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# Hotspots: Where science meets practice

The hotspot method is a useful way to apply and integrate theoretical knowledge in the field. Which factors lead a hotspot to be a success and where can pitfalls be identified?

**T**HE APPROACH WAS USED in Groningen and in the hotspot Zuidplaspolder, one of the deepest reclaimed areas in the Netherlands. Teams in both hotspots decided to work parallel to the mainstream planning processes, but with very different techniques.

There are at least two conventional definitions of a “hotspot”. First, it is a location that offers internet access; it is a place for people to connect. Second, it can be a region of high activity within a larger area of low activity (Wikipedia, 2009). The research program Climate changes Spatial Planning (CcSP) combined the two meanings to create the concept of hotspots, that is, areas where science and practice connect and where trans-disciplinary research is carried out in ‘melting pot’ conditions: with many people and over a relatively short period.

In 2006 the Hotspot definition study was carried out to identify, describe and evaluate possible hotspots. A hotspot was defined as a pilot project

in a region in which spatial planning and climate change play important roles and where conflicts of interest are found between these and other factors<sup>[1]</sup>. The research program was designed to start hotspots in order to apply and integrate knowledge in the field, that was produced in the CcSP program. Two workshops and several interviews were held with people from governmental organizations, the business community and nature conservation organizations. In total 65 hotspots were identified of which 13 were selected for closer study. Of these, six of were adopted as hotspots.

This article focuses on the Zuidplaspolder and Groningen Province. The methods used will be described, some of the results will be shown and finally a short analysis of the ‘wicked by-pass’ will be made.

## Zuidplaspolder and Groningen

The Zuidplaspolder is located north of Rotterdam. The land is reclaimed from a lake. It contains the lowest point of the Netherlands: -6.76 m.



The Zuidplaspolder contains the lowest point of the Netherlands: -6.76m

Exactly this location has been designated for major housing developments in the southern part of the Randstad and for greenhouses to farmers. In total, 15.000 houses, 280 ha of greenhouses and 500 ha of nature are planned. The area is vulnerable to existing threats made riskier by climate change: flooding from the river, inundations by increased precipitation, deteriorating water quality, further land subsidence and drought. The hotspot research was intended to evaluate whether the plans, that were already prepared, were climate proof and if not, what could be done to improve them.

The Province of Groningen is situated in the north of the Netherlands, bordering the Wadden Sea. The province is vulnerable to different climate change effects: increased risk of flooding from the sea, heavier precipitation increasing the risk of winter floods, dry summers leading to long periods of drought and more extreme temperatures, all making nature more vulnerable. Groningen decided to prepare a new regional plan for its territory. Climate change was one of the pillars. The hotspot

project set out to: identify adaptation options; analyze how climate change with its uncertainties can be fitted into spatial planning and decision making processes; reinforce the network of organizations involved in adaptation challenges.

### Guarding creativity

The two hotspots applied different methods to achieve their objectives. But they had one thing in common: both teams decided to start parallel research processes and not to integrate these in the main planning process for the two areas. By so doing, the hotspot teams could follow their own creative paths and methods without being hindered by the procedures and logics of the main provincial planning practice. Rob Roggema, project leader of the hotspot Groningen, states:

Planning for climate change requires alternative methods because it deals with so-called wicked problems. These problems are complex and cannot be easily quantified, because they surface only after a longer period – often more than 30 years –

Oldehove in the north of Groningen province. Extended dry period causes erosion at the edge of a field.



The research program was designed to start hotspots in order to apply and integrate knowledge in the field, that was produced in the CcSP.

and they are uncertain due to the uncertainties of climate change. Yet, we know that we have to deal with them now to avoid higher costs in the future caused by possible climate disasters or by delayed investments<sup>[2]</sup>.

The hotspot research Zuidplaspolder was conducted by the Xplorelab, a laboratory for renewed working and learning of the province of Zuid-Holland. It stimulates integral working through research and design by interdisciplinary and transdisciplinary cooperation between policy makers and scientists. In the first phase of the project, effects of climate change on flooding, inundation, drought, water quality and nature were analyzed in a rational analytical way according to the ‘three layers approach’: what is the situation now and how will this alter under the four climate scenario’s designed by the Royal Netherlands Meteorological Institute KNMI for the underground layer, the network layer and the occupation layer. In the second phase many adaptation options were elaborated for the Zuidplas in creative workshop settings. These ideas were used to make five pilot designs for different parts of the polder. In the third phase the pilot designs were subjected to a cost-benefit analysis. A ‘zero alternative’ with measures already proposed in the existing plans was compared to the ‘pilot design alternative’.

The hotspot Groningen applied a very different approach. It created a ‘wicked by-pass’. By-passing the planning process of the regional plan allowed for the use of uncommon techniques such as back casting and back-tracking. With back-casting a desired future (climate-proof and sustainable) was designed and translated to strategies and measures to be taken as from today. With back-tracking a situation in the past was described in which a climate-proof situation and sustainable equilibrium existed. Elements of this past were also used to describe a possible future. New knowledge was developed in expert meetings and other special settings where creative and design oriented thinking were stimulated. Special attention was given to the composition of these groups; in expertise, gender and age they were made as diverse as possible. This enhanced unorthodox thinking.

#### Results of the studies

Conclusion of the hotspot Zuidplaspolder is that the existing plans are climate proof. Many of the measures proposed in the hotspot study were already used in the plans. However, for water shortage, water safety and inundation caused by precipitation the plans are insufficient under some of the climate scenarios. The five pilot designs offer supplemental solutions, often deviating from traditional approaches<sup>[3]</sup>.

Hotspot Groningen concluded that the regional plan doesn't offer enough possibilities for a long-term and integrated climate proof perspective, while adaptation in the province is urgent. The coastal defence is inadequate, given future risks. Variations on the 'super-dike' and/or controlled inundations make it possible to combine various functions, like housing with safety against flooding. A climate proof ecological infrastructure needs more space, but this can be intelligently combined with space needed for water conservation for dry periods. Also other solutions for fresh water supply, local sustainable energy generation and agriculture are given ([www.klimaatbestendiggroningen.nl](http://www.klimaatbestendiggroningen.nl)).

### The wicked by-pass

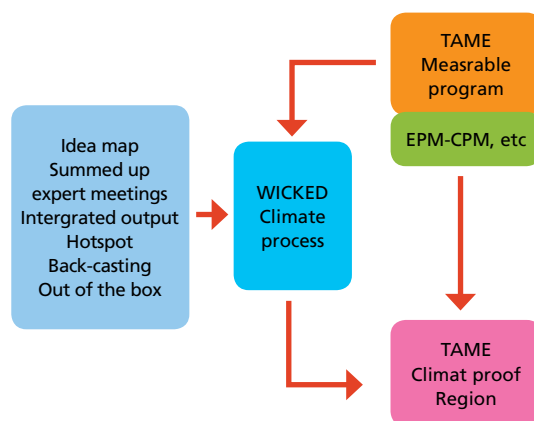
Both hotspots decided to work parallel to the mainstream planning process. This had clear advantages, such as a positive environment to experiment and perform cross-boundary work. But the risk of not being able to influence the mainstream process was considerable. Having recognised this risk from the beginning, the Zuidplaspolder hotspot team set up a special structure: the project leader of the mainstream plan joined the hotspot research team, and one of the members of the steering committee of the mainstream plan was appointed rapporteur for the hotspot. This allowed the hotspot project to be taken seriously; some of the measures developed in the hotspots are included in the mainstream plan. The selected method of research probably helped as well. The steering committee recognized itself in the rational analytical research approach.

The hotspot Groningen was less successful in influencing the regional plan. The main reason was that it began to lag behind the regional planning process after the first phase. The hotspot research was complicated, techniques to tackle this 'wicked problem' were new and knowledge was more slowly produced than required for the regional plan. Results from the hotspot project came too late to be included in the plan. Climate adaptation was not sufficiently included in the plan also because the executive board of the province decided to reduce the plan's ambitions from one with new ideas and perspectives to one in which existing policies were confirmed.

The methods used, play a role as well. Civil servants and commissioners are not used to a creative and innovative approach. Moreover, since they

were not fully involved in the conception of the hotspot, they didn't feel at ease with the outcome. A lesson learned is that within a planning organisation one has to accept that solving wicked problems needs a different planning approach.

Climate as a wicked problem integrated in an adjusted regular planning process



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#### REFERENCES

- 1] Pater, F. de, et al 2009. Hotspot definition study.
- 2] Provincie Groningen, Roggema, R 2009. hotspot klimaatbestendig Groningen, ontwerp eindrapportage
- 3] Provincie Zuid-Holland, Steekelenburg, M, Goosen, H, de Groot, M. Climate adaptation in the Zuidplaspolder