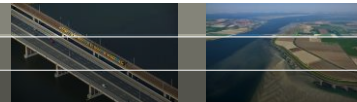




Developing multipurpose infrastructure for climate resiliency, workshop DP 3.1

Deltas in Times of Climate Change, September 26, 2014
Jurgen van der Heijden (AT Osborne)

This workshop



- Short introduction
- Game together with participants
- Introduction into the combination of functions, the case of 'Water control and its combination', Jurgen van der Heijden
- Developing multipurpose infrastructure for climate resilience, from Practice to Principles, Arjan Hijdra
- Multipurpose infrastructure, simulated participative scenario planning, Rosalie Franssen

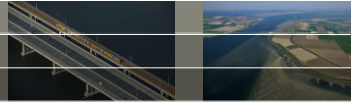
Rotterdam, water storage square



Combination of functions and multiple space use

- Two or more functions share the same space at the same time, or the one after the other:
 - Road on dike, water storage square, water storage and purification in nature park
- This saves space and other resources and sometimes also energy and transport, and therefore saves costs.
- **All combinations of functions start with multiple space use, but there's more ...**

Agriculture on a dike



Reduction of costs and creation of more value



- Combination of functions saves costs because of multiple space use, the integration of work during building, operation and maintenance of the project.
- Also a combination can generate more income: think of a dike that is better maintained in combination with agriculture. Costs go down whereas it also generates income from agricultural products, that otherwise couldn't be produced there.

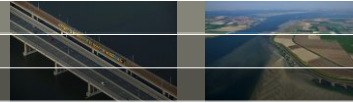
Water purification in dune area



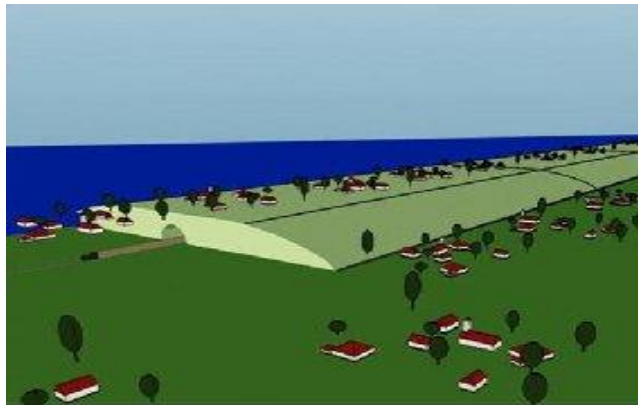
More examples of extra income

- Pure water from protected nature area that is used for water storage
- Better nature within this area
- Better spatial quality in and around this area
- Better water safety because of nature before and behind dike
- Wind energy from dike that provides a remote spot with a lot of wind at the same time
- Tidal energy, Brouwersdam

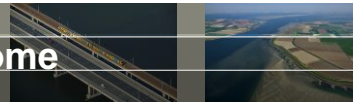
Game



Game with 'all' conceivable functions on, in, under and around a multifunctional dike.

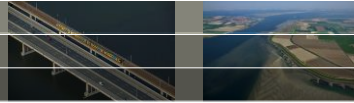


Break down of costs and income

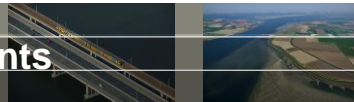


	Reduction of costs	Extra income
Development	Buying space together	
Development	Building together	
Operation	Manage together	Exploitation of new possibilities

Brouwersdam



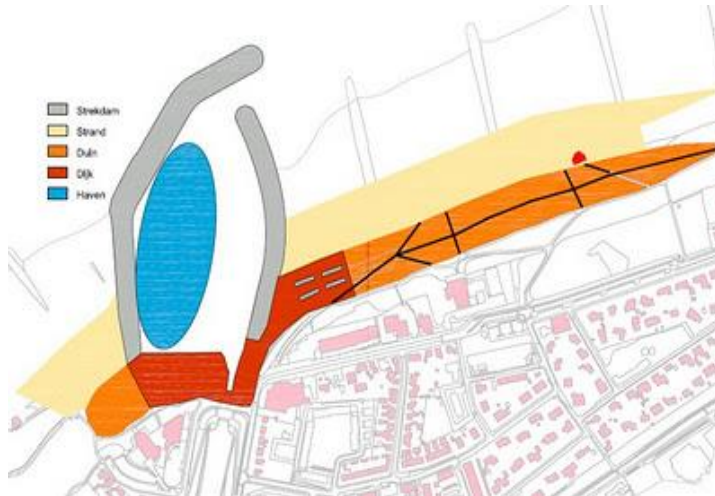
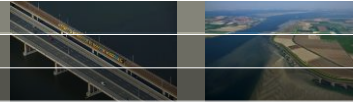
From contract to chain of events



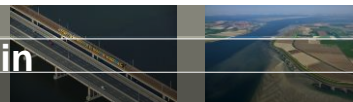
D → B → F → M → O → RE

- Design
- Build
- Finance
- Maintain
- Operate
- REuse, REduce, REfuse, RETrofit, RENovate, REpair and REcycle

Cadzand, plan for a marina



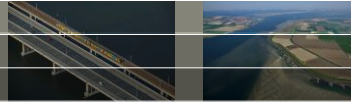
Internal integration of the chain



D ↔ B ↔ F ↔ M ↔ O ↔ RE

- DBF *MORE* ☺

Vlissingen Boulevard



Deltares

External integration, comparable chains



D ↔ B ↔ F ↔ M ↔ O ↔ RE (dike east)

↓ ↓

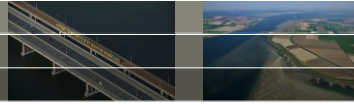
D ↔ B ↔ F ↔ M ↔ O ↔ RE (dike west)

- This is scaling up



Deltares

Hamburg, Hafencity



External integration, incomparable chains



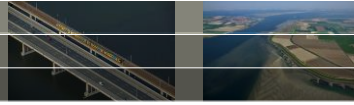
D ↔ B ↔ F ↔ M ↔ O ↔ RE (dike)

↑ ↑ ↑ ↑ ↑

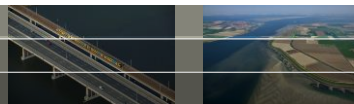
D ↔ B ↔ F ↔ M ↔ O ↔ RE (road)

- This is the combination of functions

City water retention

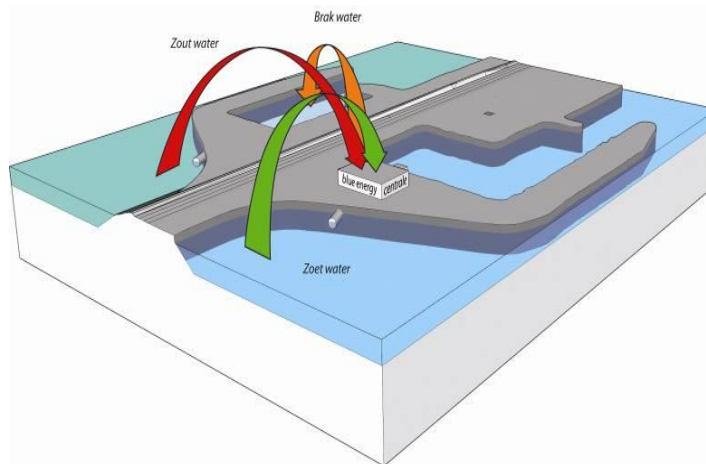
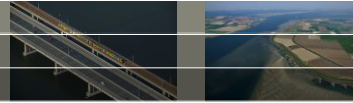


Thesis: real cooperation

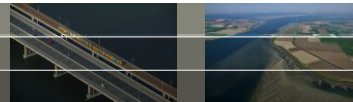


- Real cooperation is investing in the other, in order to have him profit and invest in you within a lasting relation that will bring profit more than once.
- That's the combination of functions, and that goes further than simple 'win – win' wherein all take their gains and leave.

Blue Energy

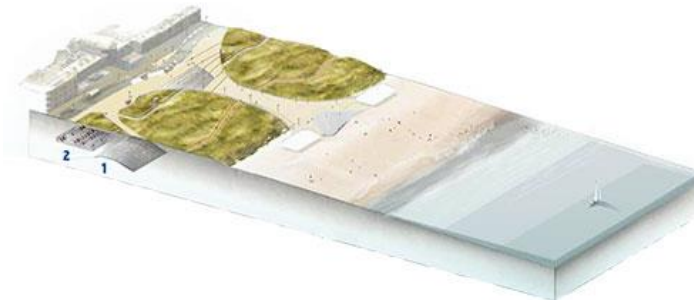
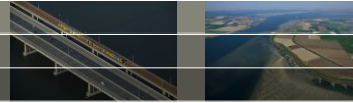


Obstacles

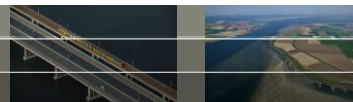


1. Mass production, project scope
2. Meritocracy
3. Culture
4. Protection of interests by the law
5. Split incentive

Coastal work - Katwijk



Overcoming the obstacles



- 1 Profit+
Combine more with less
- 2 Planet+
The project protects interests better than the law
- 3 People+
Social innovation; real cooperation



26 september 2014



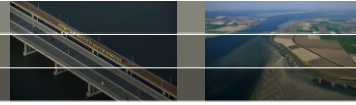
Stadium Yokohama, water storage area



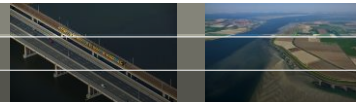
Future

- Exiting thought is that the cooperation around combinations not only results in transaction costs, but in transaction benefits also. Arjan will go into that a.o.
- What happens when you can work on a series of combinations? Rosalie will go into that a.o.
- Do we need an institute for combinations?

Japan



Conclusion



- Until now we've only discovered the tip of the iceberg when it comes to the possibility of making combinations; the best kept secret of economy and society.
- For further reading '*Water – Its control and combination*', Deltares and AT Osborne for Rijkswaterstaat (google title for free download).