

BELGIUM :

A COUNTRY ADAPTED TO CLIMATE CHANGE?

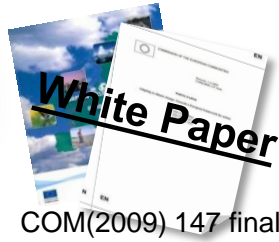


Adaptation Conference
- Brussels - 23/11/2017

Air  Climat
agence wallonne de l'air & du climat

Julien HOYAUX

Adaptation framework



Reg./Fed. adaptation plans



2009

2010

2012

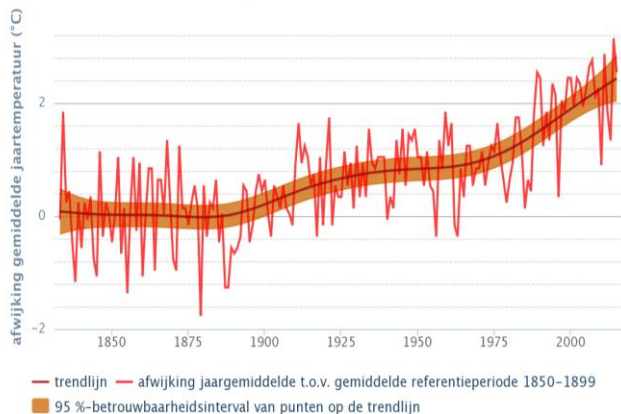
2013

2015

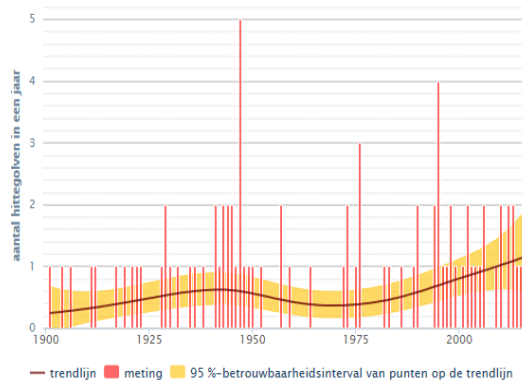
2016

2017

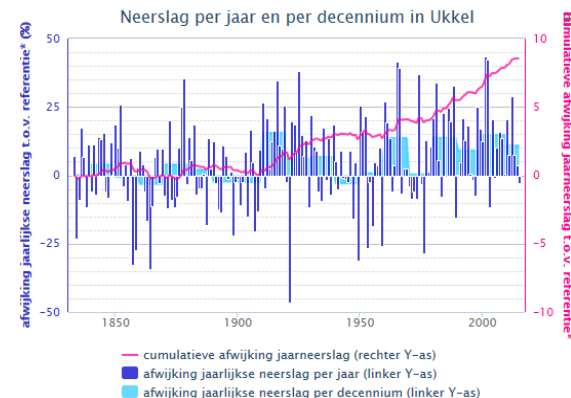
Annual mean temperature



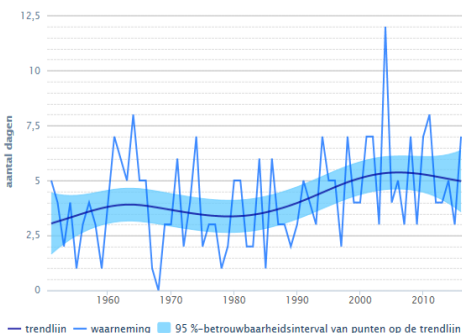
Heat waves



Precipitation



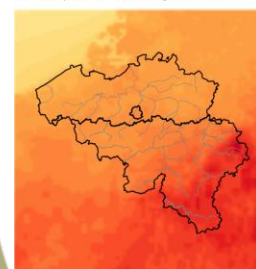
Sea level rise



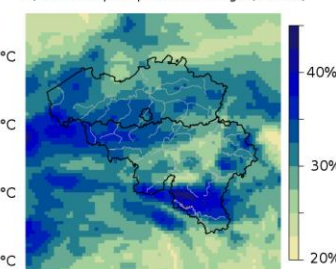
Key messages for the future:

- Hotter climate
- Reinforcement of the precipitation seasonality
- More extrem events
- Sea level rise

a) Temperature change (RCP85)



b) Relative precipitation change (RCP85)



NAS



- Goals: Provide coherence between the existing Belgian adaptation activities ; Better communicate ; Initiate the NAP development
- +-30pp in English, coordinated & adopted by the National Climate Commission in **Dec 2010**
- *Introduction, climate change impacts, adaptation existing actions, roadmap to a NAP*

NAP



- Coordinated & adopted by the National Climate Commission in **April 2017** with consultation of regional/federal stakeholders
- Complementary to regional plans (each plan evolves independently)
- 11 national actions
- Translated in EN, FR & NL

→ Available on <http://www.cnc-nkc.be/fr/reports>

Regional/Federal plans

- Based on CCIV assessments,
- Integrated plans (Climate/Air/energy)



+



National plan

- 'Adaptation plan'
- Valuable for all regions

	Federal	Flanders	Wallonia	Brussels	National
Agriculture		X	X		
Biodiversity		X	X	X	X
Built environment		X		X	
Coastal areas		X			
Crisis management	X	X			X
Energy		X		X	X
Environment		X	X ²	X	
Fisheries		X			
Forests		X	X	X	
Health		X	X		X
Infrastructures	X ¹	X		X	
Industry & services		X			
Research		X	X		X
Tourism		X	X		
Transport	X	X			
Water management		X	X		
International cooperation	X ³		X		X
Transversal issues	X	X	X		X

Designed to be:

- complementary to regional measures
- valuable & coherent on the whole territory
- effective (save money & create synergies)

Measures	
1	Development of high resolution climate scenarios for Belgium
2	Development of a roadmap for a Belgian Centre of Excellence on Climate
3	Development of a national online platform for climate adaptation
4	Strengthening the sectoral coordination at national level
5	Take climate change into account in risk analysis for invasive alien species
6	Evaluate the impact of climate change on the security of energy supply, the infrastructures of transport and distribution of the energy
7	Evaluation of the socio-economic impacts of climate change in Belgium
8	Take climate change impacts and adaptation into account in the framework of the future environment and health action plan (NEHAP)
9	Education and awareness-raising among health professionals of climate change impacts
10	Promote transnational cooperation on adaptation
11	Coordination of preventative, planning and management measures in the event of emergency situations linked to climate change



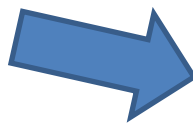
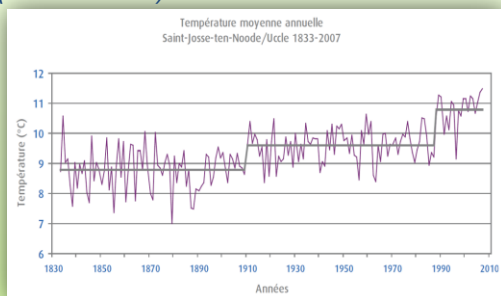
- 2010-2013: Regional impacts assessments
 - Identifying and evaluating impacts to prioritize actions in regional plans
 - Different studies for different challenges (coastal zones, urban area, forestry, ...)



- 2013: Vlaamse Klimaat plan (mitigation & adaptation)
- 2016 : Brussels & Walloon Air-Climate-Energy plans (integrated plans) & Federal adaptation contribution

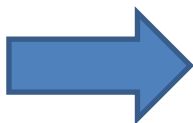
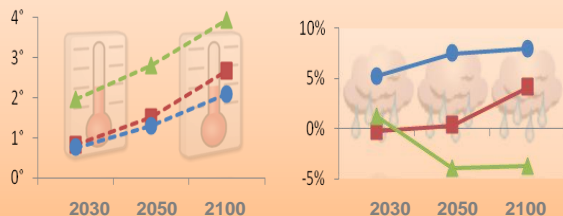
Historical National Data

(source: IRM)

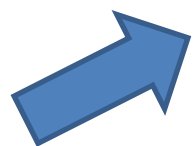


Climatic Projections

(based on the EU project ENSEMBLES)



Experts consultation and validation



Wet Projections	2030 2050 2085								
	2030	2050	2085						
Dry Projections	2030 2050 2085								
Temperature rising (°C)	0,5	1	1,5	2	2,5	3	3,5	4	
Agriculture	<ul style="list-style-type: none"> of erosion risk due to heavy rain of loss of soils due to heavy rain Variability of the crop production and breeding (of the frequency of extreme events) of the pressure of diseases, parasites, weeds and invasion episodes of water needs and water stress risk of yields or production of certain crops Limiting factors (photoperiod, water, fertility) and reversal of the trend? 								
Coastal Areas	<ul style="list-style-type: none"> risks of breaking of natural (mostly sand and dunes) coastal defences risks of breaking of man made (dykes, wave breakers, ...) coastal defences risks of higher stormfloods and waves damages caused by changes of the wind regime and gulf height reduction of sweet water upper layer of the ground water in the polders (salt intrusion) affecting natural systems and infrastructures 								
Fisheries	<ul style="list-style-type: none"> changes in the abundance and distribution of marine species, inclusive commercial fish stock new commercial species will appear (shift from South to North) new harmful species will appear vulnerability of highly specialised fishery sector of flood risk 								
Spatial Planning / Infrastructures	<ul style="list-style-type: none"> Risk of disruption of transport by waterways (low-flows more important) Impact of heatwaves and amplification by heat islands damage to infrastructure due to high temperatures (rail deformation, etc.) Risk of disruption of road and rail transport and damage to infrastructure due to snow and frost Impacts on clay soils (shrinkage) Karst Risk Damage related to a possible increasing of the frequency of storms Modification of the distribution areas of forest species (bad for wood production) 								
Forest	<ul style="list-style-type: none"> Amplification of invasions of damage related to fires, storms, droughts damage related to frost of the pollution frequency of the growing and then limitation by soil fertility and droughts Phenology modifications 								
Biodiversity	<ul style="list-style-type: none"> Added pressure on vulnerable areas (peat areas ...) changes in distribution areas Amplification of invasions Phenology modifications 								
Energy	<ul style="list-style-type: none"> of energy consumption for cooling (cold chain/ air conditioning in summer) integrity and capacity of installations (production and transport) Problem of cooling of nuclear plants 1 Management of the network and consumption of electricity 2 of the energy consumption related to warming Seasonal modifications of the productions (solar, wind, hydraulic) and of the productivity of biomass 								
Health	<ul style="list-style-type: none"> of the death due to heatwaves and diseases related to food contamination of respiratory diseases and allergies (pollens...) of death in winter Sanitary risks due to air quality (summer) sanitary risks due to air quality (winter) of diseases related to water contamination of vector diseases 								
Water Resources and Management	<ul style="list-style-type: none"> Pollution of ground water by leaching Degradation of water quality (floods, streaming, low-flows) variation in water courses flow can lead to pollution increased rainfall in winter recharges groundwater Lowering of ground water in summer Longer periods of favorable conditions for off-season tourism 								
Tourism	<ul style="list-style-type: none"> Favorable conditions for summer tourism but risks for nautical activities during drier summers Energy consumption for warming Energy consumption for cooling 								
Industry & services	<ul style="list-style-type: none"> Impact on production processes (e.g. water shortages, cooling of plant, etc.) direct (flooding, high winds, etc.) and indirect (supply problems) damages More frequent and/or intensive weather disasters will challenge insurance systems 								
Legend	very bad	impact difficult to appreciate						1. The modification of the parc (complete closure of Thinge site expected in 2025) should decrease significantly the pressure on water. Attention: Belgium is also directly concerned by the existing risk in the interconnected piers.	
	bad							2. The modification of the parc will create a modification of the modes of electricity management (costs very important).	
	not very bad								
	opportunities								





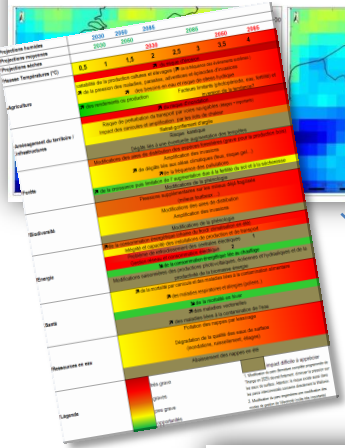
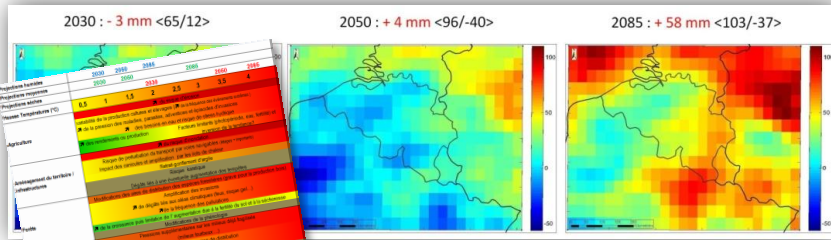
Sigmaplan 



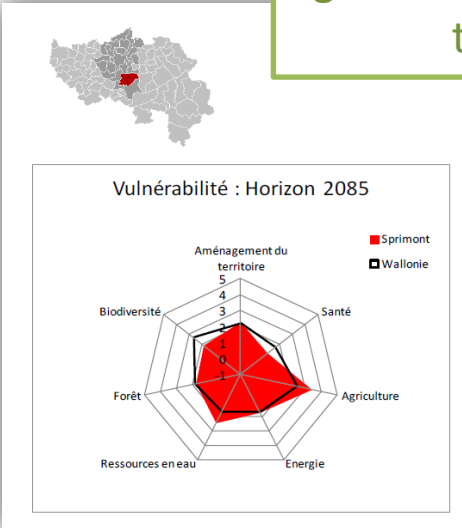
For more information:

- In Vlaanderen: <https://www.lne.be/klimaatbeleid>
- In Brussels: <http://www.bruxellesenvironnement.be>
- In Wallonia: <http://www.awac.be/index.php/thematiques/changement-climatique/les-actions-chgmt-clim/adaptation>
- Federal: <http://www.climat.be>

2012 : A diagnostic tool to assess vulnerability



By crossing results of the regional vulnerability study with the municipality specificities entered in the tool, we can get an evaluation of the vulnerability of the municipality territory



Agriculture :

		-1	0	1	2	3	4	5
Vulnérabilité de la commune pour l'agriculture:	Horizon 2030							
	Horizon 2050							
	Horizon 2085							
Risque d'érosion:	Horizon 2030							
	Horizon 2050							
	Horizon 2085							
Pression des maladies et variabilité de la production	Horizon 2030							
	Horizon 2050							
	Horizon 2085							
Besoins en eau et risque de stress hydrique:	Horizon 2030							
	Horizon 2050							
	Horizon 2085							
Rendements moyens des productions:	Horizon 2030							
	Horizon 2050							
	Horizon 2085							

Source: ECORES & TEC Conseil, 2012

2017: 'Adapte ta commune' Walloon approach



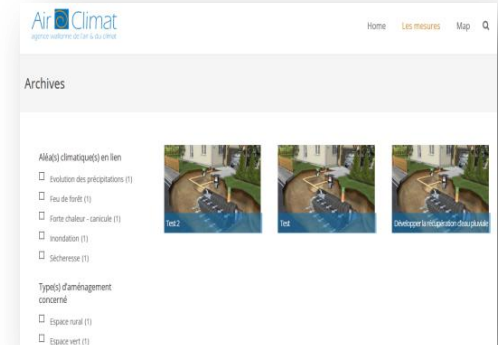
Diagnostic tool

Detailed appropriation of the risks through indicators and maps support



Selection of actions through a web app with examples & localisations of case studies

leswallonssadaptent.be



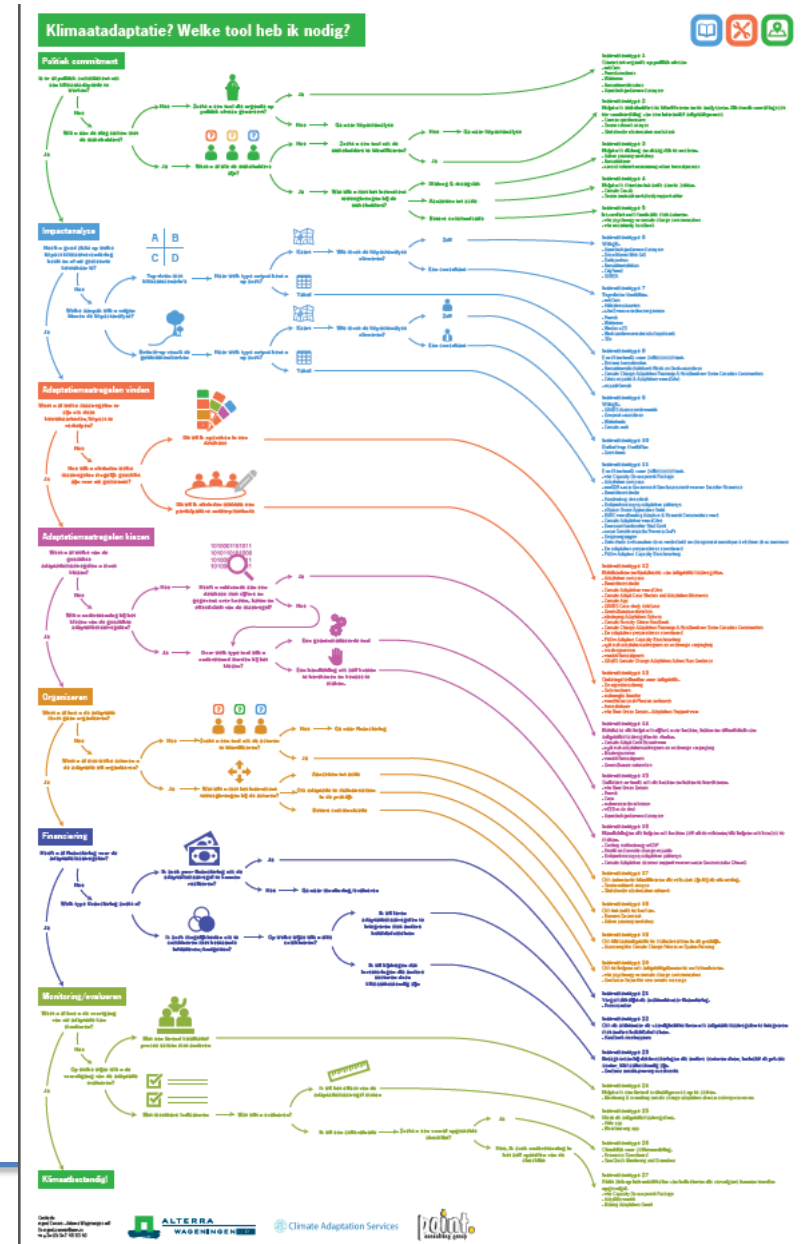
Integration & reporting to the Covenant of Mayors



Monitoring & auto evaluation of the plan

2016: How to go to a local action plan ?

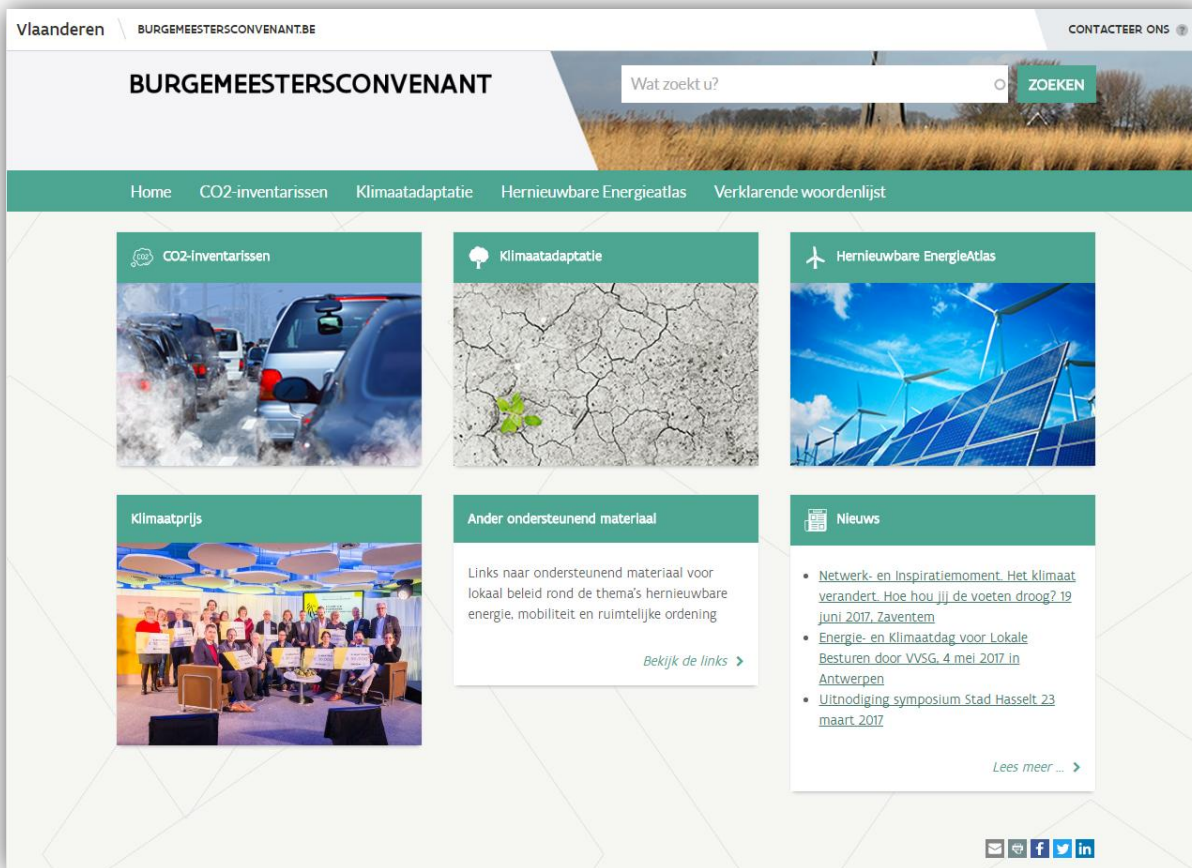
The Flemish « *beslissingsboom* » for the cities en municipalities



Source: Alterra, Point S & Climate Adaptation Services, 2016



- 2017 : Flemish web platform <http://www.burgemeestersconvenant.be>



- Climate adaptation information on:

- Measures
- Examples
- Tools
- Funding
- ...

THANK YOU FOR YOUR ATTENTION



Air  **Climat**
agence wallonne de l'air & du climat

For more information:

[http://www.awac.be/index.php/en/thematiques/
changement-climatique/adaptation](http://www.awac.be/index.php/en/thematiques/changement-climatique/adaptation)

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