

Nature driven design in China

Green ambitions on every level



Jasper Fiselier (DHV and Ecoshape)

Bohai characteristics



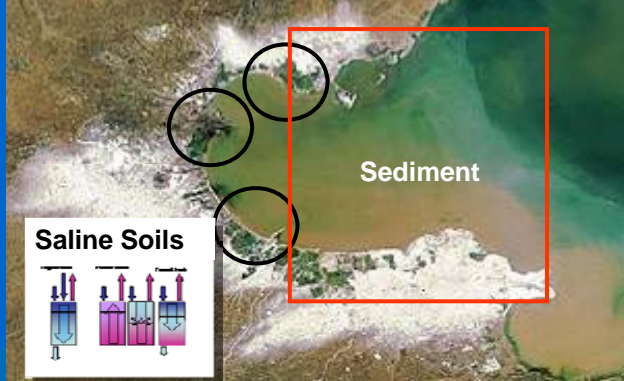
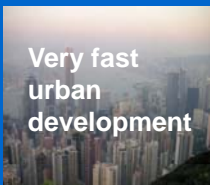
Examples of projects



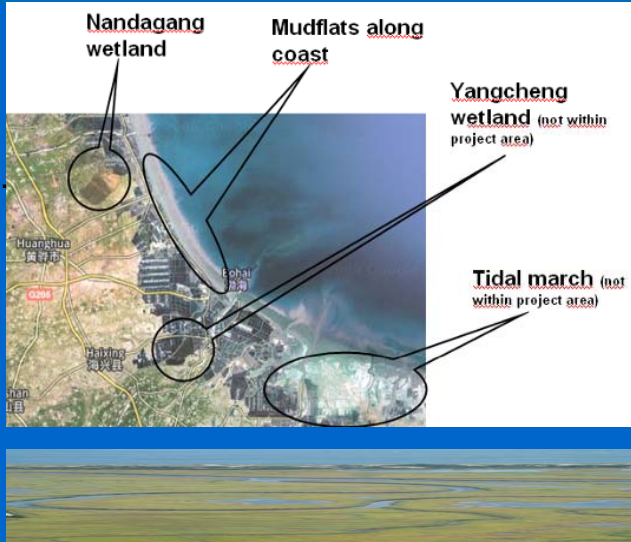
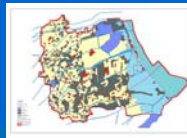
Gateway to solutions

Bohai Sea, some characteristics

Brown sea and parched land



Changzhou Bohai Development area: Master plan water management



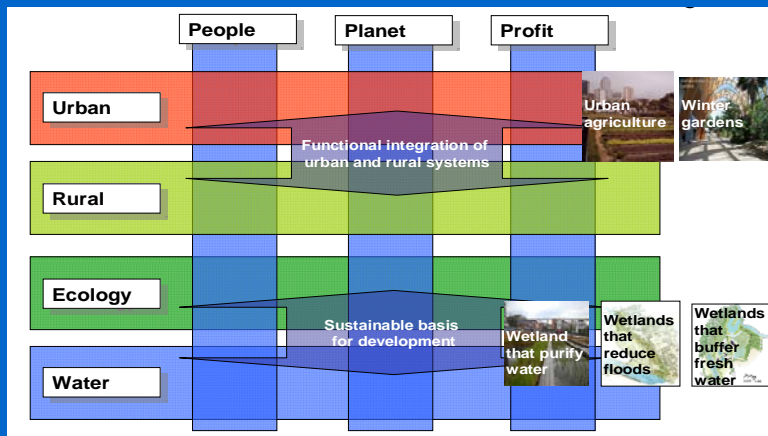
Gateway to solutions

Urban-Rural development

Blue, green, red integration



Focus is on port and city development
The city as trigger for regional developments
The city as hub and source



Gateway to solutions

Anticipate, accomodate and use floods

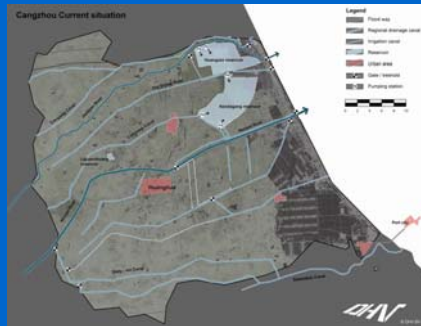
Revise standard, upgrade and green the infra



Raise safety standards, create safety rings, enlarge cross profiles and green diversions

Restructure drainage system from discharge to infiltration, storage and reuse

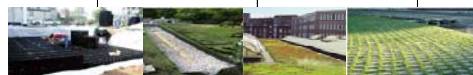
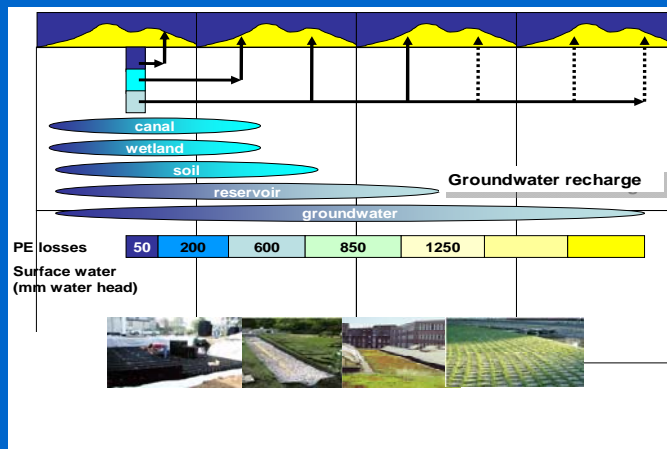
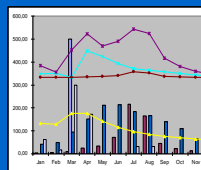
Restore the intertidal zone for safety and regional development



Gateway to solutions

Hold back and use every drop

Buffer variability to create a constant base



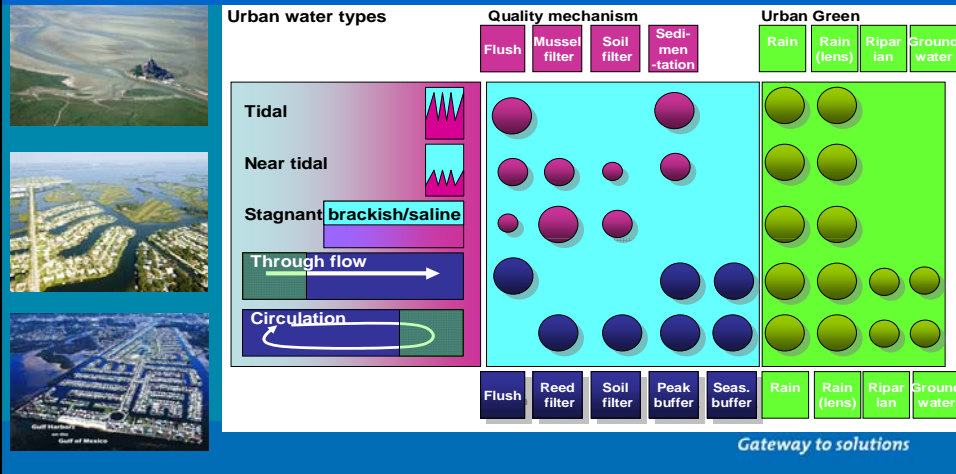
Gateway to solutions

Urban water-green systems

Based on water availability and self-regulation

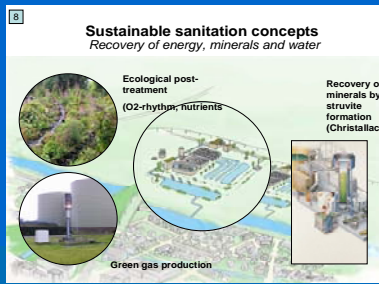
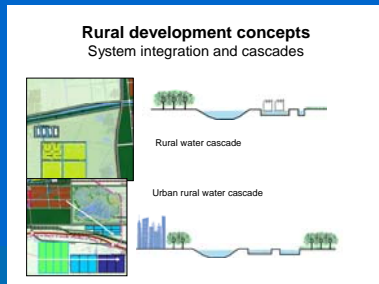
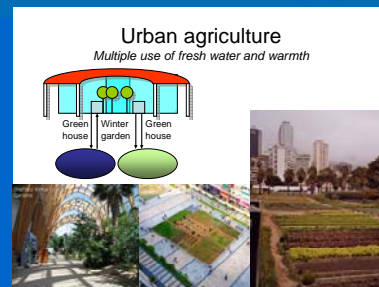
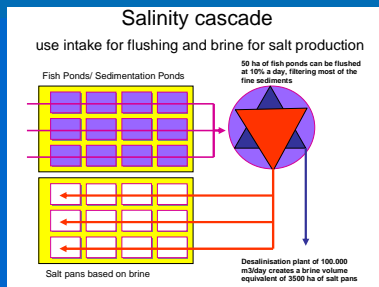


Allocate the sea-border inland



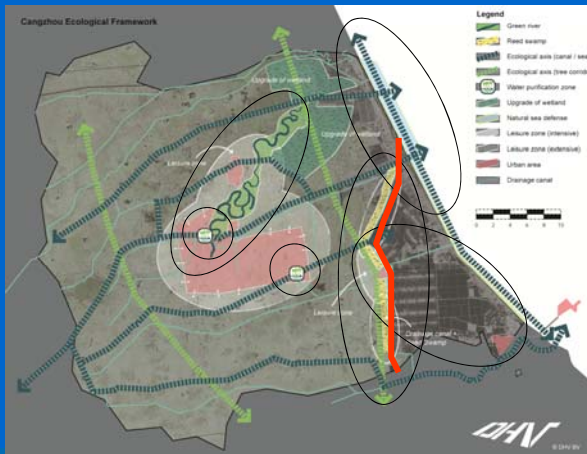
Value creating water cascades

Integrating urban and rural development



Master plan major components

A robust green framework



- Green river
- Green canal
- Living Water Park
- Natural sea defense
- Brackish urban zone
- Ground water recharge/rehab

Gateway to solutions

Tjiangshan Ecocity

Re use and development concepts

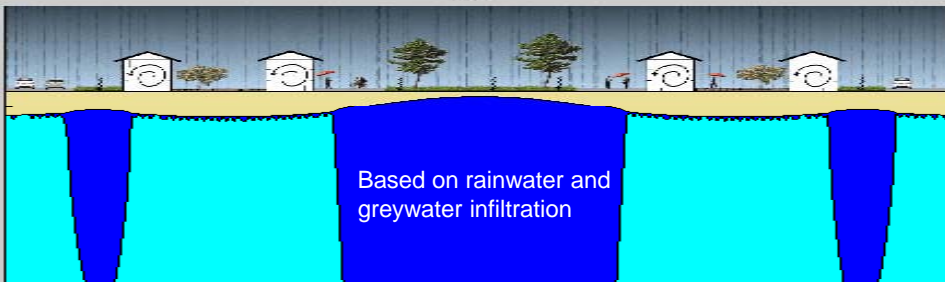
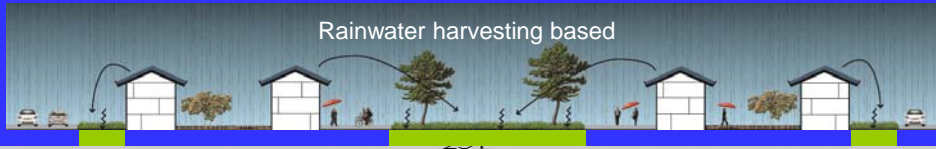


- Basic design
Tangshang
Vocational School
- Integrated
watermanagem
ent Design and
landscaping



Gateway to solutions

From temporary lenses to fresh groundwater reclamation



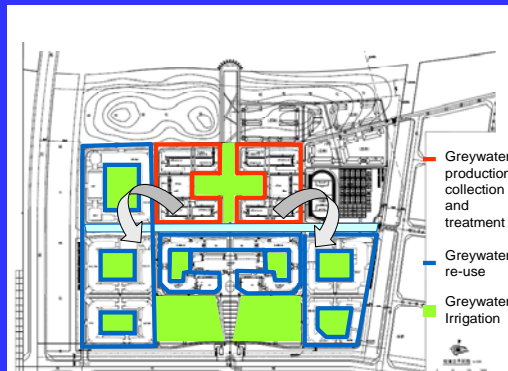
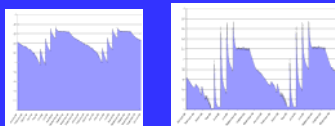
Gateway to solutions

Robust by reuse of grey water

Artificial storage is too expensive



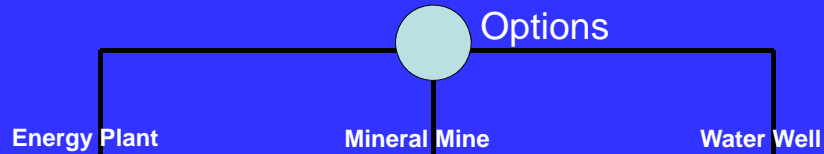
Storage in park zone and central canal



Gateway to solutions

Grey water concepts

Present preference is for centralised

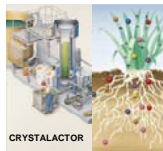


Recovery of energy: Anaerobic treatment



Example of a UASB

Recovery of nutrients: Struvite formation



CRYSTALACTOR

Recovery of water: Treatment in MBR



Gateway to solutions

Tianjin Binhai Area Delta Diamonds

Meanwhile in another corner of the Bohai Sea
Another Development for plus 1 million inhabitants



- Design of Masterplan for reclamation
- Technical analyses on land reclamation
- Water system requirements
- Delta symbiosis

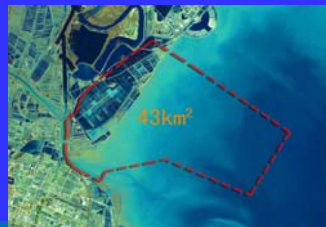


Gateway to solutions

An urban lagoon as an alternative to traditional reclamation



- Circulation system moderate tidal system
- Incremental development, island by island

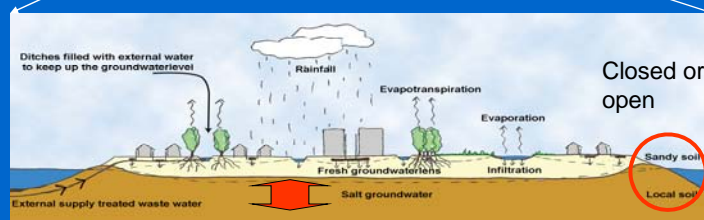


Gateway to solutions

Fresh groundwater management systems to support urban green



- Development of rainwater lenses
- Re-use of treated effluent



Islands need to be high enough

Gateway to solutions

Beyond urban green

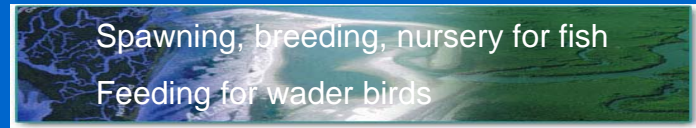
Unlock the ecological potential of urban developments



Harbor = Habitat

Soft border initiative

- Lagune ecosystem
- Create intertidal habitats
- Zone recreational use



Gateway to solutions

Ecosystem based coastal development

Upgrade to the regional level



Gateway to solutions

Basic principles Nature Driven Design



Design on the basis of true understanding
Higher ambition for biodiversity
Anticipate and adapt to natural dynamics
Seek to root also on the microbiological level
Morphology according to the essence of flow

Ecosystem dynamics

Population dynamics

Biotic-abiotic interaction

Microbiological processes

Inherent flow characteristics

Gateway to solutions