Craig Sutherland, KWL**  
**Scott Murdoch, MDI**

Infrastructure Canada  
Gas Tax Fund



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**MURDOCH  
DE GREEFF** INC  
Landscape Architects



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# *between challenges and solutions PALESTINE*

**Rewad J .Ashour OBAID**

Urban and ecosystem development: Hand in hand







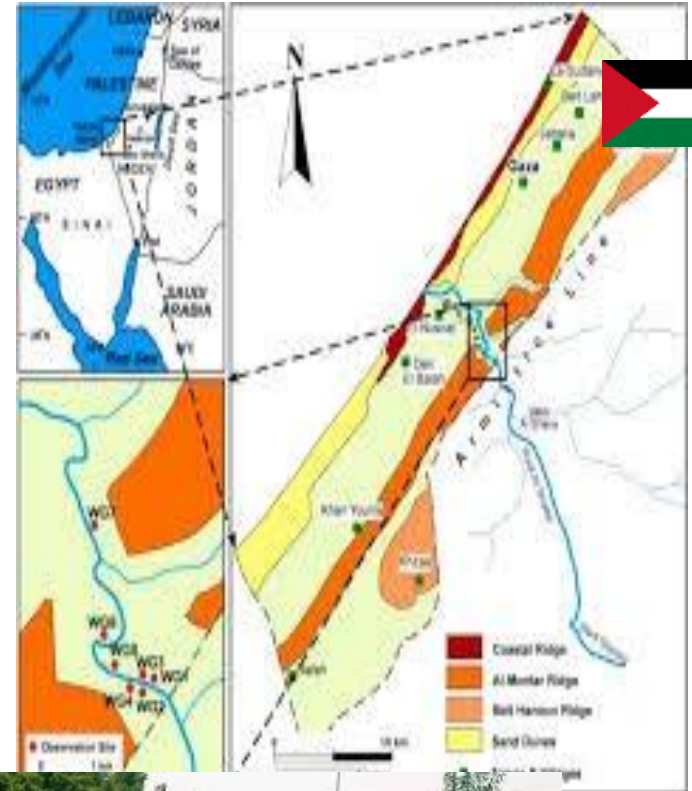
- **Total population** more than 2 Million capita (75% of populations are Palestinian Refugees ) live in a **Total Area** ( 360 km<sup>2</sup> ) **Political situation** (low infra structure -4 hrs. electricity on , crisis area, poverty , blockade, Israeli Occupation control ) **Urbanization** : high growth rate percentage (3,44%)

- **Natural resources and ECO-SYSTEM** :  
are **ENDAGARD** (wild-life , bio-diversity , marine life )



## Analysis and results:

- More than 150 terrestrial species are in Wadi Gaza affected by climatic changes.
- There is diversity of flora with 70 species including crop wild-relatives, barley, parsley, *Salvia* sp, peppermint and sweet basil.
- Ecosystem and biodiversity is suffering and high changed and loss of habitat due to urban development, pollution, increasing of water salinity and using of pesticides.
- About 50 % of Gaza's beaches are polluted due pumping untreated sewage into the sea because of Electricity Shortages





- Regulations :
- Urban planning :
- Political agreements :

*adapted solutions*

- *to secure the ecosystem in Gaza Strip and helps decision makers*
- *Removing illegal wells to remain the water level reducing the salinity, recharge storm water into ground,*
- *Increasing awareness application of land-use policies. crop production systems management.*



An aerial photograph of a village built on a hillside. A suspension bridge crosses a river in the foreground. The houses are densely packed, with some having corrugated metal roofs. The river is surrounded by lush green vegetation. The text 'Roundtable discussion chaired by presenters' is overlaid in white on the image.

# Roundtable discussion chaired by presenters

## Seminar 9: Ecosystems in an Urbanising World Stockholm World Water Week 2018



# Roundtable discussion

Roundtable with Christina Wikberger - *What are key factors of success in applying Nature-Based Solutions in Stockholm Royal Seaport?*

Roundtable with Basheer Obaid - *What are key factors of success in applying Nature-Based Solutions in the Gaza strip?*

Roundtable with Loan Diep - *What are key factors of success in applying Nature-Based Solutions in dense cities of the global south?*

Roundtable with Deepthi Wickramasinghe - *What are key factors of success in applying Nature-Based Solutions in Kelani?*

Roundtable with Dave Murray - *What are key factors of success in Urban Creek Restoration in Canada?*

Others roundtables - *What are key factors of success in applying Nature-Based Solutions in localities across the world?*

An aerial photograph of a village built on a hillside. A suspension bridge crosses a river in the foreground. The houses are built on the slope, and there is a road on the bridge. The river is surrounded by lush green vegetation.

# Feedback from roundtables

## Seminar 9: Ecosystems in an Urbanising World Stockholm World Water Week 2018

An aerial photograph of a village built on a hillside. A suspension bridge crosses a river in the foreground. The houses have various roof colors, including brown, grey, and red. The river is surrounded by lush green vegetation. The text "Concluding remarks" is overlaid in white on the image.

# Concluding remarks

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