

# Assessment of Governance Strategies for Climate Adaptation in Flanders/Belgium

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## 1 ABSTRACT

Climate discourse in recent decades has mainly focused on the issue of mitigation. Through a better understanding and assessment of climate challenges, adaptation arises as a complementary strategy to mitigation. Vulnerability in relation to climate change is seen as a function of exposure, sensitivity and adaptive capacity. Adaptation can influence sensitivity while mitigating impacts on the exposure to climate change. (IPCC, 2007).

Adaptation requires space for climate on a local scale and should therefore be incorporated into the structure of any given place or region. Consequently, however, implementation has to overcome local resistance. (IPCC, 2007) In this first part of a broader investigation into adaptation, the climate change challenge is situated in the Flemish context. Assessment of an appropriate framework in the international literature is followed by a delineation of the relation between space, demand and supply, and policy. A first step is taken towards the development of a climate scan tool to narrow down adaptation options and strategies. At this point, qualitative spatial implementations will be investigated through research by design in order to assess integrated and integral adaptations.

## 2 INTRODUCTION

CcASPAR, an acronym which stands for ‘Climate change And Changes in SPAtial structures in Flanders – Research project’ (2009-2012), funded by the Institute for Innovation through Science and Technology (IWT) and is oriented towards preparing policy in the domain of adaptation possibilities in response to climate change. The aim of the research is to formulate a spatial adaptation strategy for Flanders (SAS). Research into climate change is very much on the worldwide agenda and Flanders and Belgium are no different. It is time to develop strategies that anticipate the potential effects of climate change and to investigate new investments in spatial developments, particularly with regards to how the latter can be made sufficiently resilient against those effects. The research project’s social relevance relates to its answering of the question as to how existing spatial structures in Flemish society can be adapted to confront the growing effects of climate change. (Leinfelder, 2008) The research questions ‘What should we do?’ and ‘What can we do?’ form the foundations of this project. The latter has also sought an adequate translation of the concept of ‘adaptation’ to the Flemish context. A SAS will have to take a number of issues into account, at the very least for the purposes of defining strategic action in the Flemish context. This means that, in addition to paying attention to physical space, such a plan must also take stock of the relational social network space in which the project or process is to come about. In this paper we point to a number of forces which define the existing spatial, planning and policy context which will need to be taken into account in developing a SAS for Flanders.

## 3 WHICH ISSUES WILL A FLEMISH SPATIAL ADAPTATION PLAN HAVE TO TAKE INTO ACCOUNT? – A FEW CONFLICTING FORCES.

### 3.1 The Existing Spatial Context

#### 3.1.1 Location, density and fragmentation

Flanders/Belgium lies in the Rhine-Meuse-Scheldt (RMS) delta, placing it in the economic heart of the European Union that surrounds Brussels, the European capital. Federal Belgium consists of three quasi-autonomous regions: the Flemish, Walloon and Brussels Capital regions. It is for administrative reasons that this paper focuses only on Flanders. Of course, in relation to climate change, this delineation is purely arbitrary: neither climate nor spatial structures or systems cease to exist at administrative borders. This institutional division aimed at making the country governable nevertheless erects the first barrier to addressing cross-border problems such as climate change.

Within the RMS delta, Flanders/Belgium lies at the intersection of economically strong regions such as the Dutch Randstad to the north, the German Ruhr region to the East, London to the west and the Paris and Lille-Roubaix-Tourcoing urban zones in France to the south. (RSV, 2004 and L. Boelens, 2008) As a result of its location, Belgium is, to a great extent, a transit country. Flanders alone has around 6000km in main and regional roads (not including local roads) which simultaneously connect and divide the spaces between settlement structures.

In comparison with other delta regions in the world, the RMS delta ranks on the low side for population density with just 6.4p/ha over an area of 53 000km<sup>2</sup>. (L. Boelens, 2008) Of course, this says nothing about the factors which govern the division of space or which qualities are achieved. It only gives an indication as to size. It gives an impression of the spatial pressure which goes hand in hand with the socialisation of space, i.e. its accessibility and the ratio of private to public spaces.

Belgium has 10.6 million inhabitants of which 6.16 million live in the Flemish Region (456 inhabitants/km<sup>2</sup>), 1.05 million in the Brussels Capital Region (6497 inhabitants/km<sup>2</sup>) and 3.45 million in the Walloon Region (205 inhabitants/km<sup>2</sup>). (Federal Department for the Economy, 2008) According to the Flemish Spatial Structure Plan, the regional policy plan, Belgium and particularly Flanders and Brussels are among the most densely populated regions in the world. (RSV, 2004) Nevertheless, with 4.56p/ha, Flanders is below average for both the RMS delta and the compared overall delta average. This notwithstanding, Flanders is subject to significant spatial pressure. An historically developed spatial spread followed by unbridled suburbanisation and internal and European/global external development pressure have given Flanders a highly idiosyncratic spatial morphology. This so-called 'nebular city' is characterised by endless overlapping construction forms that often severely deface existing open spaces. In Flanders, one never has the real sense of driving into or out of a city.

One result of this characteristic morphology is that space becomes highly fragmented. This fragmentation can also be identified in other Flemish/Belgian structures such as governments, administrations and institutions. This has led to a situation where a large number of actors and stakeholders from various domains dictate terms with it comes to spatial issues. The fragmented space is also in direct proportion to the increased pressure on available space because new or additional developments generate an even greater demand for space.

### 3.1.2 3.1.2 When and how did we forget?

In the contexts of the CcASPAR project, a number of climate scenarios have been developed in order to determine the respective structures' sensitivity to change. These scenarios are in line with the models developed in the Netherlands and those of the IPCC. The primary effects which have been taken into account are water, temperature and variation. High water as a result of potential flooding via the seas or rivers. Low water as a result of reduced rainfall in summer, a drop in the water table resulting from infiltration problems because of the landuse and a gradual increase in consumption. Heat stress in the summer and, although milder winters have been predicted, it has been shown that very cold dips are a possibility, thus resulting in greater temperature extremes which could have an impact on the relevant structures and systems. Variation in the distribution of these effects is difficult to estimate, hence the importance of taking this parameter into consideration. In 2007 it was shown for the first time that human activities were the main cause of variances in precipitation observed between 1925 and 1999. Between 40° and 70° latitude – comprising the majority of Europe – precipitation levels have increased by an average of 62mm per century. The contribution of human activities to this figure is estimated at 50% to 85%. (MIRA, 2010)

Of relevance to the Flemish/Belgian case, it appears as though humankind has had a lobotomy at some point in its history. Belgium and the Netherlands have lived with water for centuries. This experience has been translated into settlement structures and specific forms of land use. In Flanders, people have traditionally not built in areas that are subject to flooding. Not a single historical church in Flanders has ever been threatened by water. This changed in the 1960s and 70s when an omnipresent belief in the ultimate manufacturability of society combined with a blind trust in technical solutions. People forgot or ignored the historical waterways and started building on top of them with all the predictable consequences.

### 3.2 The Plannological Context

#### 3.2.1 Plannological context

Although some zoning plans existed in Belgium beforehand, regional planning has formed the basis for the division of space since 1962. In 1980, spatial planning was fully regionalised which meant that the regions were at that moment given full jurisdiction over their respective territories. This is seen as the first palmy period for spatial planning and order. Then there was a transition period from the above-mentioned regional planning to structure planning. From 1996 to 2005, there was a second palmy period for structure planning. Structural planning is characterised by the fact that the respective plans are binding for the government. They are a representation of a scientifically grounded, desired spatial structure. The three policy levels, namely local, provincial and regional, function according to the subsidiarity principle. By means of planning processes, the orientational structural plans are translated into spatial execution plans, which are binding by law for individuals. As figure 1 shows, the question at this moment is, what will be next? Will the line of planning as it is today be followed and the existing tools be modified, or will there be a new planning course with new planning tools to develop, regarding the climate challenges that are upon us?

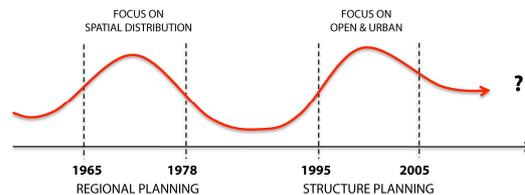


Fig. 1: Two palmy periods of planning in Belgium/Flanders

The Royal Decree of 1972 regarding the designation and application of regional plans can be seen as an obstacle for the transition from regional planning to structural planning. At the time, namely, a univocal key was introduced for regional plans, offering legal certainty with regards to the designation and use of any given piece of land. This key otherwise does not take such issues into account as, e.g., the quality of the landscape, environmental or climatological fragility or socio-cultural identity. There is no mention of any 'total economic value' (Ahlhorn, 2009), in which economic, functional and other values are incorporated in the equation. Under the weight of legal certainty, the only thing that counted in the regional planning is the economic function and/or value of a place. As such, this does not say anything about the intrinsic qualitative foundations of regional planning itself.

Structural planning, however, is better equipped to deal with uncertainty about the future. And yet, it cannot completely come to fruition because of a tradition and a culture that continue to exert influence from the past. The degree of freedom still inherent to orientational structural plans for quite liberal interpretations, are outweighed for reason of legal certainty, when the latter are converted into spatial execution plans. In complying with the regional plans, all intended uses are designated in precisely delineated zones, where the applicable criteria are described which define the function and in many cases also the intended form of subsequent developments. There is, however, another possibility: why would one not embrace a system where people must earn legal certainty through sound argumentation? In such a case, one would have to demonstrate that a certain function or programme is appropriate for a certain area; one would have to evaluate both the intrinsic and added value in each case. We could even evolve towards a fluviology instead of a plannology, as suggested by Luuk Boelens (2009), with the significant element being a shift from 'survey before plan' (plannology) to the planning activity 'of the survey itself'. Local knowledge could then be reintroduced at any moment as part of a continuous process.

#### 3.2.2 Conflicting levels of government

Within the principle of subsidiarity, one could claim that the higher the level of government, the more abstract the visions and concepts become. Although in and of itself, this is not a bad thing, it can lead to tensions within the process for two main reasons. Firstly, in higher plans and administrative processes, there is often no direct relation with the local area. Information on the actual localities is usually contained in more extensive collections, hence the tendency for a place and its needs to be reduced to a variable within the accountant's equation. Indeed, the section on spatial accounts that is appended to the Flemish Spatial Structural Plan is a literal translation of this. (RSV, 2004) Through the exertion of political pressure, people

have succeeded in reducing an integrated document into a variable in a spreadsheet; which makes it all the more controllable (and negotiable) for the politicians. Secondly, and as a consequence of the distance, the abstraction and outdated data, the local plan still to be developed can easily be steered beyond the contexts of the locality in question. Thus do top-down plans often meet with resistance due to a lack of up-to-date and above all local knowledge. Not only in relation to figures but also their incorrect assessment of the times and the sensitivities which influence decision-making in the respective policy domains. In relation to current developments, large infrastructural works at the regional level have often met with resistance during implementation within the local context.

### 3.3 The Policy Context

#### 3.3.1 Thirteen policy domains

With the introduction of the Flemish government's BBB project of 2006 (roughly translated by Better Governmental Policy), the Flemish government was restructured into 13 homogenous policy domains. A homogenous policy domain is a collection of policy areas which, from the point of view of the individual and the policy itself, form a coherent whole. Jurisdictions which logically go together are subsumed under the same policy domain. Of those 13 tracks, each of which was supposed to have a delegated minister with his/her own cabinet and administration, there are 8 + 1 (Spatial Planning, Residential Policy and Monumental Heritage) that directly impinge upon spatial considerations. Consequently, and in the case of Spatial Planning, not all jurisdictions that logically belong together have in fact been brought together. This, too, opens the door to potential conflicts.

#### 3.3.2 The primacy of the political, rationality and the prison of the "present place"

The primacy of politics has nothing to do with politicisation. It refers to the clear division of labour between politicians, administrations and civil society. The principle is that policy must be formulated by political representatives, because they are democratically elected. The Flemish policy tracks supports the government in its tasks: it takes care of the preparation, execution and evaluation of policy. Civil society is actively involved in the preparation, elaboration and execution. Neither the administration nor civil society have decision-making powers. Those are reserved for the politicians.

The result is that decisions are taken in the contexts of a political rationale, that is, by a lay instead of a specialist, in the contexts of short-term thinking as a function of an electorate rather than with regards to rational-technical considerations. A problem which, among others, is described well by Dowell Myers (2005) in 'Escaping the prison of "the present place"', where he points to the term of office which holds 'society and all its challenges' imprisoned in the present. As a result, priority is given to ad-hoc solutions for the issues that dominate the public agenda.

## 4 FRAMEWORK AND ADAPTIVE CAPACITY

According to Barry Smit et al. (2000) and in line with Hans-Martin Füßel and Richard J.T. Klein (2006), there are two distinct but not independent reasons why adaptation is important with respect to climate change and variation. Firstly, because people realise that the impact of climate change can itself be changed and in many cases reduced. People can adapt the sensitivity of the respective systems and structures. In this context, people ask themselves, 'What adaptations are likely?' Secondly, research into 'adaptation' is regarded as preparatory to policy. There, the question is, 'What adaptations are recommended?'

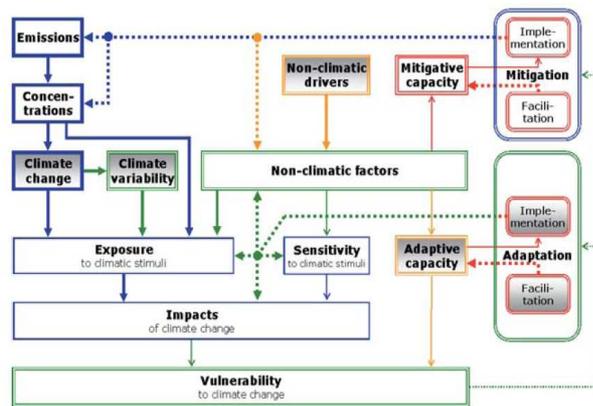


Fig. 2: Adaptation policy assessment (Füssel, H., M. and Klein, R., J., T.)

The conceptual framework forwarded by Hans-Martin Füssel and Richard J. T. Klein (2006) is abstract enough to leave the necessary development space open with respect to the Flemish/Belgian context. Specifically for this framework, the combination of natural and socio-scientific perspectives is aimed at identifying areas of vulnerability. “The natural sciences tend to apply a physical-flows view (system-dynamics diagram), [...] The social sciences tend to apply an actor system view (influence diagram), which emphasizes the flow of information and the relationship between different factors that determines social decision-making [...] the two notations interpret the nodes and arrows very differently. In system dynamics, nodes represent stocks, sources, and sinks of conserved quantities, such as materials, water, money, or numbers of humans or other species. The arrows represent flows of these quantities [...] Influences, on the other hand, [...] represent knowledge and beliefs, about how the value of variables affects the value or probability distributions on other variables, which may reflect knowledge on material flows, or of other evidential relationships.” (Morgan and Henrion, 1990, Section 10.7) (Füssel-Klein, 2006, p 311) It is the combination of both perspectives which enables the conceptual framework to comprehend (or perhaps contain) the complex relations at play. Identifying the vulnerability with respect to climate change is aimed at providing argumentative support for certain policy options which reduce the risks associated with climate change. The framework strikingly points to a dual capacity which the system must have if it is going to be able to adapt. It must have a facilitating capacity, in order to enable the acquisition of ‘adaptive capacity’. Adaptive capacity provides knowledge, mechanisms, protocols, funds, technology, platforms and other elements which enable society to mitigate, or at the very least, anticipate the relevant challenges. In addition, the system must also possess the capacity to validate this adaptive capacity by implementing it. One inherent feature of this framework is its steering capacity, due to its adoption of both perspectives. It can, in this sense, be regarded in a vectorial sense. The residue – the current state – represents the finality of the adopted policy at one specific point in time.

The remainder of the research will need to investigate to what extent the conceptual framework referred to above can be followed. In any case, the effects of climate change, insofar as they impinge upon (the use of) space, can rarely be reduced to the jurisdiction of one policy domain or sector alone. One could call this the integrative capacity of climate change. The space in which such a plan or process comes into being always involves a multi-actor context, as explained by Carton (2007), comprising many domains, each with its own rationality. If we in Flemish/Belgian society are to boost our capacity to deal with the effects of climate change, then an integrated approach is essential (see section 3.3). This requires a diagonal integration of policy, both with regards to content (alignment of policy visions) but also procedurally and instrumentally (pooling concrete initiatives). At different policy levels and within different sectors, it has been acutely obvious that certain objectives can no longer be realised because they conflict with those of other policy domains. The construction of a solid (communications) platform by and for the respective stakeholders appears to be of immense importance. (Allaert, 2008)

If we were to return to the past armed with the two questions posed at the beginning of this section, then we could state the following: in relation to the spatial organisation of Flanders, one can consider the Flemish Spatial Structural Plan (SSP, see 3.2.1) as a scientifically founded document that answers the question ‘What adaptations are likely?’ The SSP describes the current state of affairs (3.1.1) including trends and evolutions via which to formulate a desirable spatial structure or development vision for Flanders. The critique that the

SSP lacks genuine vision has been voiced often enough. Especially at times where society seeks answers to spatial challenges. The inability to respond to the current mobility problems, e.g., speaks volumes. The question ‘What adaptations are recommended?’ used to be answered by means of a rough translation of the SSP into a variable on a spreadsheet (see 3.2.2). Whenever the characteristic relations are ignored, however, there is a risk of adding to the fragmentation of which we have already spoken. The question is, however, whether we have the luxury of being able to ignore those relations again, in the face of the challenges posed by climate change.

## 5 REFERENCES

- AHLHORN, F.: Long-term perspectives in Coastal Zone Development – Multifunctional Coastal Protection Zones. Springer-Verlag Berlin Heidelberg, 2009.
- ALLAERT, G.: Ruimte en Planning – Van planningstheorie tot Vlaamse planningspraktijk. Ghent/Ostend, 2008.
- BOELEN, L.: The Urban Connection - an actor-relational approach to urban planning. 010 Publishers, Rotterdam, 2009.  
Doi:10.1007/978-3-642-01774-2
- CARTON, L.: Map making and map use in a multi-actor context - Spatial visualizations and frame conflicts in regional policymaking in the Netherlands. Printed by JB&A grafische communicatie, repro en print. Delft, 2007
- FÜSSEL, H., F., KLEIN, R., J., T.: Climate change vulnerability assessments: An evolution of conceptual thinking. Springer, 2006.  
Doi: 10.1007/s10584-006-0329-3
- IPCC: Climate Change 2007: Synthesis Report. An assessment of the Intergovernmental Panel on Climate Change. Valencia, 2007
- LEINFELDER, H.: Climate change And changes in SPATial structures in Flanders – Research project. (CcASPAR) Ghent, 2008
- MYERS, D.: Escaping the prison of the present place: Can we plan the future of localities in the context of the network society? The network society, a new context for planning. Edited L. Albrechts and S.J. Mandelbaum. Published by Routledge, Oxon, 2005.
- RSV: Het Ruimtelijk Structuurplan Vlaanderen. Gecoördineerde versie, April 2004. Ministerie van de Vlaamse Gemeenschap, Sectie Ruimtelijke Planning. Flanders, 2004
- SMIT, B., BURTON, I., KLEIN, R., J., T. AND WANDEL, J.: An anatomy of adaptation to climate change and variability. Kluwer Academic Publishers, 2000