

## Some Futures for the Belgian Coast 2100, a Case Study of Research by Design on Regional Level

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### 1 ABSTRACT

In this paper, we want to explain our findings from recent research by design on regional level that is initiated by the Flemish Spatial Development Department Ruimte Vlaanderen.

We elaborate further on our conclusions on the article “Can research by design on regional level help to introduce new concepts in spatial planning?” (Zaman Geldof Geens, 2014) and add more results on recent research by design on regional level on the Belgian Coastal area for 2100 (Metropolitaan Kustlandschap 2100). Furthermore we elaborate new findings based on the comments we received by the audience of the ISOCARP 2014 congress in Gdynia and the Quality-forum Regional Research by Design (RRD) we organized in Brussels.

Main issue is the question if paradigm breaking research by design (Janssens 2013) is possible in a policy context. Another issue is the idea that research by design has to evolve during the process on 4 scale-lines as described in previous article. The issue to involve more stakeholders during the design process to obtain a more ‘realistic’ level is discussed. The importance to go back to an bigger scale and scope level after having focused more to get to a more comprehensive result seems to be very important. This means that some kind of evolution path is to be explored to become more performant research by design on regional level.

### 2 CAN RESEARCH BY DESIGN ON REGIONAL LEVEL HELP TO INTRODUCE NEW CONCEPTS?

As shown in our previous paper, we gradually established in the past 10 years both (real) design and research by design on a regional scale in our administration of Spatial Planning Division, by doing it ourselves or by leading a external design team. Through a design attitude we analysed, reframed, represented and projected possible futures of a wide range of spatial challenges. With this knowledge, we are now trying to change of method by dividing current research projects into small topics, by which we try to establish the essence of designing on a regional scale. This gives us additional insight in the research by design process.

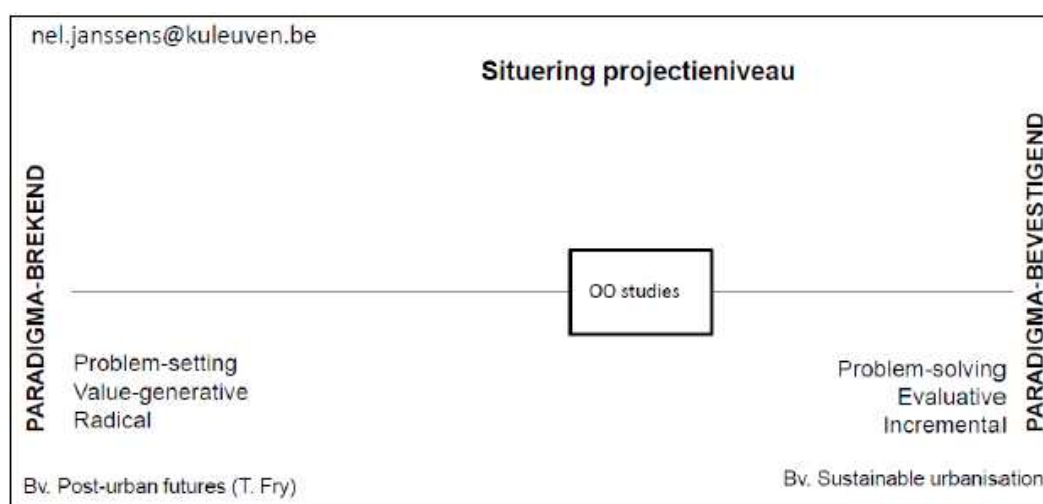


Figure 1: Scheme situating our past research by design projects between paradigm breaking and paradigm confirming (Nel Janssens, presentation during the Flemish spatial research conference, Brussels, November 2013)

During the past 2 years, we tried to move the research along the 4 following scale-lines, where the two opposite sides of the ‘scale-line’ are to be explored in an iterative process:

- from ‘easy to understand’ to ‘comprehensive’
- from ‘one sharp opinion’ to ‘a widely shared view’
- from ‘strategic’ to ‘operational’

- from 'utopian' to 'realistic'.

This is inspired on the remarks dr. Nel Janssens formulated in the spatial research conference of November 2013. On a continuous scale between 'paradigm confirming' and 'paradigm breaking' research by design, our work remains nearly in the middle, without moving from one end of the scale and back. This iterative method will give far more interesting results.

First steps of this iterative research process can be shown in the Metropolitan Coastal Landscape 2100 project. In this paper we will present first results and methodological approaches while dealing with the paradoxes between paradigm confirming and paradigm breaking research in a policy context.

### 3 METROPOLITAN COASTAL LANDSCAPE 2100

#### 3.1 Climate change and Belgian coastal area

The "Metropolitan Coastal Landscape 2100" is a cooperation between the department of mobility and public works, the agency for maritime services and coast, Ruimte Vlaanderen and the Flemish Government Architect. The purpose of the study Metropolitan Coastal Landscape 2100 is to develop long-term building blocks through 'regional research by design' for the coastal zone.

The "Coastal Landscape" refers to a cohesive whole landscape of the maritime area and the coastal territory, which is being concretely on the coastal zone with the sea, the coastline and coastal polders. In a metropolitan coastal landscape function different spatial entities such as port, roads, beaches and homes in a complementary and equal way and are linked together in a productive interaction. This requires a combined stakeholders approach covering the community level, with provincial (Province of West-Flanders), regional (Flanders) and national (Belgium) level.

By setting the time horizon in 2100, is a long-term approach for projective research prepared taking into account climate change.

The insights are useful for the current projects for the Flemish Bays project of the Department of Mobility and Public Works (MOW) and the Agency for Maritime Services and Coast (MDK), for the development of the Spatial policy plan Flanders, prepared by RuimteVlaanderen (RV) and for detecting potential pilot projects in the framework of the activities of the Flemish Government Architect Team (TVB).

The long term horizon is necessary to incorporate long term uncertainty on the extent of sea level rise. Depending on the regional climate scenario (figure 2, Climar) the storm protection could have to be raised within 2, 27 meters (sea level rise + storm surge) in the warm + scenario. These high sea water levels will probably coincide with an enormous amount of water from land due to more winter rainfall and extreme weather conditions (storm). The gravitational water evacuation system that exist nowadays in Belgian/Flemish Polders will no longer function in these conditions.

Table II: Climate change scenarios 2100

	M	M+	W	W+	WCS
Air temperature	+ 2° C	+ 2° C	+ 4° C	+ 4° C	+ 4° C
Change air circulation	No	Yes	No	Yes	Yes
Winter precipitation	+ 8 %	+ 14 %	+ 16 %	+ 28 %	+ 28 %
Wind velocity	0 %	+ 4 %	- 2 %	+ 8 %	+ 8 %
Summer precipitation	+ 6 %	- 20 %	+ 12 %	- 40 %	- 40 %
Sea water temperature	+ 2.5 °C	+ 2.5 °C	+ 3.5 °C	+ 3.5 °C	+ 3.5 °C
Mean sea level	+ 60 cm	+ 60 cm	+ 93 cm	+ 93 cm	+ 200 cm
Storm surge level	+60 cm	+80 cm	+80 cm	+130 cm	+240 cm

Figure 2: tabel II, extract from CLIMAR (2011) final report Evaluation of climate change impacts and adaptation responses for marine activities,

Thus, the long term perspective forces us and other stakeholders to look for other solutions than the standard reinforcement of dikes. Even under current conditions, the MDK agency is already using new innovative techniques that are closer to natural sand deposit processes.

### 3.2 Intersectoral and interdisciplinary collaboration is needed

The objective of Metropolitan Coastal Landscape 2100 research is to develop long-term 'building blocks' for a sustainable and resilient coastal region through regional research by design. The study looks ahead to the coastal zone, -including land and sea-, in 2100 from a transnational perspective. The adjacent Province of Zeeland of the Netherlands is involved, as well the French Departement Nord - Pas-de-Calais. This all requires intersectoral and interdisciplinary approach.

As pointed before, the results of the regional research by design project can be useful to the ongoing elaboration of the White Paper on the new Spatial policy plan Flanders (Spatial Development department Flanders – Ruimte Vlaanderen), of the Flemish Bays project (Department of Mobility and Public Works), and the implementation of the Master Plan for Coastal Safety (Agency for Maritime and Coastal Services – Coastal Division), and of the agenda of the Flemish Government Architect and his ongoing 'open calls' on the shore front. Also the Province of West Flanders is a partner, presented regarding the revision of the land use plan shore and dike and the Provincial Structure Plan / Coast area.

To frame this intersectoral approach, there was the opportunity in 2012 of the institutional innovation by the creation of the new LABO Ruimte (spatial development laboratory). It acts as a free research area for the Spatial development Department (RV) and the Team of the Flemish Government Architect (TVB). It has to prepare diverse policy themes with a spatial impact and had to test them in a perspective of territorial cohesion while true agendas temporarily were released to accelerate to think out of the box. For MKL2100 project we worked with four experts (Joost Schrijnen, prof. A. Loeck, prof. P. Meire, Luc Vandamme) and the above mentioned administrations.

In the framework of the cooperation in the LABO Ruimte, a protocol was signed with Team of the Flemish Government Architect (TVB), the Department of Space Flanders (RV), the Agency for Maritime and Coastal Services (MDK) and the Department of Mobility and Public Works (MOW). In partnership with the Province West Flanders – Area, we elaborated specific development to nourish the long-term study of the spatial potential of coastal area which we carried out under the heading "Metropolitan Coastal Landscape 2100".

Metropolitan Coastal Landscape 2100 is addressing to coastal communities in the Province of West-Flanders who are at most risk or have the greatest scope for opportunity from climate driven coastal change. These range from communities with residents in low-lying rural marshes to densely populated urban centres and include a number of diverse disciplines (coastal safety, mobility, housing and architecture, tourism, ... and sectors such as the Department of Mobility and Public Works, the Agency for Maritime and Coastal Services-Coastal Division, of the Flemish Government Architect.

The interdisciplinary approach is necessary for research on the long-term and about climate change.

During this period, several studies are devoted to resilient space and mitigation & adaptation on climate change. From the spatial research community, the results of the investigation CcASPAR and the CLIMAR and CCI-HYDR studies, and the study 'toward a climate proof Flanders with spatial policy' are best known. In this latest study, commissioned by Spatial Development department Flanders – Ruimte Vlaanderen and developed by Alterra Wageningen (WUR) a guide model for the coast has been included.

Also on national level (Belgium), the preparation and presentation of the draft of the Marine Spatial Plan of the Belgian part of the North Sea (FOD Environment) has been translated into a definitive Belgian Marine Spatial Plan (2014).

Both the scientific findings as the policy plans of different sectors were to be considered which resulted in an interdisciplinary approach; the executing teams were multi-disciplinary (architect, urban planners, landscape planners, coastal experts, coastal defense engineering,...), the workshop also (water experts, urban planners on different policy levels, tourism, housing, ..) and the broader stakeholders workshop involved scientific (in ecosystems, policy studies, coastal defense engineers, environmental research, ...) with different administrations and also the steering committee involved scientific (ecosystem services, human settlements,...). A common language therefore has to be found.

### 3.3 Horizon 2100 and applied future explorations

The available studies related to climate change show that the biggest challenges for the coastal zone arise in the long term. The Masterplan Coastal Safety can with a reasonable certainty protect the coastshore against a 1000yearly storm until 2050. The different climate models (IPCC, CLIMAR) show that the effects of climate change will continue in much stronger after 2050. It is therefore necessary to, from the uncertainty that hangs, elaborate solid models to examine the possibilities for a future spatial policy on the coast.

The Flemish Bays Project also uses these long-term 2100 horizon to anticipate to what could possibly come after 2050 and to review its short-term planning in order to take no-regret measures.

Long-term thinking is needed because the coastal impacts of climate change combined with all other spatial claims, will be amplified. Changes in natural systems will contribute to pressure on the economic system (agriculture and water, ports and activities, ..). Therefore, a long-term perspective is also helpful. The Interreg IVa project -Entre 2 Mers / Between the 2 seas- : Coastal Communities in 2150 was also looking at the coastal zone in a long term perspective.

In the field of long-term projections that must work with relatively large uncertainties, future explorations and speculations are used. The judgments are validated through the involvement of policymakers and experts in the planning process. This can be organized through a wide range of interactive methods. 1

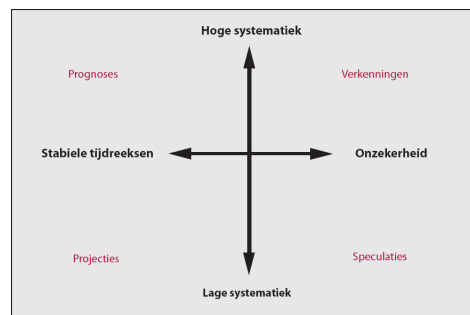


Figure 3. Overview of the different concepts to look to the future. The concepts are placed relative to the degree of systematics (vertical axis) in the analysis phase and the availability of data on the other hand translated in degree of uncertainty (horizontal axis, more to the rightside the more uncertain). You find prognoses, future explorations (verkenningen), speculations (speculaties) projections (projecties). (to Dammers, 2000, in Verlet, De Smedt, 2010)

Research by design is a useful method to make long-term forecasts and future speculations, to discuss them in interdisciplinary and intersectoral workshops, to visualize and develop divergent future visions. This happened both in the broad stakeholderworkshop dated 11.2013 as in phase 3 of Metropolitan Coastal Landscape 2100.

### 3.4 The whole MKL2100 -research trajectory: an accumulation of knowledge to be shared

The Metropolitan Coastal Landscape 2100 research project is divided in 4 phases going from looking back into history and understanding the problems and chances for the future (phase 1), to determine the main question and territory (phase 2), to elaborating 4 divergent long-term futures (phase 3) to elaborate a realistic program constructing a global integrated vision and executing pilot project (phase 4).

The trajectory is divided into four phases covering 2012-2015... Phase 1 to 3 contains the investigations within LABO Ruimte. Currently, phase 3 has been completed and the final reports will be recently put on-line on the MKL2100 project website. Phase 4 is the transition path from a research within the lab space LABO Ruimte to a Spatial Programme on the coastal zone. (See 3.5 in this text)

This is a brief overview of each phase of the regional research by design.

#### 3.4.1 Phase 1 (9/2012 to 2/2013)

Phase 1 (9/2012 to 2/2013) was an exploration and methodological analysis, and included an exhaustive and comprehensive historical analysis (necessary to the future projections of phase 3), a section on current functioning of the coast system, a benchmark to international reference projects and a formulation of potentials, opportunities and challenges towards 2100. This phase was carried out by the planning office BUUR (B) in collaboration with ALTERRA Wageningen UR (NL) and commissioned by Team Flemish Government Architect, in collaboration with the other partners.

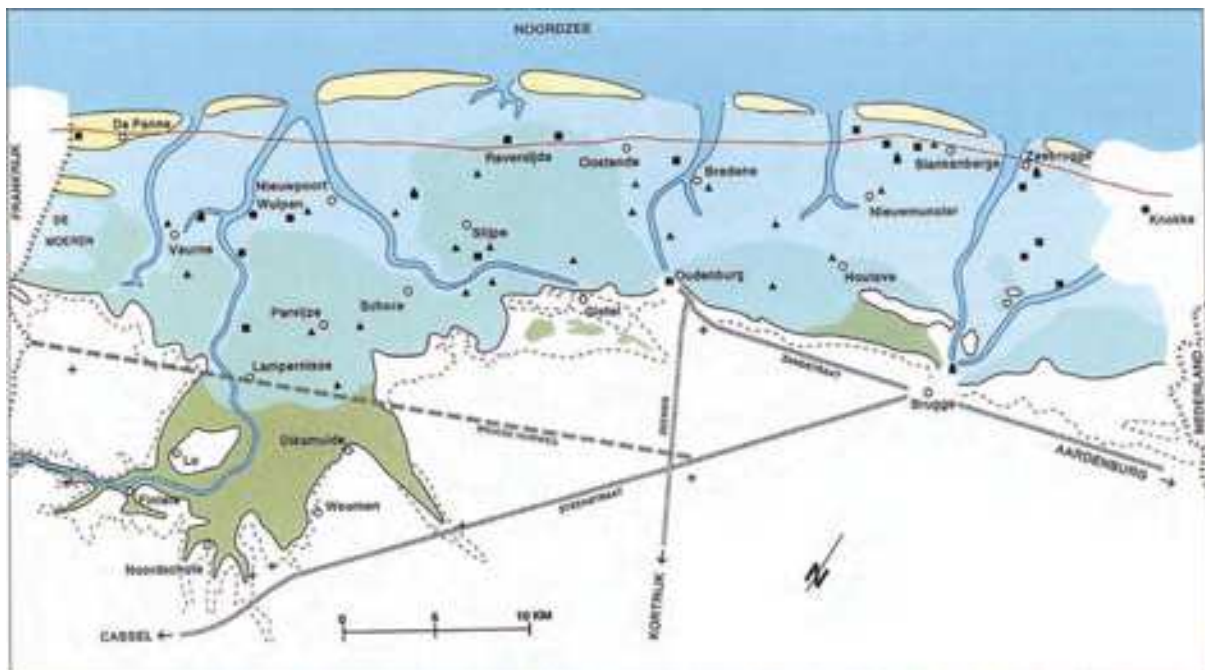


Figure 4, historical dynamic system of the Belgian coastal area, 1st Century A.D., according to H. THOEN, 1978

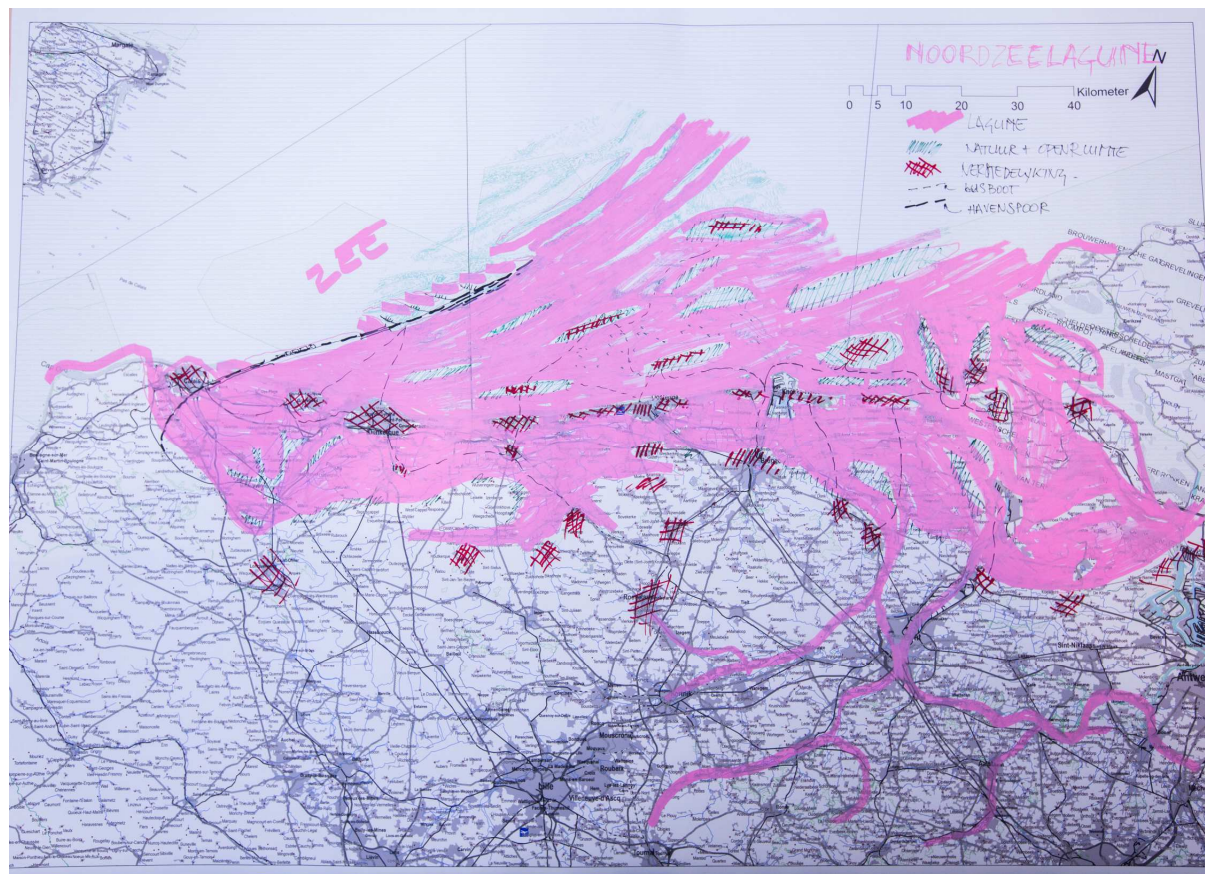


Figure 5, one of the extreme vision drawings by participants of the Broad Stakeholderworkshop MKL 2100, nov 2013.,

### 3.4.2 Phase 2 (3/2013 to 6/2013)

Phase 2 (3/2013 to 6/2013) is where the design assignments were formulated and imagined. This draft of a research by design agenda and questions were formulated and structured in a number of 'landscapes'. So the assignments were structured by using a basic layer (the "Conditioning landscape" –voorwaardscheppend landschap), coupled with three thematic layers called landscape of residence (verblijfslandschap), mobility landscape (mobiliteitslandschap) and productive landscape (productief landschap). On top is a metropolitan ambition prioritized, seeking to add value and organize synergy. This phase was carried out by the landscape

office H + N + S (NL) in cooperation with the ingeneering office Deltares (NL), supplemented by the expertise of Atelier. 1: 1. In this. phase the steering group was supplemented by Luc Van Damme, who was formerly leader of the Flemish Bays project in MOW. This phase was commissioned by Team Flemish Government Architect in collaboration with the other partners.

### 3.4.3 Broad stakeholder workshop (Ostend, 14. 11.2013)

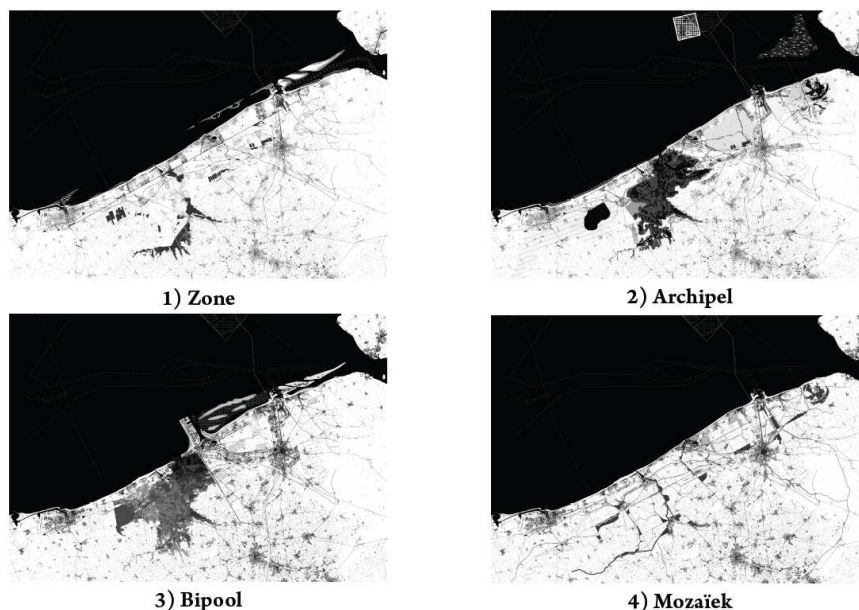
Broad stakeholder workshop (Ostend, 14. 11.2013) was held with relevant transnational policymakers (France, The Netherlands, Belgium, Flemish Region, Province of West-Flanders, 10 Coastal Municipalities) and relevant sector administrations and scientists to to inform and involve them during the further process. The study results of the previous phases were explained (Alterra, Deltares), there were several future-oriented workshops (led by Trizoom and involved administrations) and a discussion was held with representatives of the partners and scientists (chairman S. Kerger). The website was used as a communication tool to share the evolutions in the process, inform about reports. The 90 participants from mainly administrative level gave a very constructive and innovative contribution to the foresight and was very usefull to broader the scoop of phase 3. This stakeholder workshop was conducted by Ruimte Vlaanderen in collaboration with the other parnters and especially with the Province of West- Flanders.

### 3.4.4 Phase 3

In Phase 3 (12/2013 - 12/2014) we organized data and constructed 4 diverging long-term future visions through two stakeholder workshops, different feedback on the research by design process and held a confrontation with existing policy context. The final results of phase 1 and phase 2 and the results of the Broad Stakeholder Workshop November 14, 2013 formed a good basis for this explorative research by design. The tender RV AOM / 13/8 "explorative research by design for Metropolitan Coastal Landscape 2100" was announced in European and published. The contract was awarded to the consortium 'Atelier Visionaire Coast' (Architecture Workroom (B), XDGA architects (B), Maat ontwerpers (B), H + N + S landscape architects (NL), supported by Deltares (NL) and IMDC- Technum (B) and ran for 8 month. The steering committee remaned unchanged. This was commissioned and guided by Ruimte Vlaanderen and MOW in collaboration with the other partners.



## Fase 3 Exploraties (Eindrapport - DEEL 1)



Metropolitaan Kustlandschap 2100

Fase 3: Exploratief ontwerp onderzoek

Figure 6, overview of the 4 diverging long-term futures, according to Atelier Visionaire Kust, 2014 (AWB, XDGA, MAAT ontwerpers, HNS landschaps architecten)

### 3.4.5 In Phase 4 (2015 -..) is current. See 3.5 below

### **3.5 Fasing out of the laboratory: from research to a territorial program**

In phase 4 (2015- ..) we will investigate how potentially relevant long-term building blocks can be implemented by ‘promoters’ TVB, Ruimte Vlaanderen (RV), MOW Department Mobility and Public Works (MOW) and the Agency for Maritime and Coastal Services division Coast (MDK) and the Province of West Flanders, in coalition with relevant partners and are converted to a area- integrated PROGRAM with two tracks:

- Track 1: a forum / platform around one area-specific long-term vision for the entire coastal zone, in which the various actors and policy levels are involved
- Track 2: pilot projects: establishing concrete realistic projects, activities and studies that can be launched shortly in cooperation with relevant actors and that work further on the common knowledge coming from phase 1- phase 3

The conclusions of the whole research by design require the continuation of this process bet on those two tracks. Moreover, we must also accommodate a conversation around an area long-term vision for the entire coastal zone, in which the various actors and policy levels are involved and the experiences of the pilot projects are included in the global vision. To this end bilateral talks are to be hold with potential partners (ANB, ILVO, VMM, VLM, ..) for possible area-pilot projects. A overall communication during the whole process is performed with internal and external partners by a website, and publication (October 2015) and a 2nd Wide stakeholder workshop is provided (June or September 2015); this will help to bring the research project into to the next stage of a program with more realistic elements and a consolidation and commitments about actions. The steering committee now accompanies this process every two months.

Currently, an estimated phase 4 is drawn out to divide the financial contribution by the promoters, as provided in the protocol.

## **4 COMMENTS OF QUALITY FORUM ON REGIONAL RESEARCH BY DESIGN**

In november 2014 we presented our ISOCARP paper and the work in progress to an independent expert panel. They pointed out that we tend to mix ‘vague’ with ‘abstract’ and that there might be a conceptual problem with the overall aim to do open research within a context of policy preparation. The latter firmly poses the question wether the ambition of having an open mind is possible inside an administration that is supposed to work for a Minister or a overnment. Even if conditions today in RuimteVlaanderen are allowing a free (more or less) scientific approach to all kind of research, the expert panel questions this position. They expect that taking position will inevitably be part of the decision making process, and most probably happens even while defining the research topic and method.

The first is more deeply rooted in flemish regional planning, where planners tend to use generic concepts while hoping that someone else will put them into practice. For the regional research by design project, the expert panel advises to be precise, even when using abstract phrases or concepts. According to the expert panel, this is the only viable way to overcome the vagueness of some research projects up to now.

## **5 EVOLUTION PATH TO BECOME MORE PERFORMANT RRD**

In order to move along the different scales, mentioned in the introduction, we will permanently have to mind the fact that every step should be part of the iteration and dialectics between the oposite ends of the four scales.

- from ‘easy to understand’ to ‘comprehensive’
- from ‘one sharp opinion’ to ‘a widely shared view’
- from ‘strategic’ to ‘operational’
- from ‘utopian’ to ‘realistic’

This means that some kind of evolution path is to be explored to become more performant research by design on regional level.

In the fourth phase of MKL2100, we will develop operational, realistic, easy to understand ideas and proposal, that could be put into practice on the very short term. This is necessary in opposition with the utopian, strategic, comprehensive, sharp opinion point of view of the third phase. As difficult as this might prove to be in a political context, the concrete small scale proposals of the possible, will later give feedback and inspiration to (again) utopian thinking. Only if we can realise a full circle, one full iteration, we are able to understand how this method might be usefull both as a research method as in a real life political context.

## 6 CONCLUSIONS

It is a long way to finish this iterative process and many obstacles may be seen. Nevertheless, once the full iteration discribed above will be done, we hope to construct a relevant long-term vision with pilotprojects towards a resilient climate proof coastal area.

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