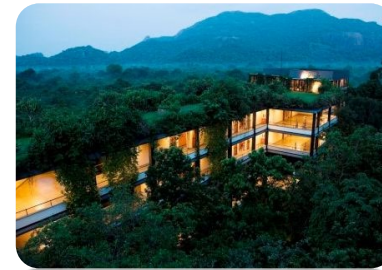


Towards better cities with water, nature, and YOU:

My learning moments during ten years of
rubbing shoulders with stakeholders



Assela Pathirana

Alumni online seminar 2019-Mar-12





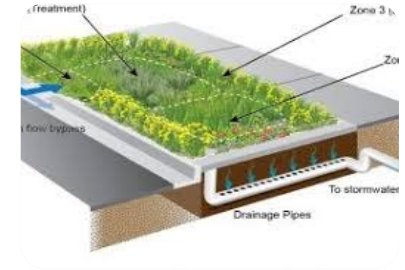
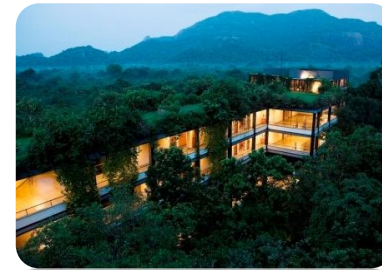
Contents

Stakeholder engagement in urban water cycle management:

- Why?
- How?
- What?

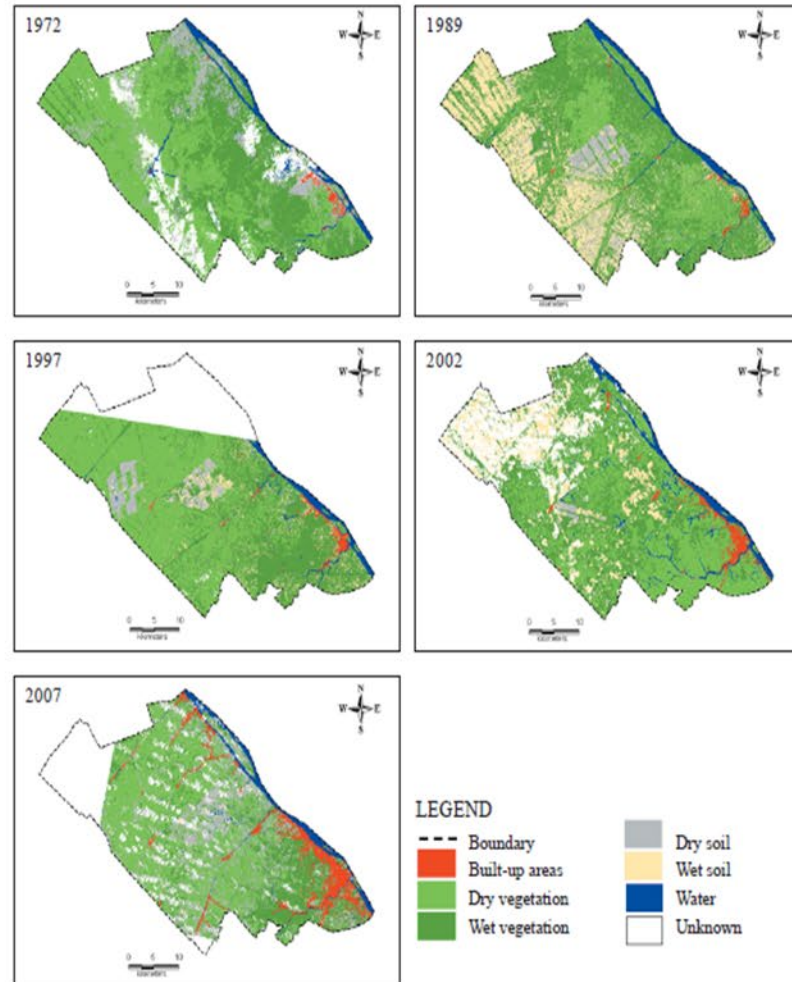


Why?

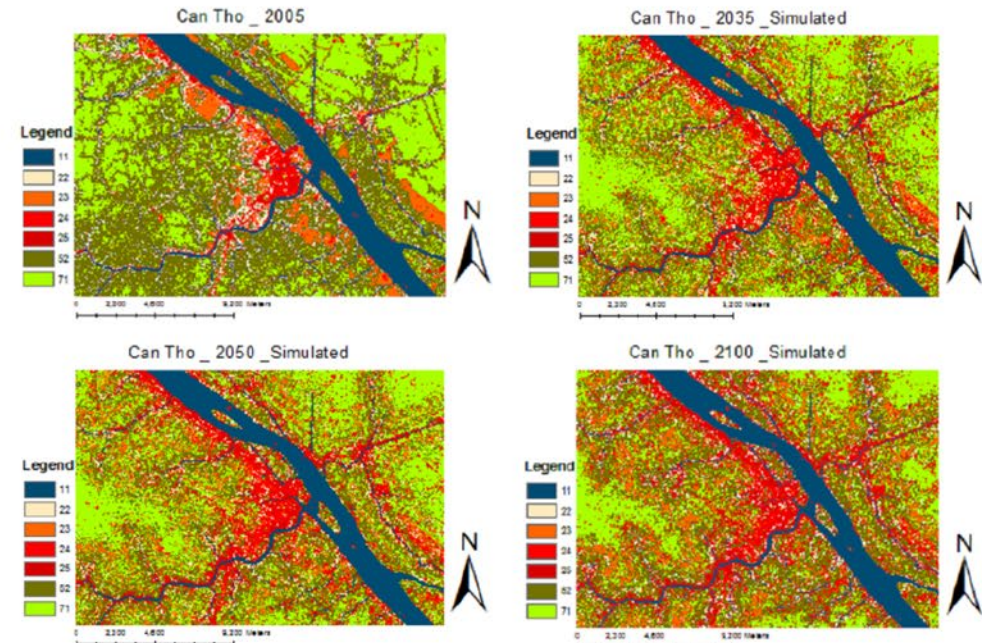


Asian cities are urbanizing fast

Can Tho – Vietnam



(Thy et al, 2010)



Red: Urban

(Huong & Pathirana, 2013)

Pressures on Can Tho





2009 October Floods: **Hoa Binh Avenue.**

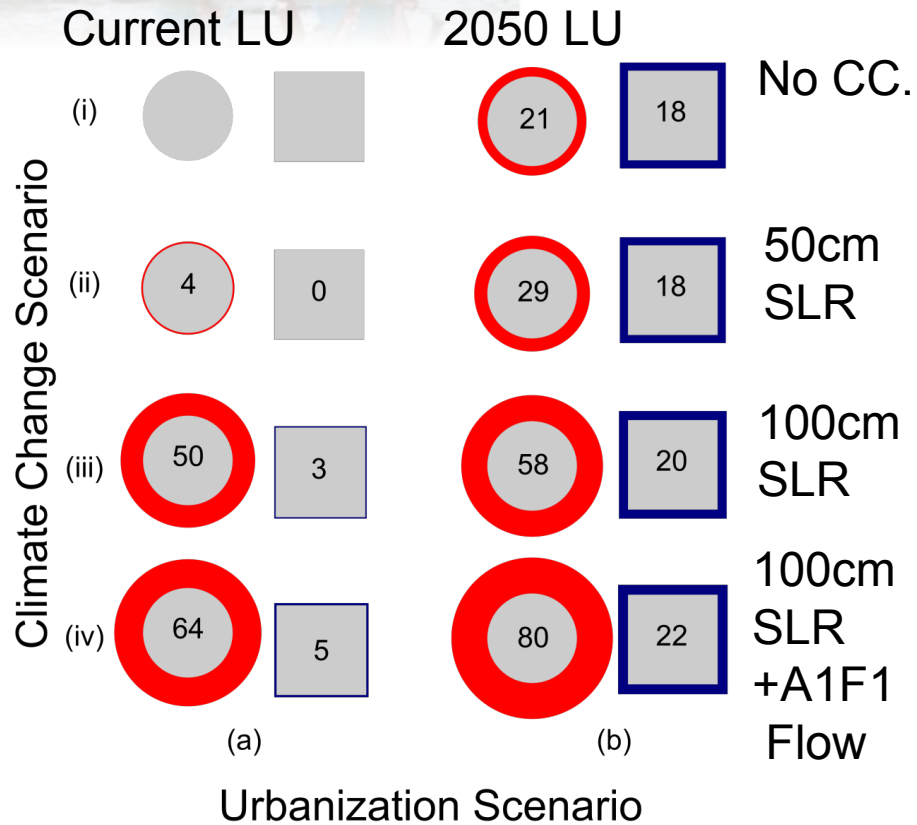


2009 October Floods: **Whole Ly TuTrong Street**



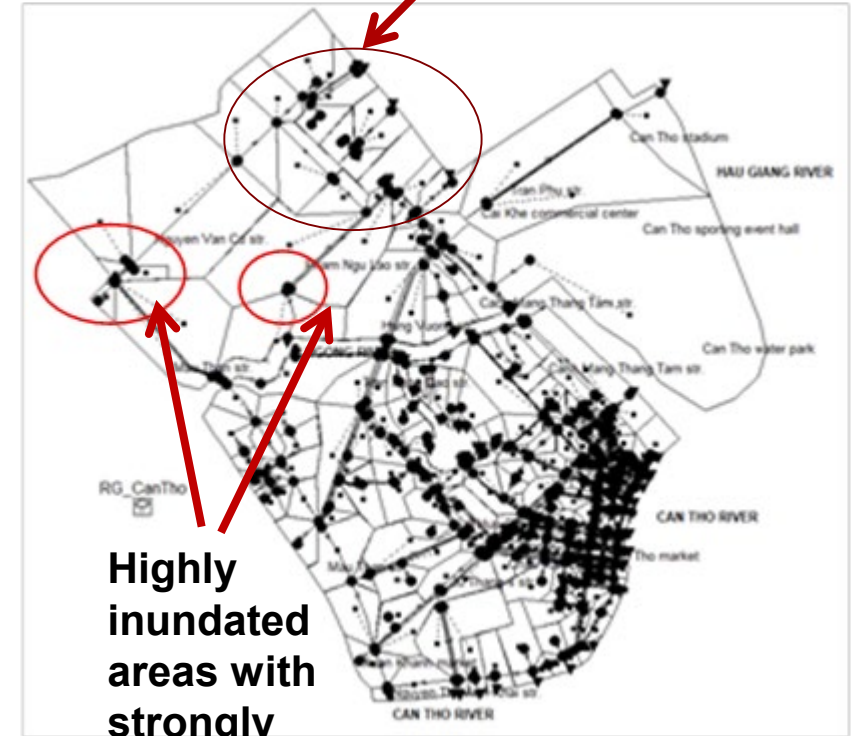
Can Tho: Future ?

Areas with strongly effected by rainfall



29 Maximum flood depth
 18 Flooded Area

Percentage increase compared to baseline (i-a) scenario



Highly inundated areas with strongly effected by river flow

Huong H, Pathirana A. Urbanization and climate change impacts on future urban flooding in Can Tho city, Vietnam. Hydrology and Earth System Sciences. 2013;17(1):379-94.



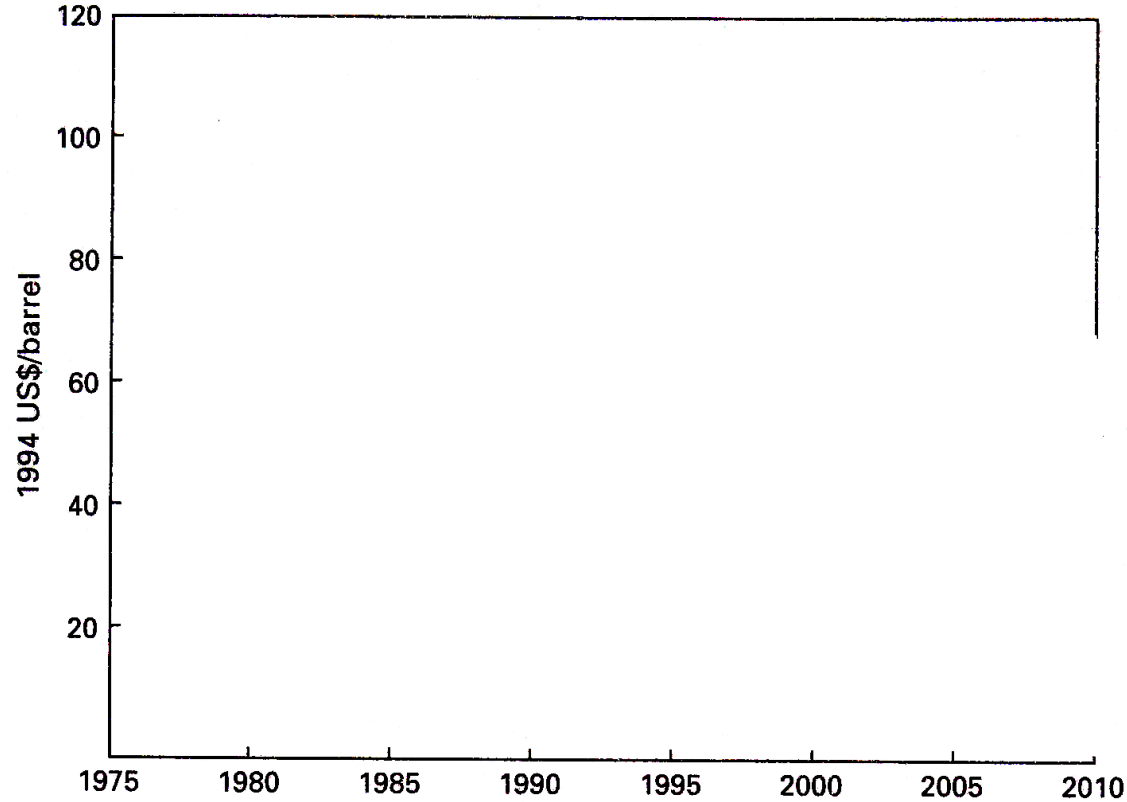
How certain are our
predictions?

Our attempts in predicting global oil prices.

De Neufville R, Scholtes S. Flexibility in engineering design. MIT Press; 2011.



Our prediction record...



... is!



What we know & don't know?

- Severely higher external forcing
 - virtually certain.
- The nature/magnitude of them
 - totally uncertain!!!

Urgent

+

Uncertain



Urgent + Uncertain: How to act?

- Ignore the future and focus on present ?
- Assume a non-existent predictability – traditional ‘concrete’ project plans ?

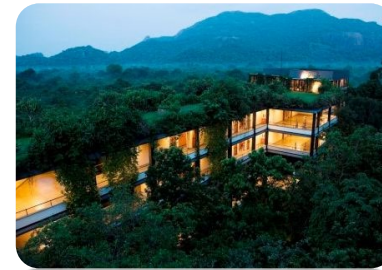
But, there's an alternative!

Milly PC, Betancourt J, Falkenmark M, Hirsch RM, Kundzewicz ZW, Lettenmaier DP, Stouffer RJ. Stationarity is dead: Whither water management?. *Science*. 2008 Feb 1;319(5863):573-4.

Pathirana A, Radhakrishnan M, Ashley R, Quan NH, Zevenbergen C. Managing urban water systems with significant adaptation deficits—unified framework for secondary cities: part I—conceptual ,framework *Climatic Change*. 2018 Jul 1;149(1): 43–56.

Proposition:

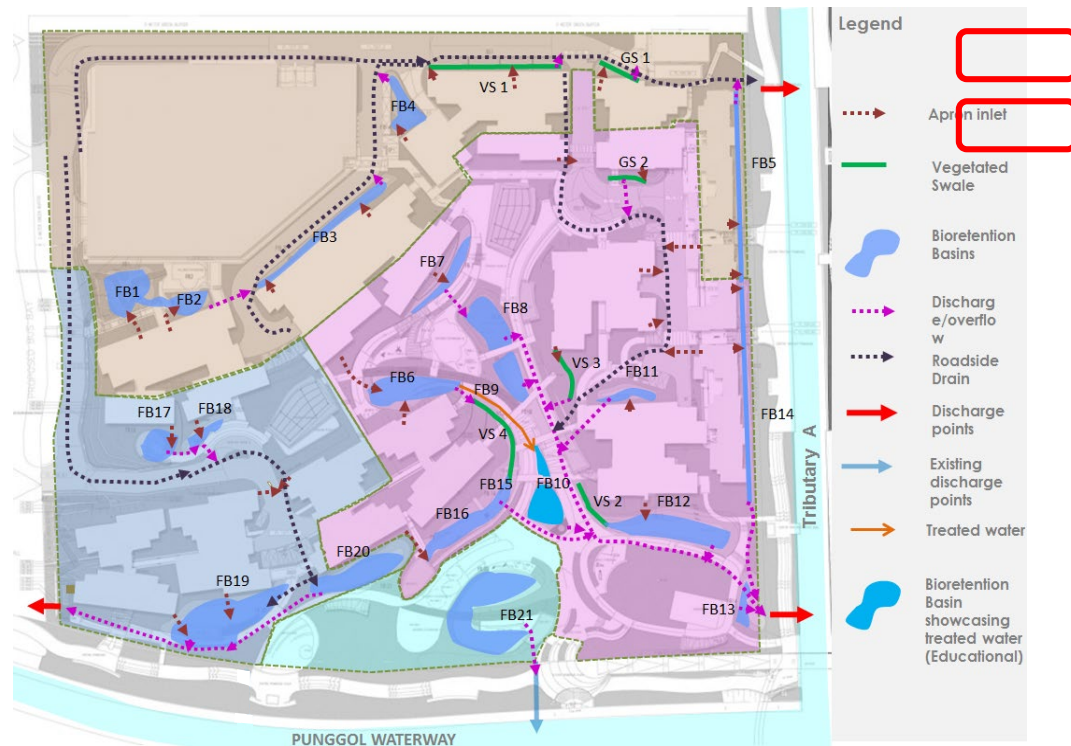
“Green” solutions are Suitable for urban adaptation under urgent/uncertain situations



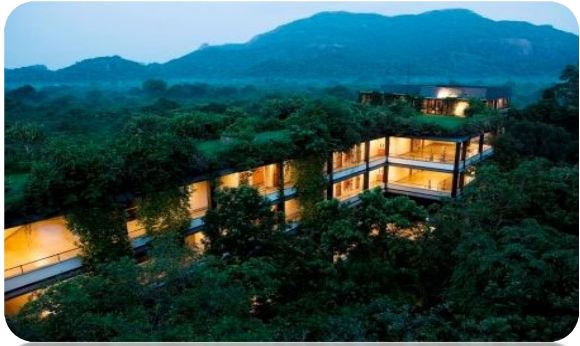


“Green” solutions (SuDS)

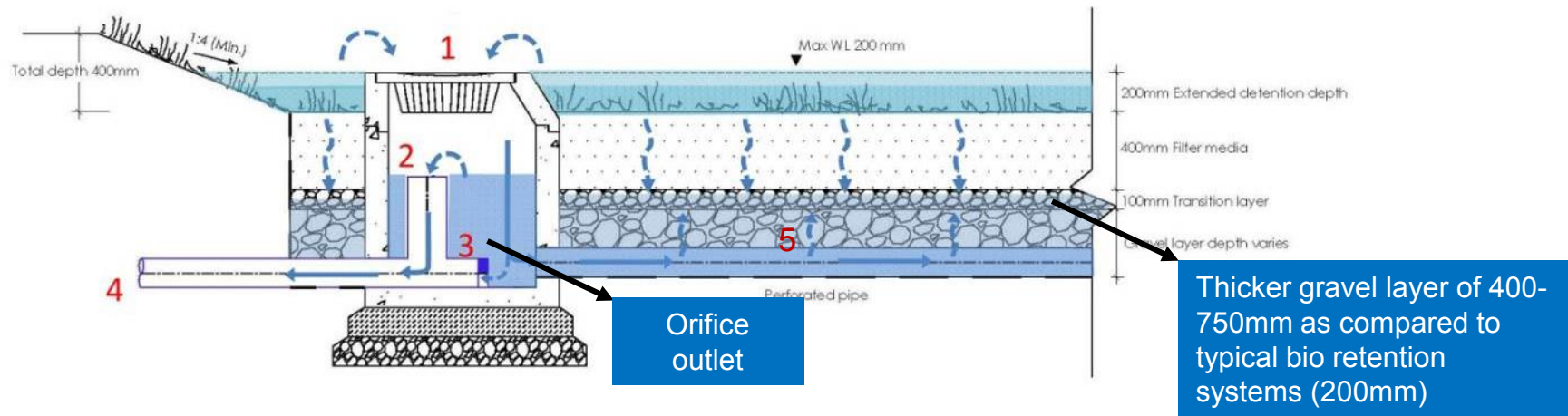
- Waterway Ridges (aka Punggol C39), Singapore



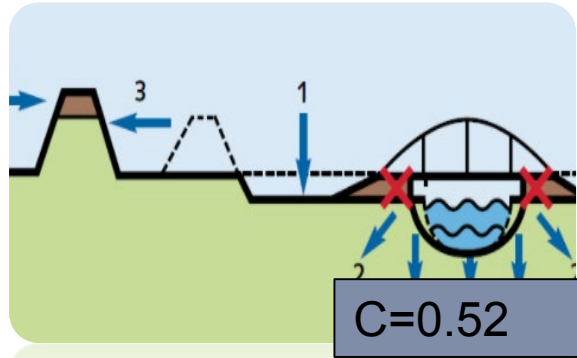
A Unique Rain Garden



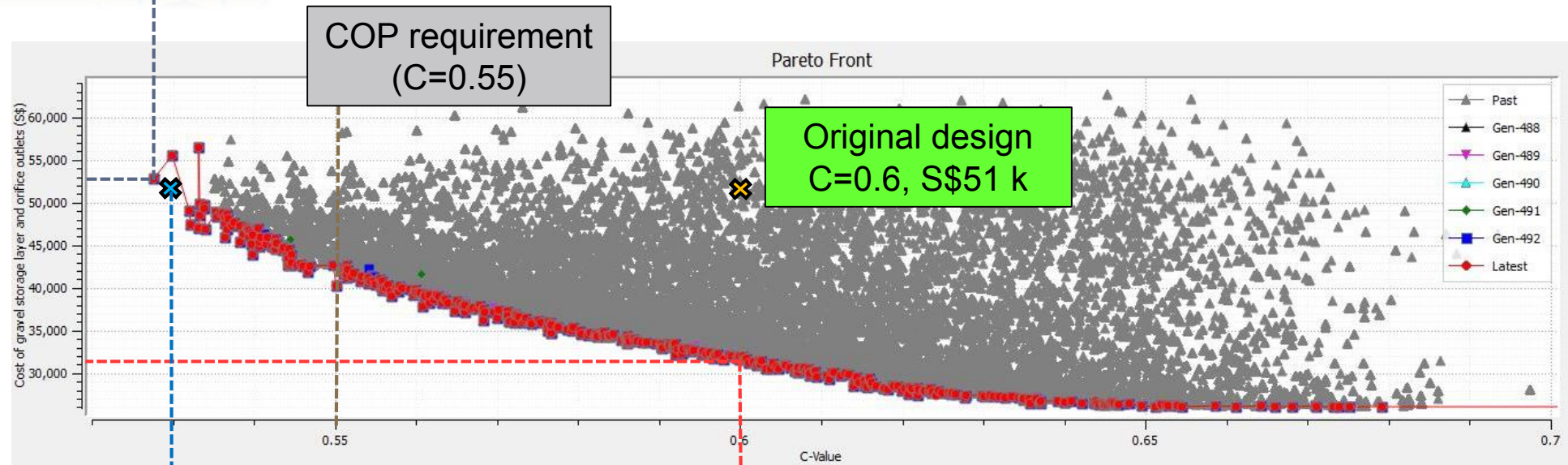
- Rain garden
- Thick gravel layer.



Typical cross section of bioretention basins at the site



Design improved with optimization



COP requirement (C=0.55)

Original design
C=0.6, S\$51 k

C=0.5298, S\$51k

Least cost result for C=0.6:
Cost = S\$31,980.09
Savings of S\$19,203.06
(37.5%)

Original precinct has low efficiency

Yau WK, Radhakrishnan M, Liong SY, Zevenbergen C, Pathirana A. Effectiveness of ABC Waters Design features for runoff quantity control in urban Singapore. *Water*. 2017 Aug 3;9(8):577.



Why SuDS are better for our adaptation problems?

A metaphor: Health

- Certainties: We die, get sick, face injuries
- (Deep) Uncertainty: Do we know the exact disease we will succumb to?
- So, when we are healthy should we take action specifically for either “myocardial infarction” or “diabetes mellitus”



A metaphor: Health

- Rather:
 - exercise
 - Diet

Why would we rather exercise (when young):

- Afraid of early death
- Because its fun and liberating

–Buy a general health/life insurance

SuDS Have multiple-values – Good for uncertainty!

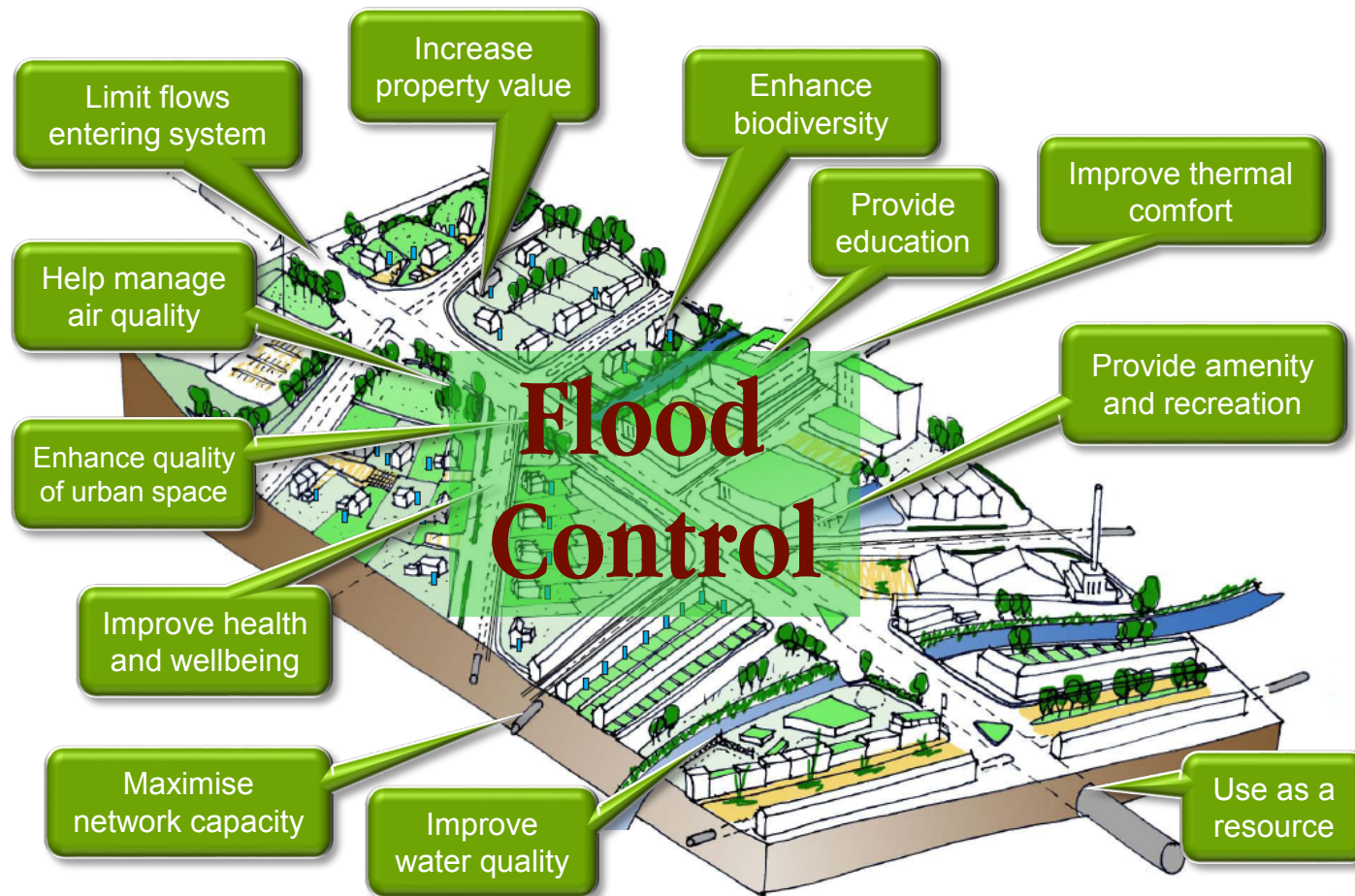
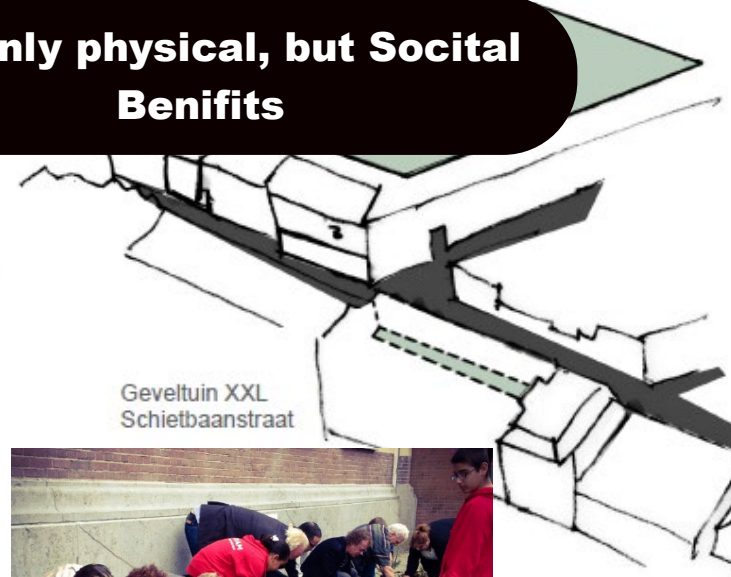


Image: Ciria, UK

Not only physical, but Social Benefits



AD 4 | Stad & Regio

De geveltuintjes zijn hot

Trend heeft louter positieve effecten, aldus expert

ROTTERDAM | Geveltuintjes, bloempotten en bankjes. Steeds meer Rotterdammers maken van hun eigen straat iets moois. En dat heeft enkel positieve effecten, constateren de schrijvers van het boek 'De Stoop'.

ANTTI LUUKKU
Zijn 4 jaar geleden begon Miranda Spek (57) erin; een eigen geveltuintje voor haar woning aan de Schiederskeddaan. Aangevuld met een houten bankje, dat met een stevige ketting is vastgelegd. Het struikgewas is inmiddels flink gegroeid. „Met als voordeel dat veel minder voorbijgangers naar binnen staren,” zegt ze.
Het moest in ze in haar ergnis met haar bankje. Ze heeft ook een achtertuin, maar op straat is het gezelliger. „Met een glaasje wijn en een boekje. Zelfs wisselende seizoenen. We maken er echt een feestje van.”

Het Liskwartier, waar Spek met haar gezin woont, geldt als het voorbeeld voor liefhebbers van deze groene trend. Geveltuintjes, goed gevulde bloempotten en een rijke afscherming aan banken en stoelen. Het is er allemaal in overvloed.

der Ham en Daniel Heussen een boek over het knusmen geschreven. Het is een ode aan *De Stoop* geworden - wat ook de titel van het boek is. Ze hebben met behulp van *Gezonde Maat* onderzocht hoe de buurt van Van Ulden. „Een straat met geveltuintjes is in alles prettiger: levendiger en minder anoniem. Ons boek is ook een aansporing om er bij nieuwe bouwprojecten rekening mee te houden.”

Uit het onderzoek blijkt dat het vooral 'onbedoelde voordelen' oplevert. „In straten met geveltuintjes is er meer contact tussen de bewoners. Ze kennen elkaar en knopen af en toe een praatje aan. Het is ongewoon contact. Je moet niet per se op de koffie bij elkaar.”

Burgerij
Het is de vraag waar de trend vandaan komt. Van Ulden refereert aan de 'oud-Hollandse stoep': het eigen stukje grond voor de huizen van de streekse burgerij. Maar ook in volkswijken was het normaal om voor de deur te zitten. Van Ulden: „Het zit in ons dna. En dat gecombineerd met de opleving van tuinieren en eigen groente kweken... Het is een manier om je te uiten.”
Daarbovenop is het extra groen goed voor het milieu, betoogt hij. „Maar goed, geveltuintjes zijn ook weer niet de redding van de wereld. Het is een kans om het leven op straat iets aangename te maken.”

Eric van Ulden

m pakt uit in Milaan

Het Nederlandse paviljoen op de Wereldtentoonstelling in Milaan



Recreation



Food Production





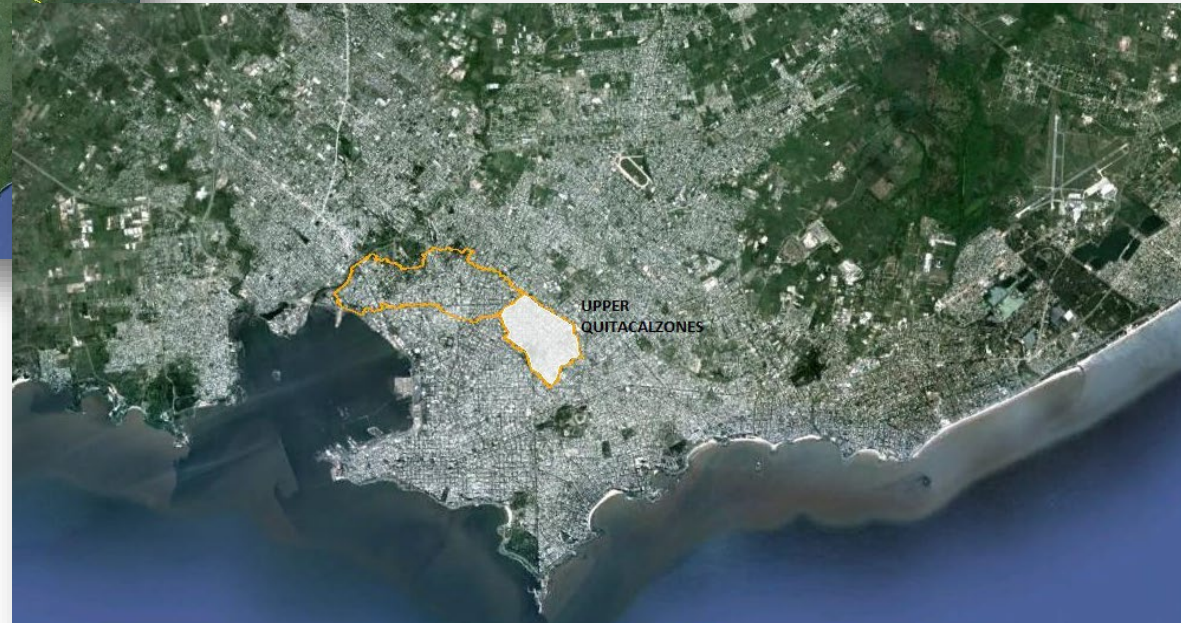
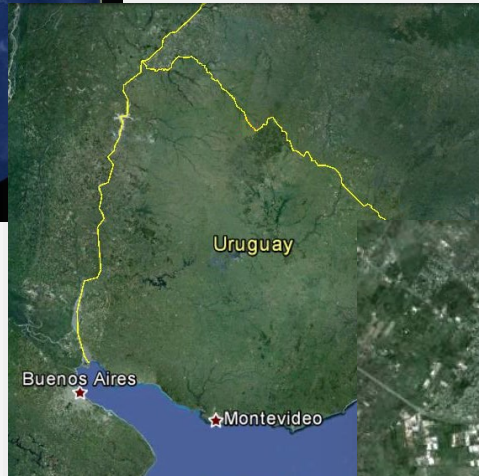
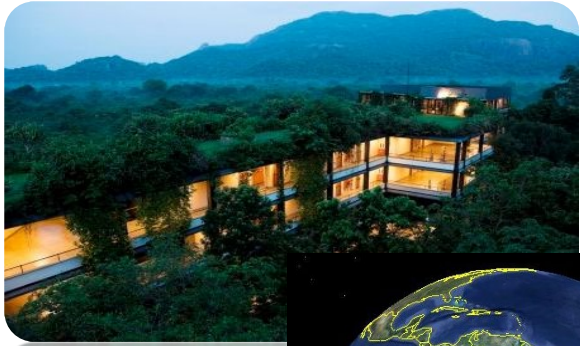
Community cohesion



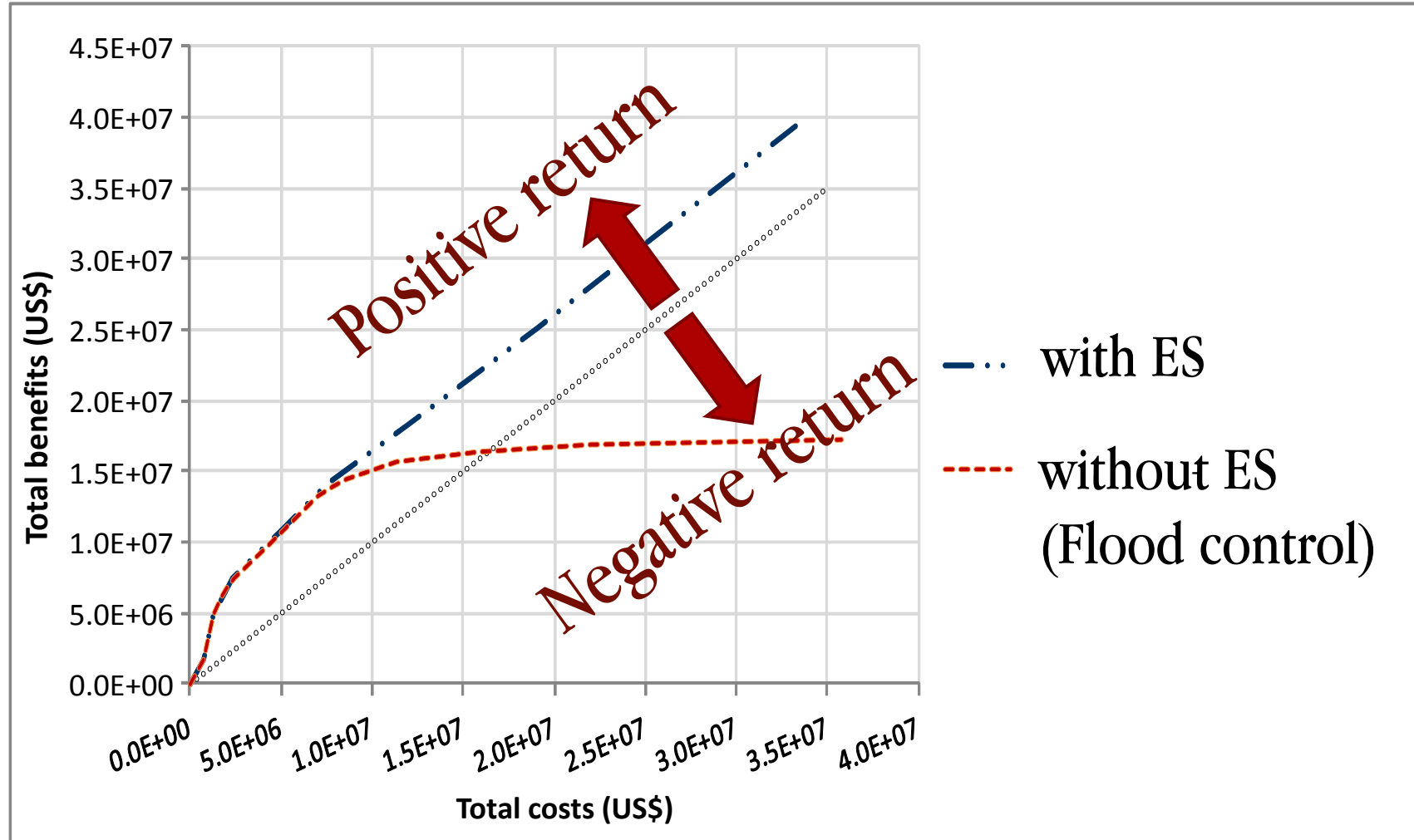


Project: Upper Quitacalzones catchment

Montevideo, Uruguay

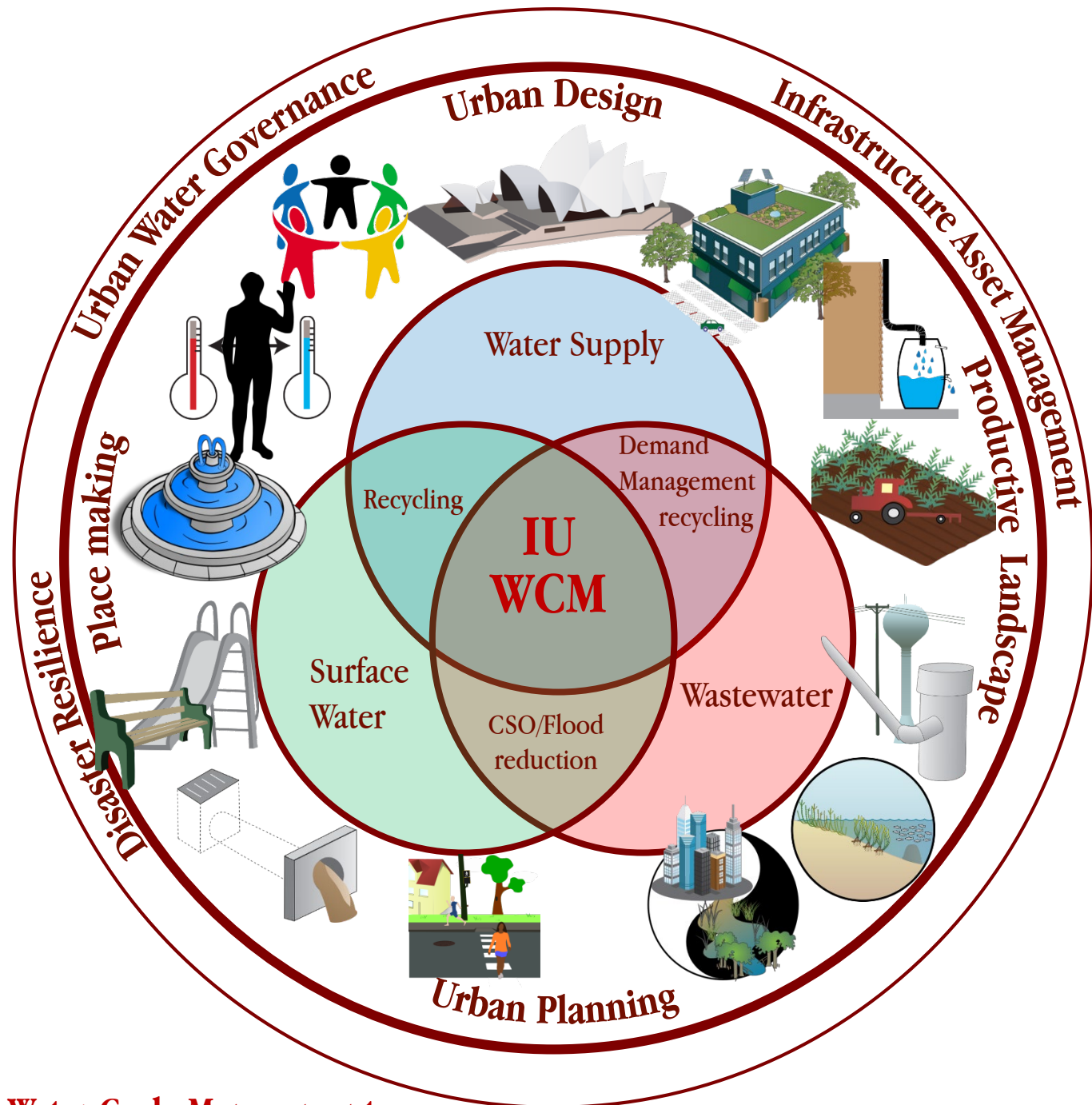


'Value' depends on how you look at it!





It's all
connected!



IUWCM – Integrated Urban Water Cycle Management

Why stakeholders?

multiple values are

intimately connected to them

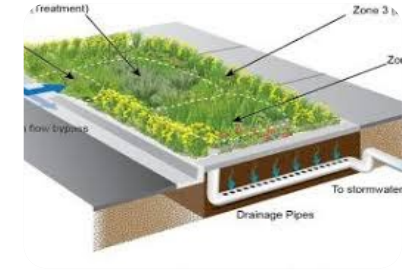




Four Requirements for sustainable urban adaptation

- Favour flexible, incremental, changeable, multi-value solutions
- Virtual-worlds, understood and accepted by all stakeholders
- Type I and II adaptations are equally important.
- All stakeholders working and learning together

What & How ?

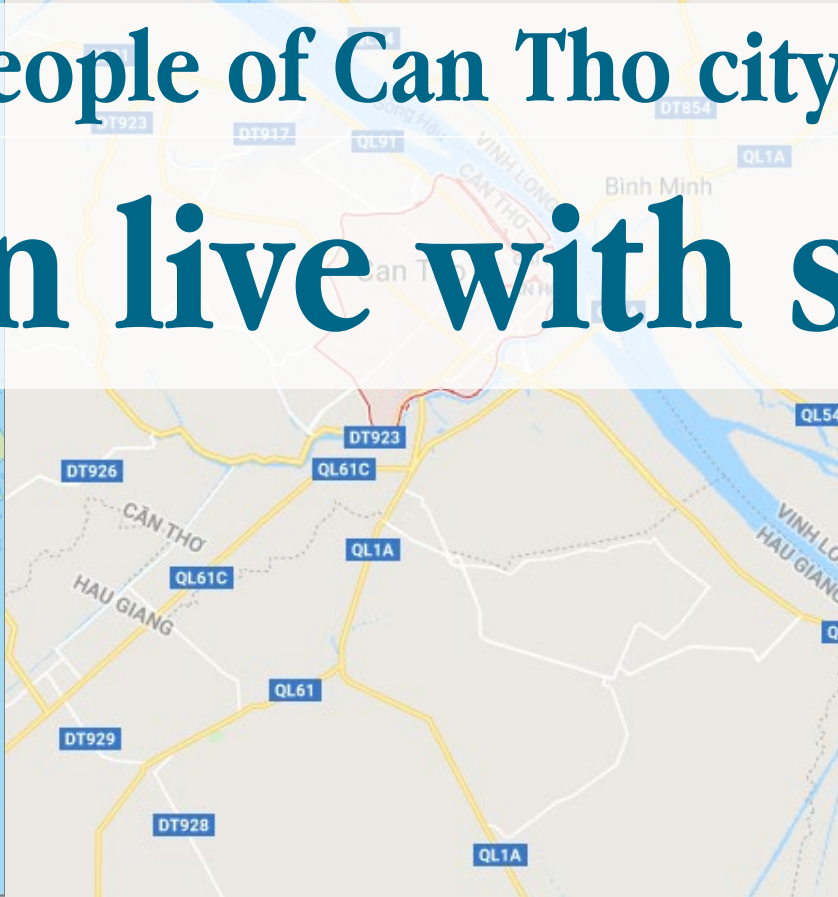
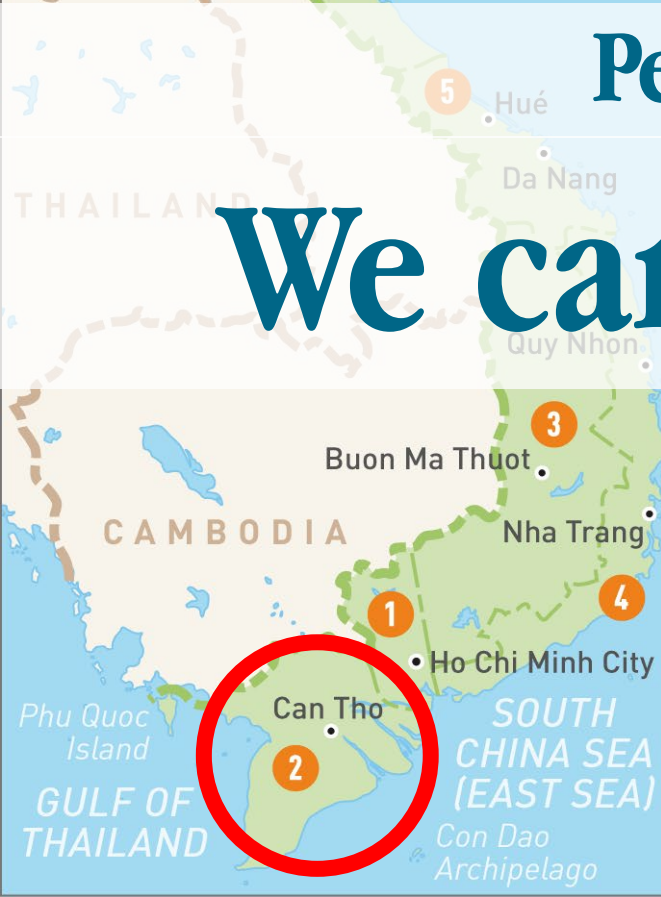




People of Can Tho city, Viet Nam :

(Images: vietnamnews.vn)

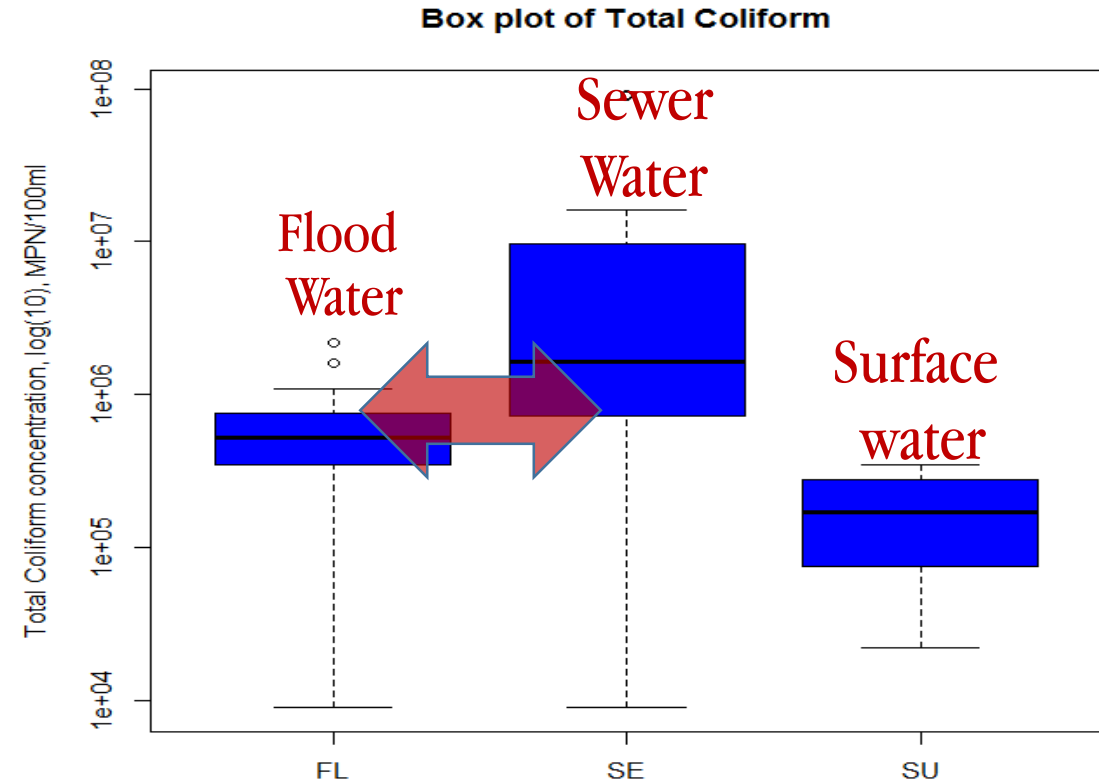
We can live with small floods



(Images: en.vietnamplus.vn)

Living with Water!!!!

OR Living with Sewage?



Note: SU: surface water, SE: Sewer water, FL: Flooded water

(source: Nguyen et al., 2017)

AND Be Surprised



A city in a Southern Europe



Q: When did you involve residents?

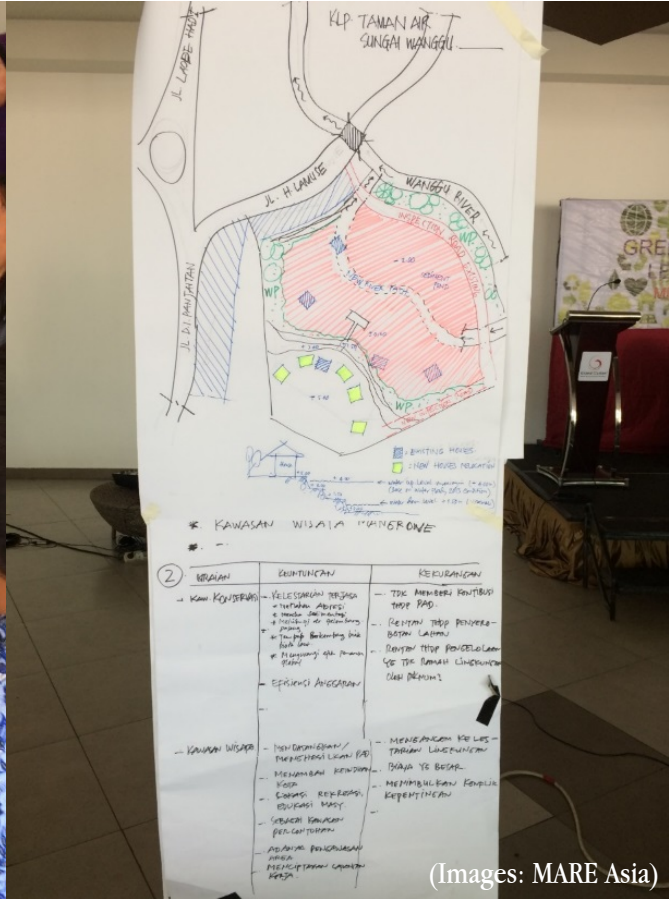
A:

“Ah... but it was designed by the famous architect!”



[People were not involved!]

Kendari City, Sulawesi, Indonesia



Co-learning/Co-design Workshops

Environmental activist

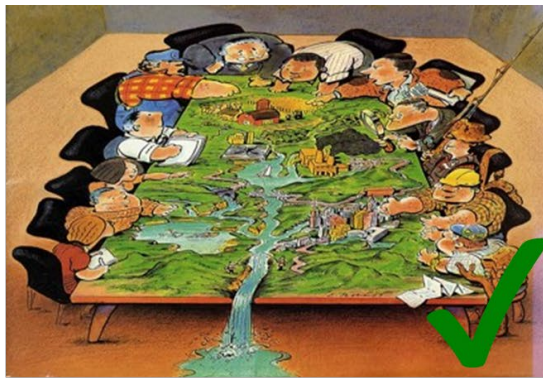
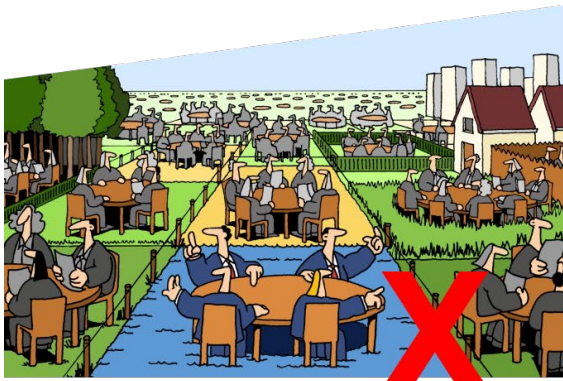
Environmental Activist

1) Government → Plans

2) I → Critique

“So, what should I do here”?





Co-learning needs
(un?) learning!

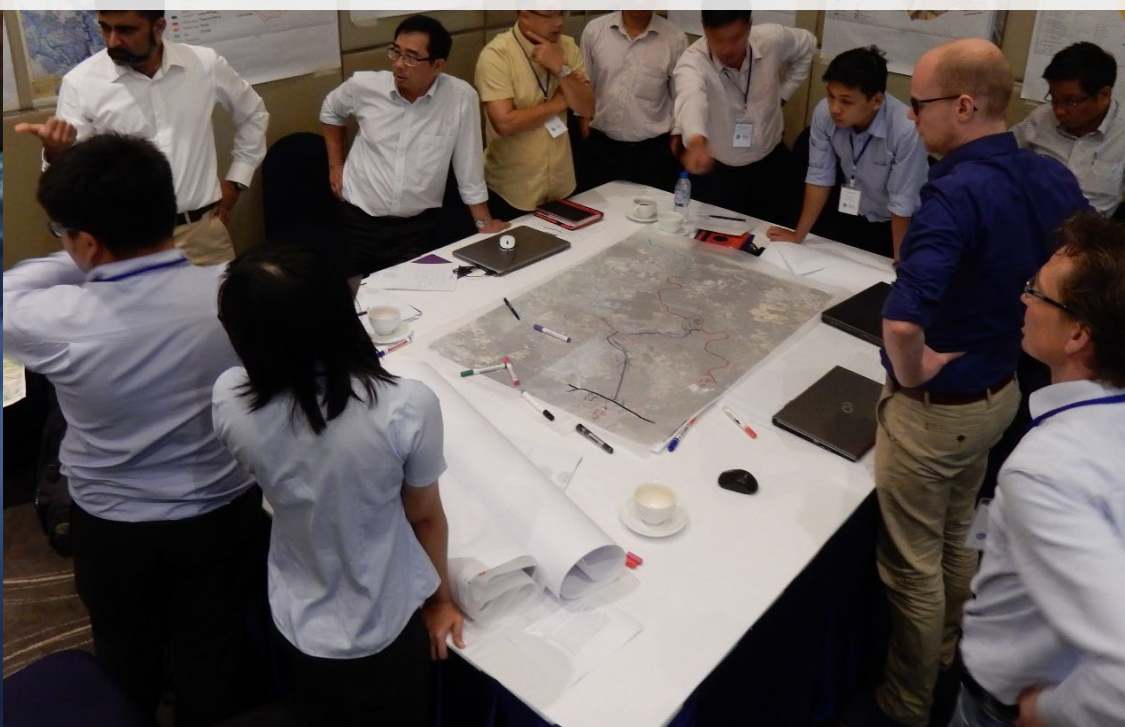
Experts' Burden

- Everyone has the right to opinion
- Every opinion may not be right

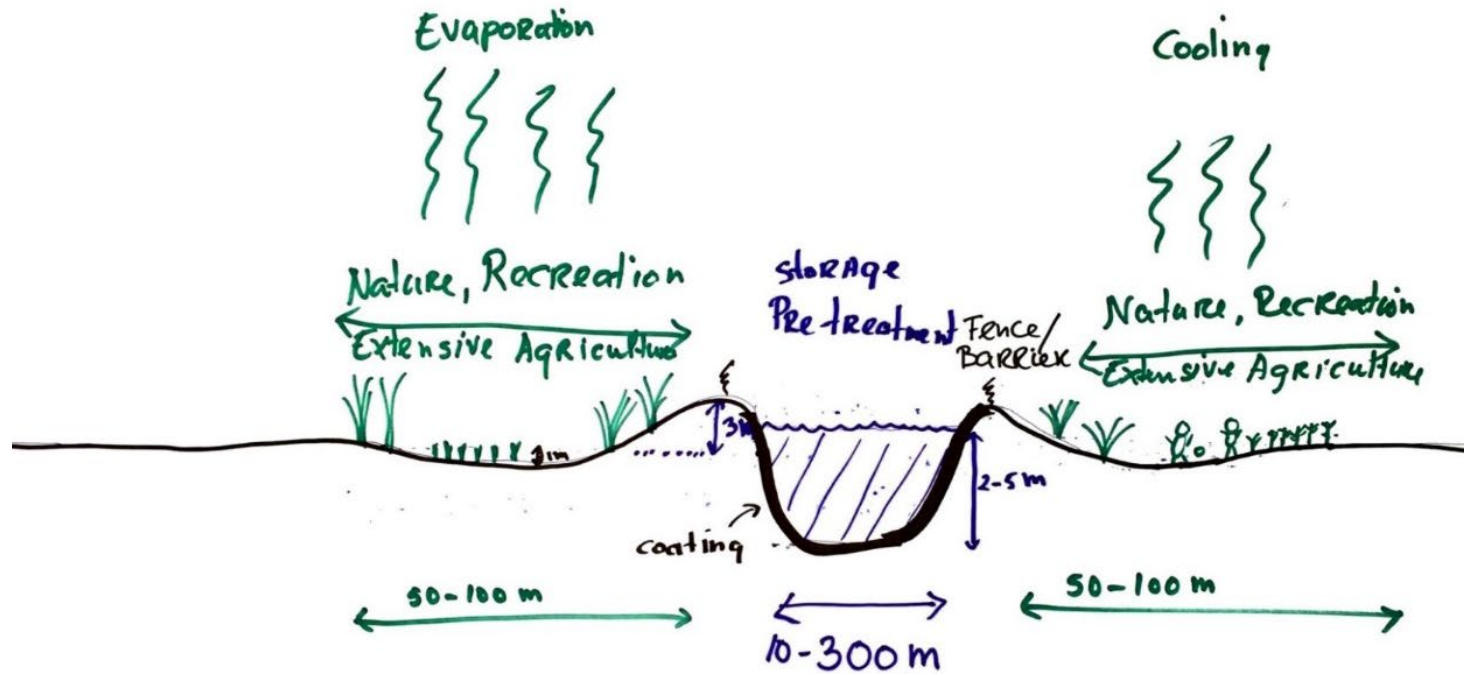
If you are the expert, onus is on you to facilitate others learn a bit of so that they can meaningfully contribute.



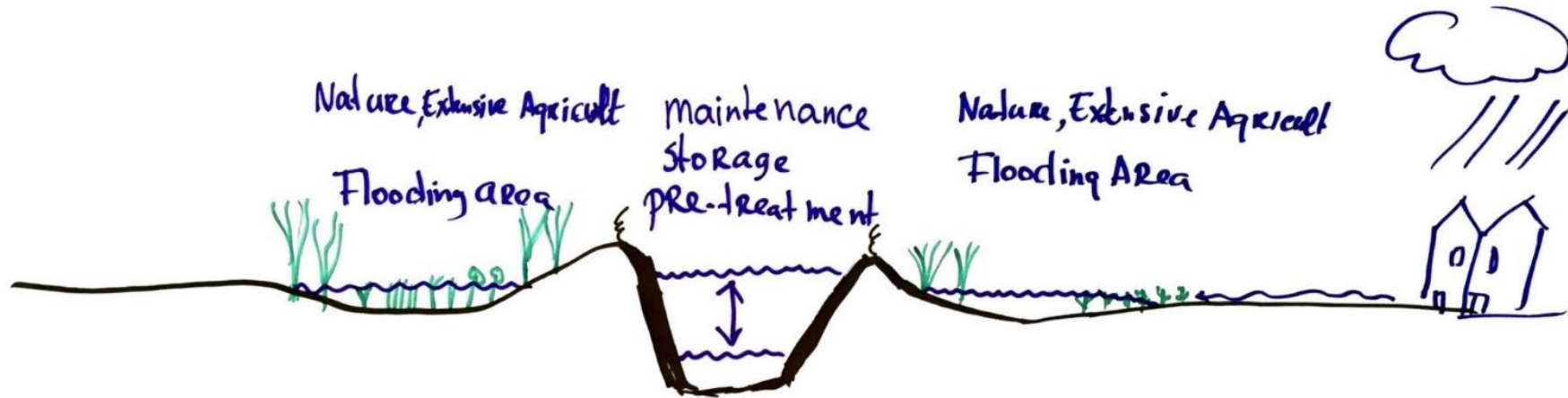
Co-Design Workshop



Dry Season



Wet Season



Cross Section of the "Green Blue Lung"



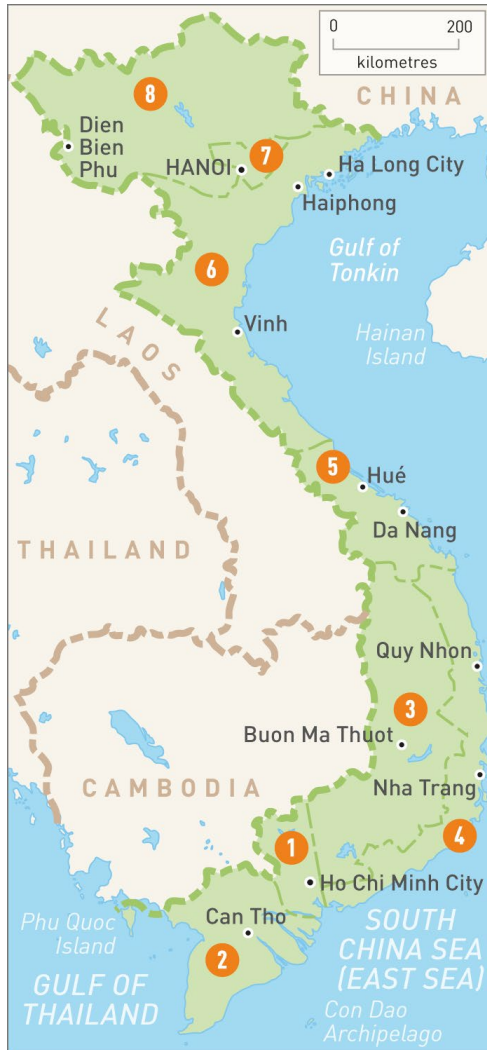
Saigon Water
one-stop total water solution

“I thought you would try to push a ‘Dutch Solution’ But you came up with nice designs that are appropriate to Viet Nam”

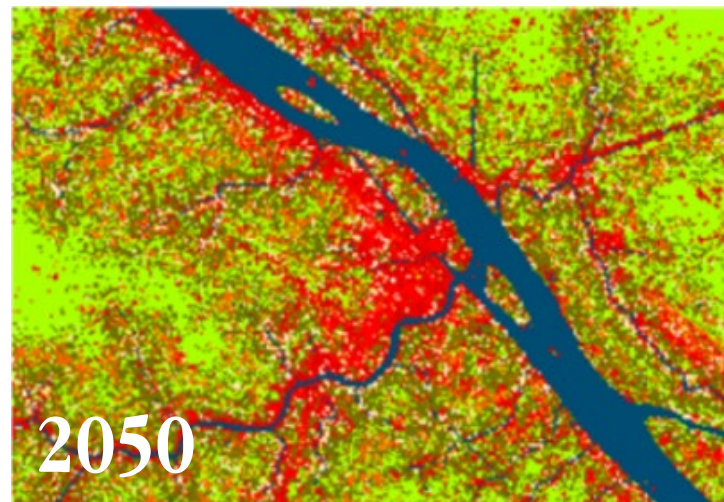
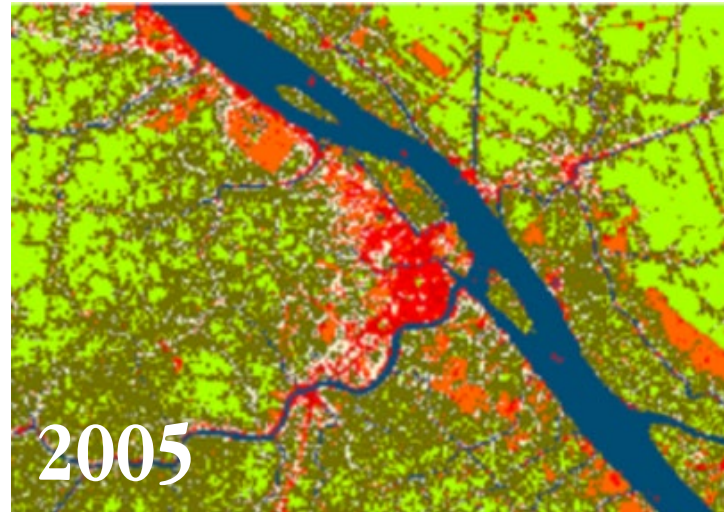
A close-up photograph of a hammer and a screw on a wooden surface. The hammer's head is on the left, and its red handle extends to the right. In the foreground, a silver screw lies on the wood. The background is blurred, showing a white wall and a wooden surface.

**If all you have is a hammer,
everything looks like a nail**
(There is no single 'best')

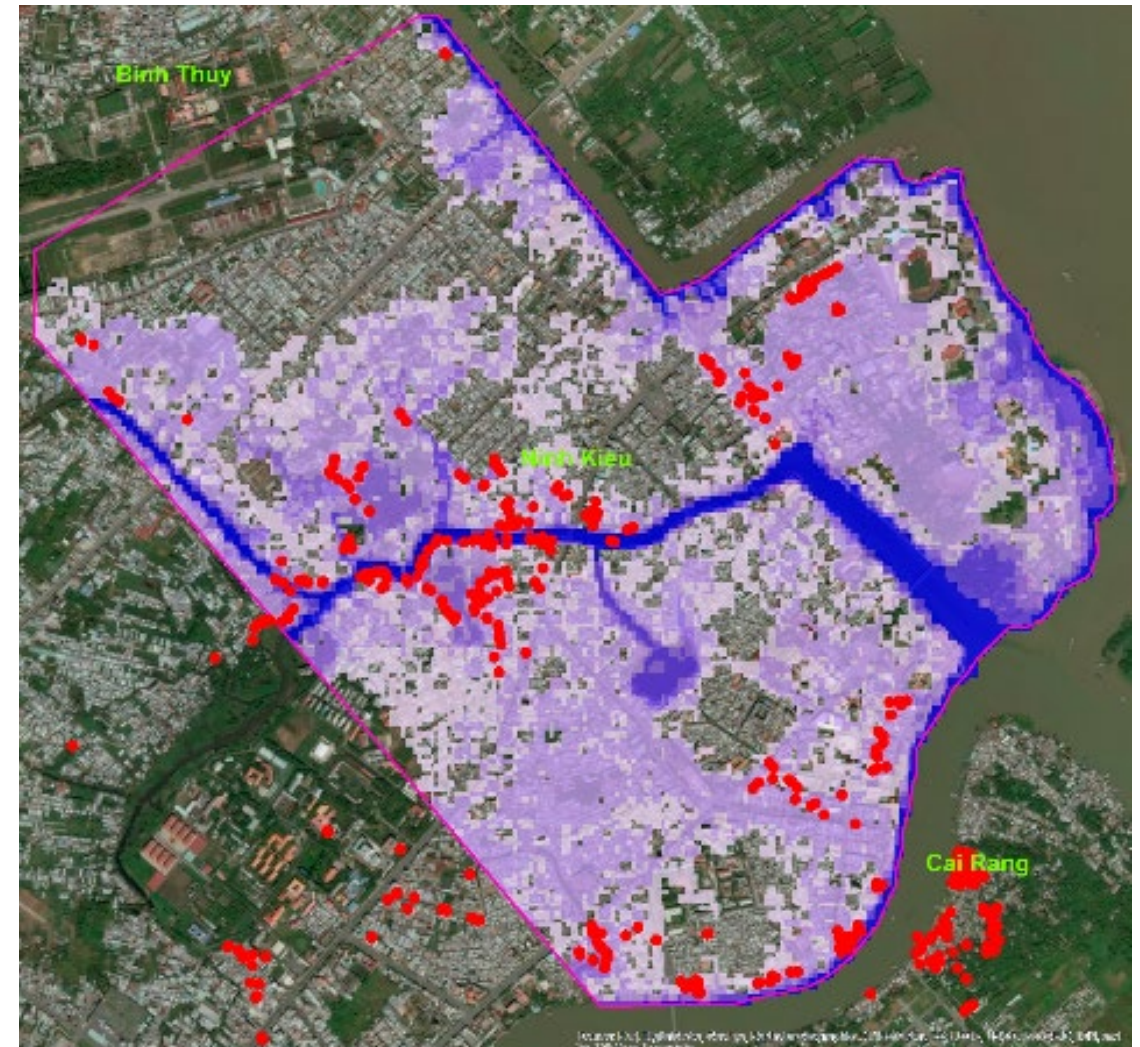
Can Tho City



(image: www.roughguides.com)



(source: Huong and Pathirana, 2013)

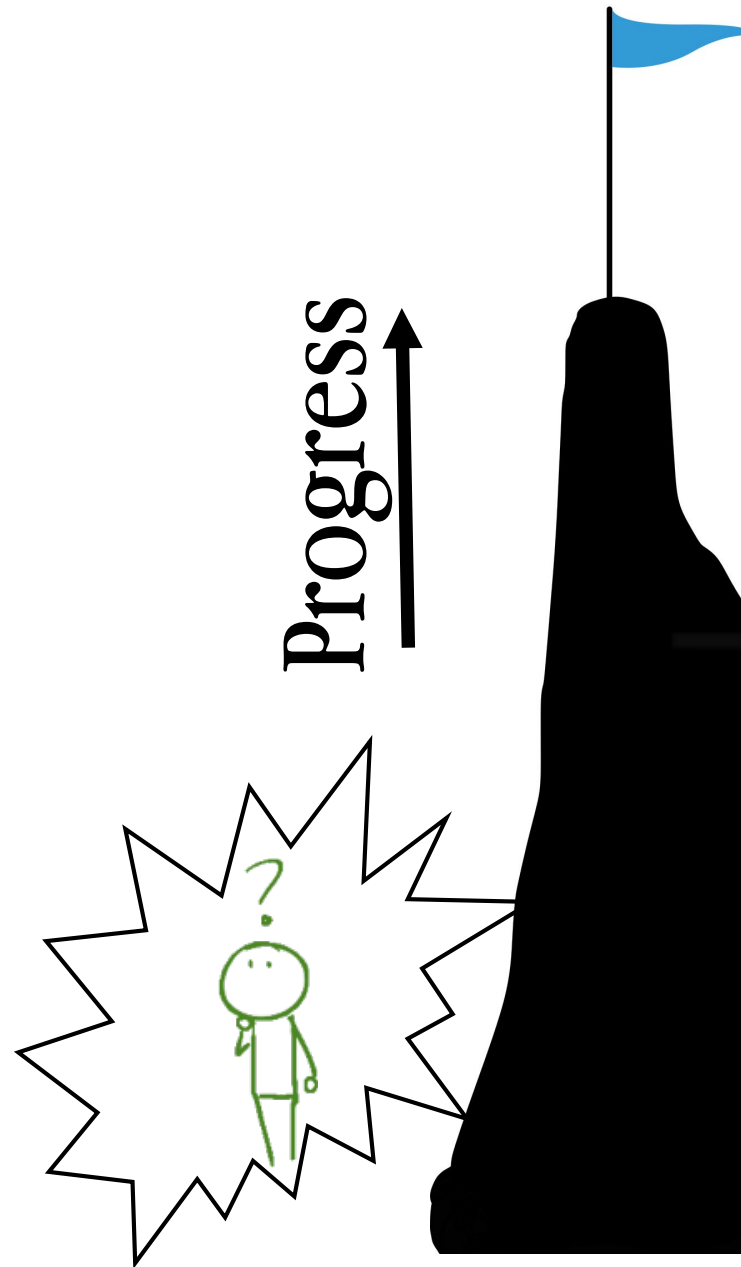


(source: Chinh et al., 2017)

Climate Change Manager – Mekong Delta

They gave us the destination,
but we knew that.

What we need is the steps to
start the journey!





Visions are inspiring



But, process is the real challenge!

Stakeholder engagement in urban adaptation

- Why?
- Urban adaptation : Urgent problem + Uncertain drivers
- Go for multi-valued, flexible solutions
- Multi-value > Strong connection to stakeholders
- What/how?
 - Open for learning
 - Transdisciplinarity
 - Leads to local insights
 - Incremental solutions lead to learning cycles – effective learning.
 - Equal partnerships
 - Experts have extra responsibilities
 - Those models should be a means for learning!