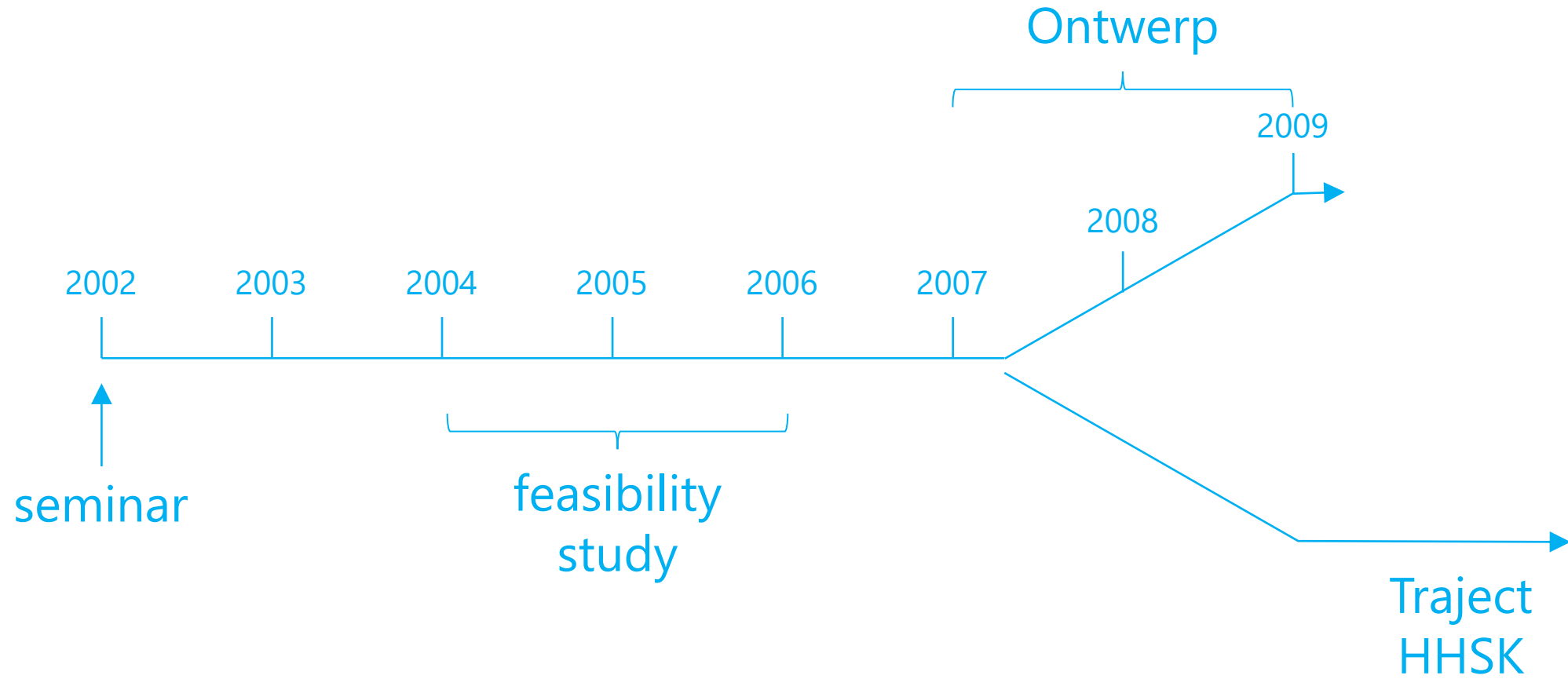


The Banger Pilot Polder, a brief history

- The most useful and satisfactory project that I was allowed to work on
- We gave 80.000 people, of which 50% children, better living conditions
- The project could not have been a success without the cooperation of:
 - . Water Groot Salland
 - . Partners for Water
 - . Hoogheemraadschap Schieland en de Krimpenerwaard
 - . UNESCO-IHE
 - . Unie van Waterschappen
 - . QUEST-Consult
 - . Roy Kraft van Ermel
 - . Herman Mondeel and Sawarendro

Timeline for us



How it all started

- Seminar in 2002 “Polders in waterfront cities”
- Organised by Witteveen+Bos and UNPAR (Universitas Katolik Parahyangan)
- Purpose of the seminar
- 2-days event
- Supported by Kementerian Pekerjaan Umum (PU)

Purpose of seminar “Polders in waterfront cities”

- Commercial initiative of Witteveen+Bos
- To proof that polders are maybe the only feasible solution for proper water management in sinking cities
- Show (once again) the Dutch expertise on this topic
- Emphasis on the role of the government

Sinking cities

- Groundwater extraction
- A problem of many metropolises (in Asia)
- Irreversible
- Impact will become larger with climate change and sea level rise
- Additional measure: proper water supply

Participants of the seminar

- Waterschap Groot Salland (Siebe Schaap, moderator)
- PU (national) and DPU (provincial)
- Unie van Waterschappen
- Madara Permai (Pantai Indah Kapuk), private polder system
- Organised and guided by Witteveen+Bos and UNPAR

Program of the seminar

- Day 1:
 - Technical presentations (W+B, UNPAR)
 - Operational, financial and legal aspects of polders in NL (WGS, UvW)
 - Operational aspects of the first polders (private) in Indonesia (Mandara Permai)
- Day 2:
 - Brainstorm session on possible follow up
 - Organised in the Pantai Indah Kapuk polder

Result: pilot project!

The birth of the pilot project

- Discussions in 2002 and 2003 on:
 - . Where?
 - . How large?
 - . How to be financed?

Result:

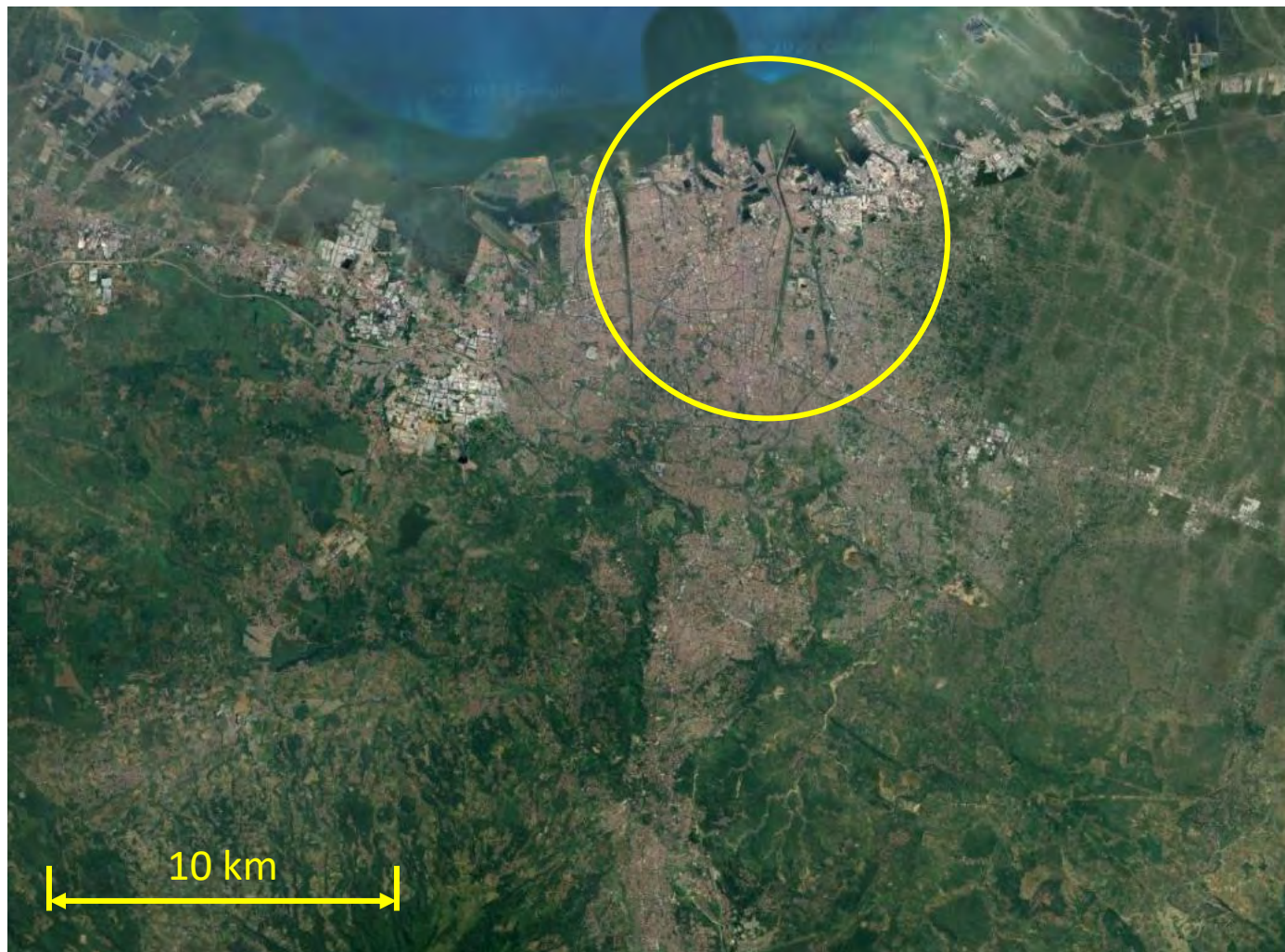
- Part of the 4PMoU
- Siting and feasibility study

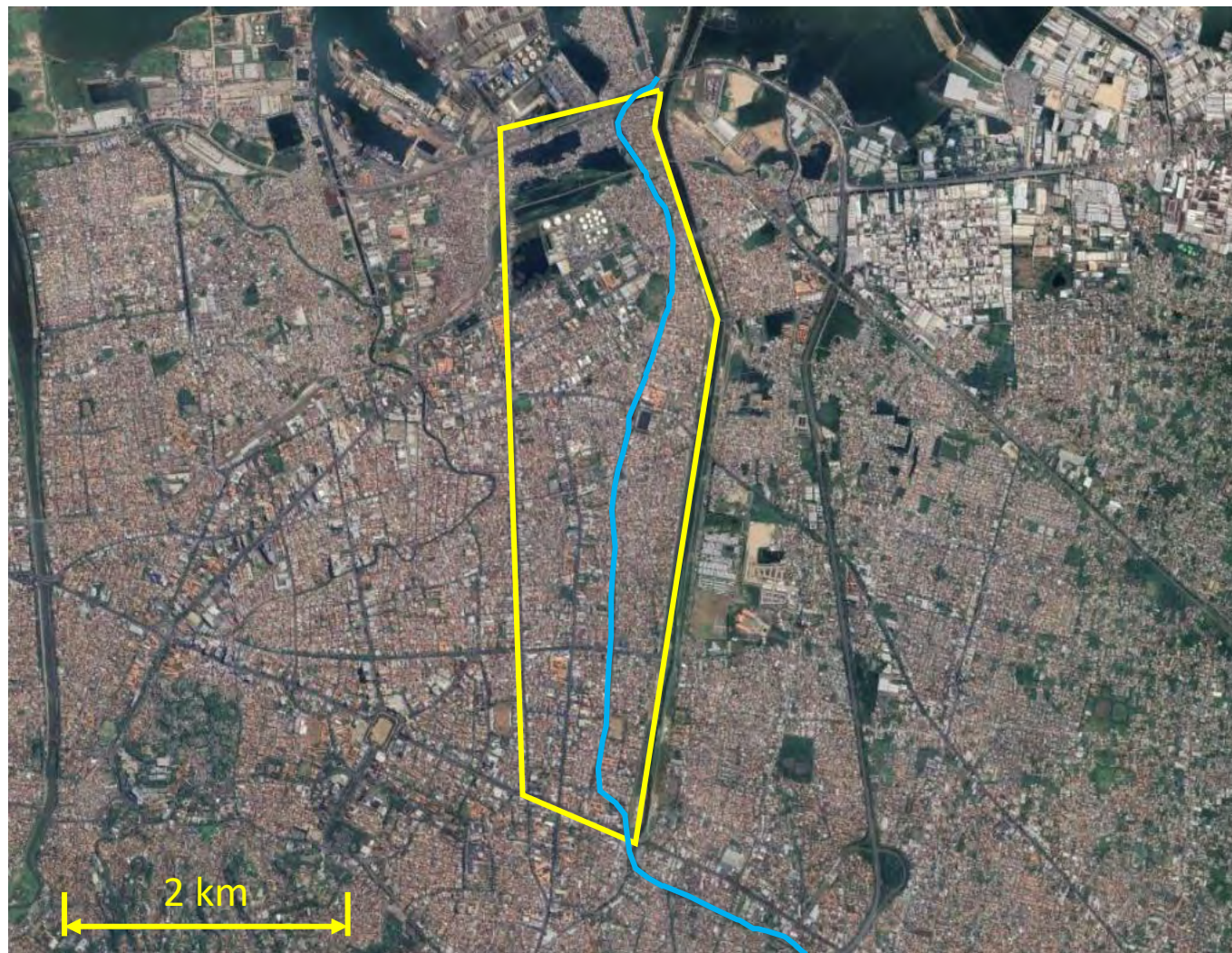
The feasibility study (2004-2005)

- Financed by Partners for Water (Simon Warmerdam and Aris Schellinkhout)
- Jakarta too complicated from political and administration point of view
- The floodings in Semarang were worse than in Jakarta
- Witteveen+Bos together with UNESCO-IHE (Bart Schultz en Suryadi)
- Criteria for location search:
 - Location with severe flood problems
 - Mixed community: rich, middle class and poor people
 - Residential and commercial use
 - Preferably some water management infrastructure present

Result FS: Banger area in Semarang







Characteristics Banger area

- 540 hectares
- 80.000 inhabitants
- Daily floods
- Open sewerage system, mainly grey water
- Mixed community
- Business and residential functions
- Internal drainage system
- Banger river



The design works (2007-2009)

- Again paid for by Partners for water
- Design of the basis elements:
 - . Pumping station (6 m³/s)
 - . Retention basin
 - . Internal drainage system
 - . Subsurface drainage
 - . Slope protections
- Almost 3 years with major support of Mayor Sukawi Sutarip, HHSK and UNESCO-IHE



ORIO for the construction stage

- We made a full application ORIO
- Indonesia did not accept the ORIO terms and conditions
- No further role for Witteveen+Bos and UNESCO-IHE anymore
- Luckily HHSK and the polder board took over smoothly