

# **Fifth Annual Conference on Carbon Capture & Sequestration**

*Steps Toward Deployment*

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*Programs*

**Assessing the potential of carbon capture and storage in Belgium for  
the period 2010 – 2050**

**the Policy Support System for Carbon Capture and Storage (PSS-CCS)**

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# Content

- The Belgian context
- Goals of the project
- Concept of the support tool
- Architecture of the support tool
- Scenarios
- Conclusions



# The Belgian Context

- Project funded by the Belgian Science Policy Office under
- Science for a Sustainable Development (SSD)
- First major Belgian project on CCS
  - Belgian Geological Survey
  - Flemish Institute for technological research
  - Faculté Polytechnique de Mons
  - University of Liège



museum



# The Belgian Context

- Increased awareness
  - President George W. Bush  
(Washington DC, 11.06.2001)
  - C. Day, Director-General van de DG ENV, EC  
(Brussels, 13-15.04.2005)
  - European Climate Change Programme II – WG3
  - Carbon Sequestration Leadership Forum
  - IPCC SR-CDCS
  - interest of scientific world and industry



# Goals of the project

- General state
  - technique is on the verge of break-through
  - costs are significant
- Points to be clarified
  - risks and how to minimize them
  - behavior of CO<sub>2</sub> in the subsurface
  - (long-term) monitoring and remediation
  - is CCS worth the investment
  - public acceptance



# Goals of the project

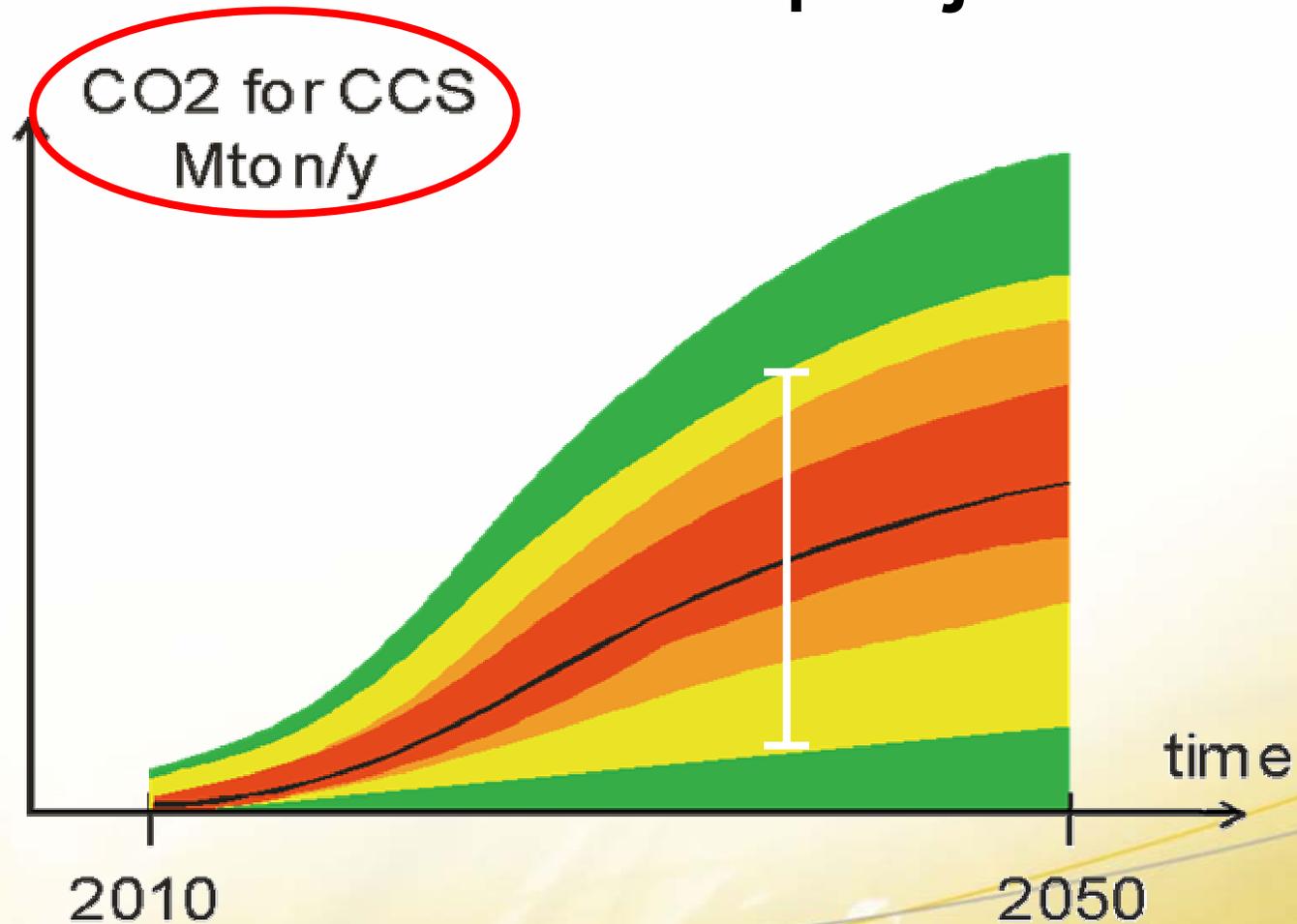
- Main question to be answered

## **How important will Carbon Capture and Storage become for Belgium?**

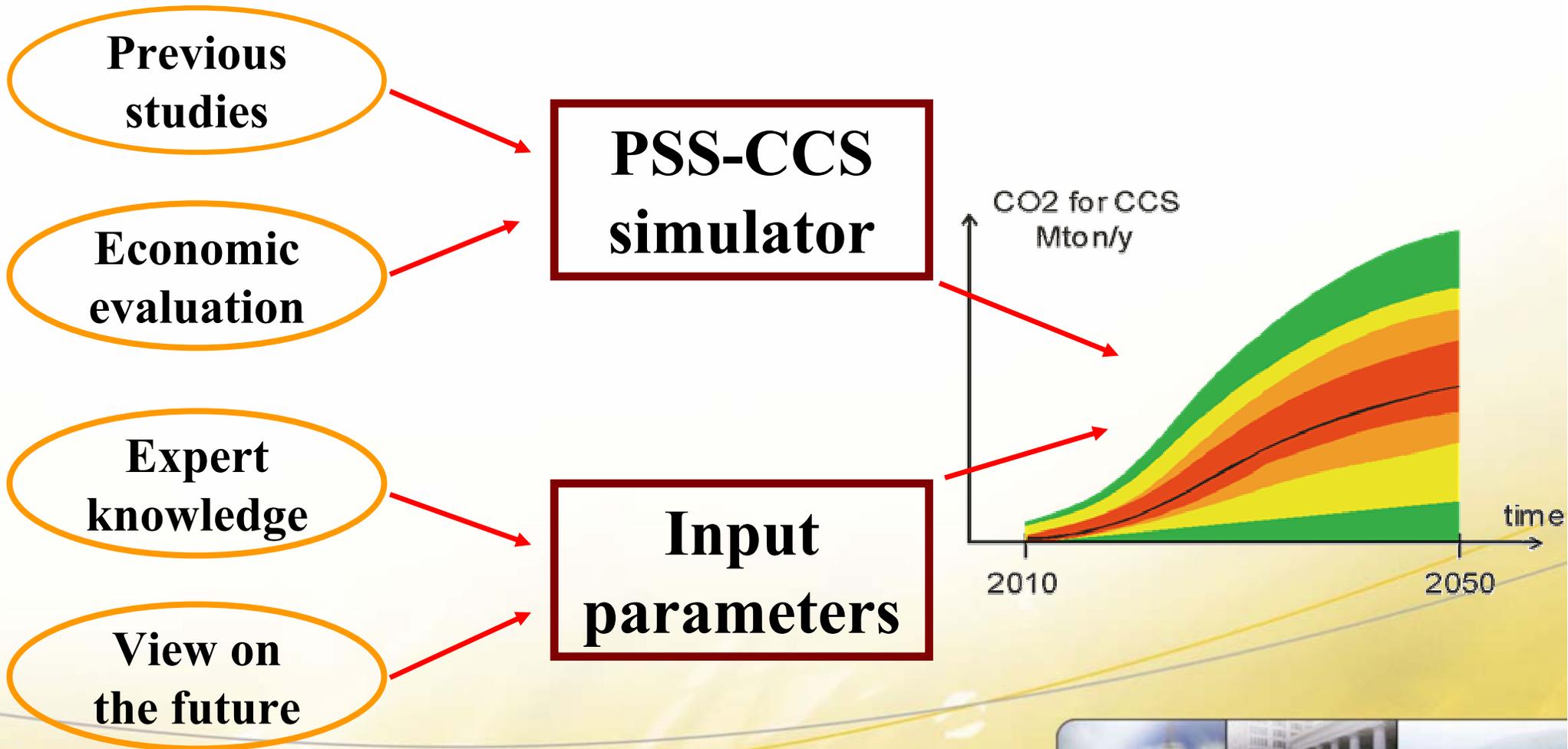
- PSS-CCS project will look at
  - impact of economics on CCS
  - impact of policy on CCS
  - safety (secondary importance)



# Goals of the project

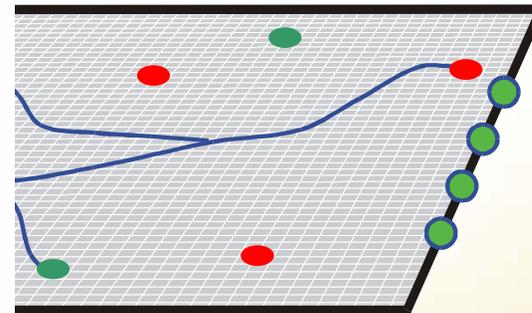
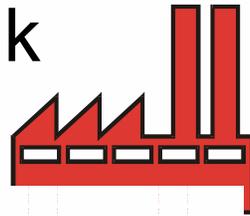


# Concept of the support tool



# Concept of the support tool

- Define source-sink couples
- Calculate cost
- Estimate livability
- Implement viable project
- Repeat for next year ... up 2050



2010

2050



# Concept of the support tool

- Two levels of uncertainty
  - Individual installations (object specific)
    - investment costs
    - operational and maintenance costs
    - capture and storage efficiency
    - (geological) uncertainty about sinks
    - ...
  - Economic, political and social conditions (market conditions)

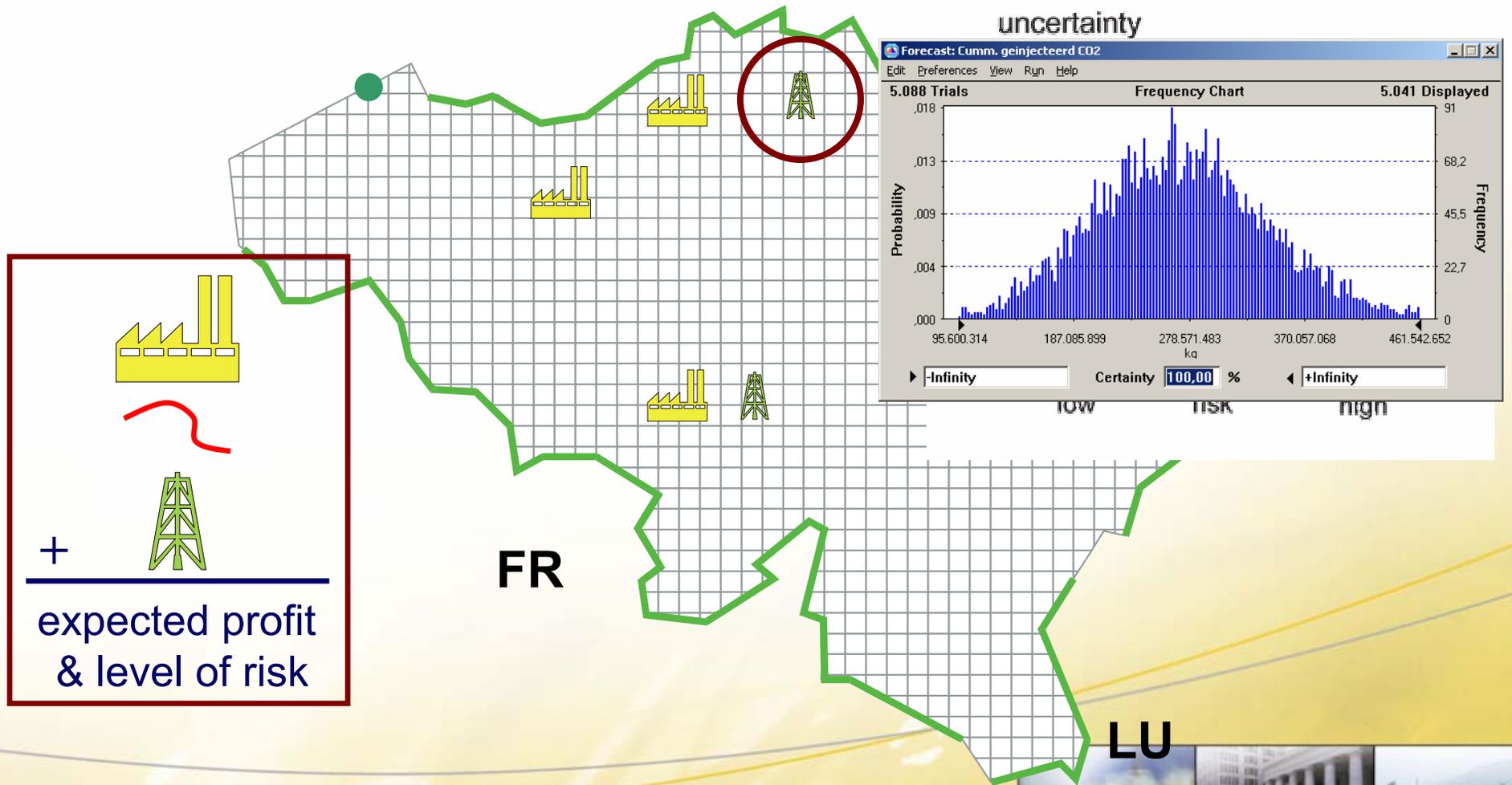


# Concept of the support tool

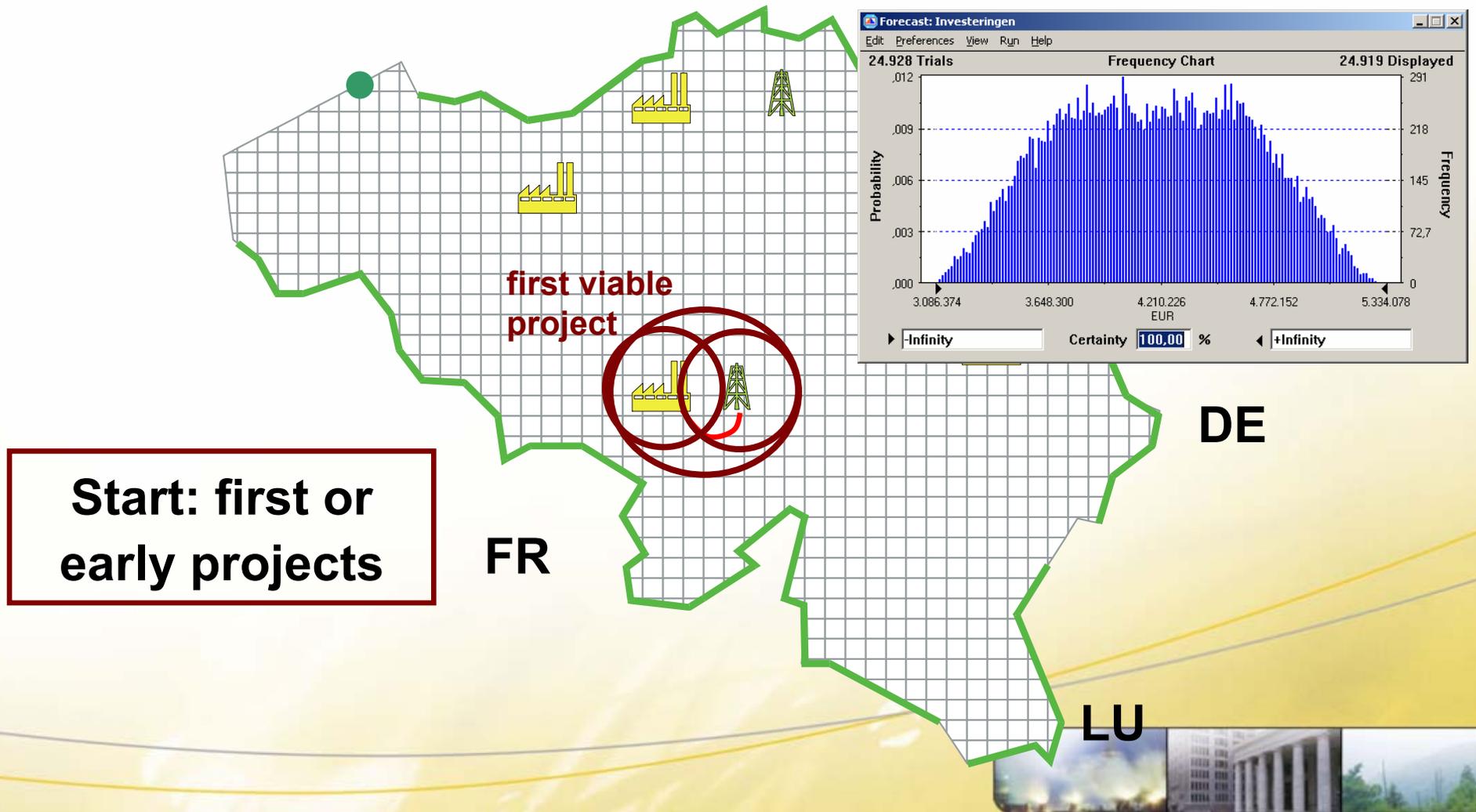
- Object specific uncertainty
  - based on present-day data
  - part of economical and risk evaluation
  - Monte-Carlo simulation
  - summed in output of single runs
- Uncertainty in market conditions
  - based on expert judgement
  - constraints for econ. and risk evaluation
  - defined as scenarios
  - sum of multiple runs



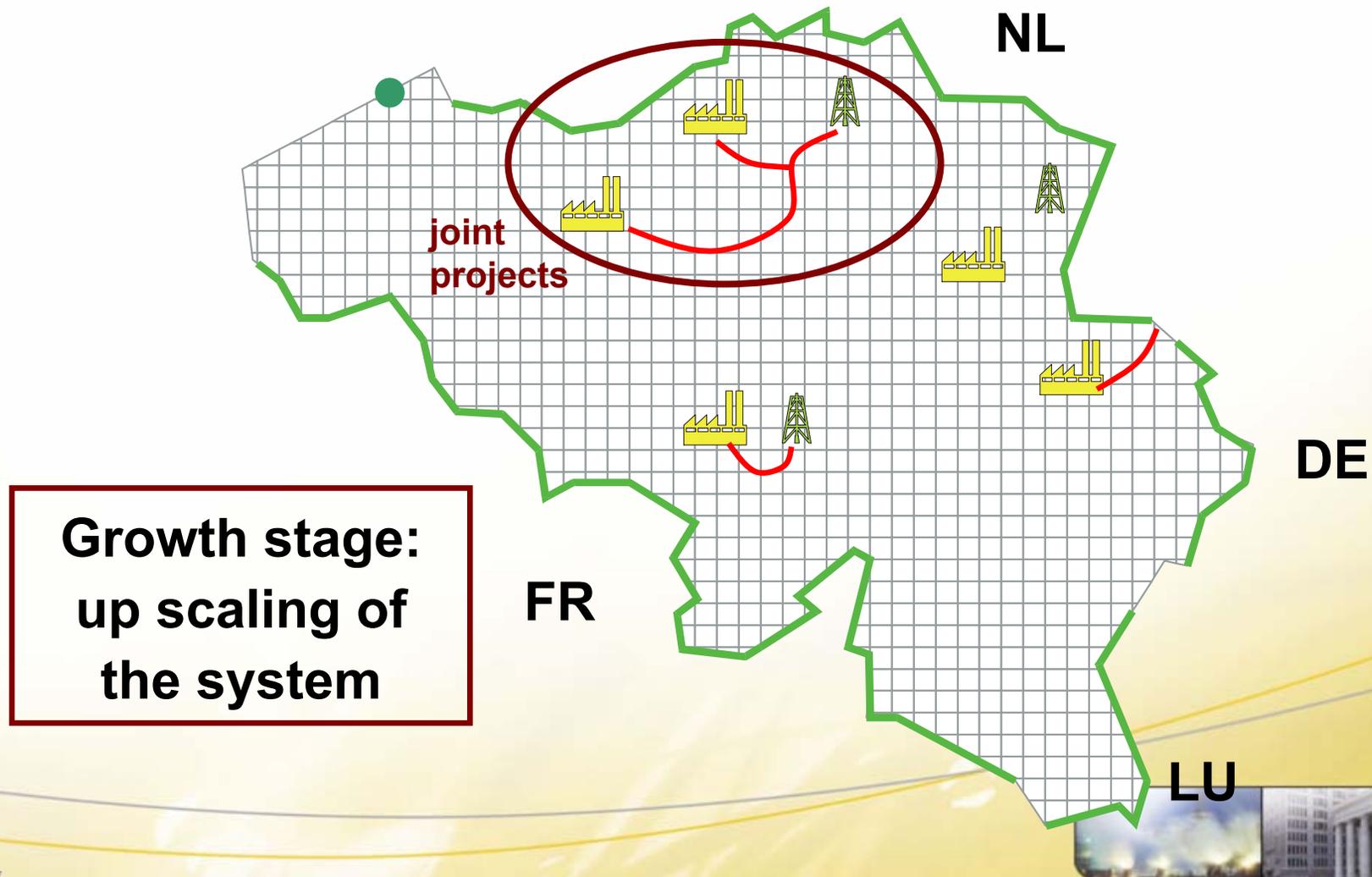
# Concept of the support tool



# Concept of the support tool

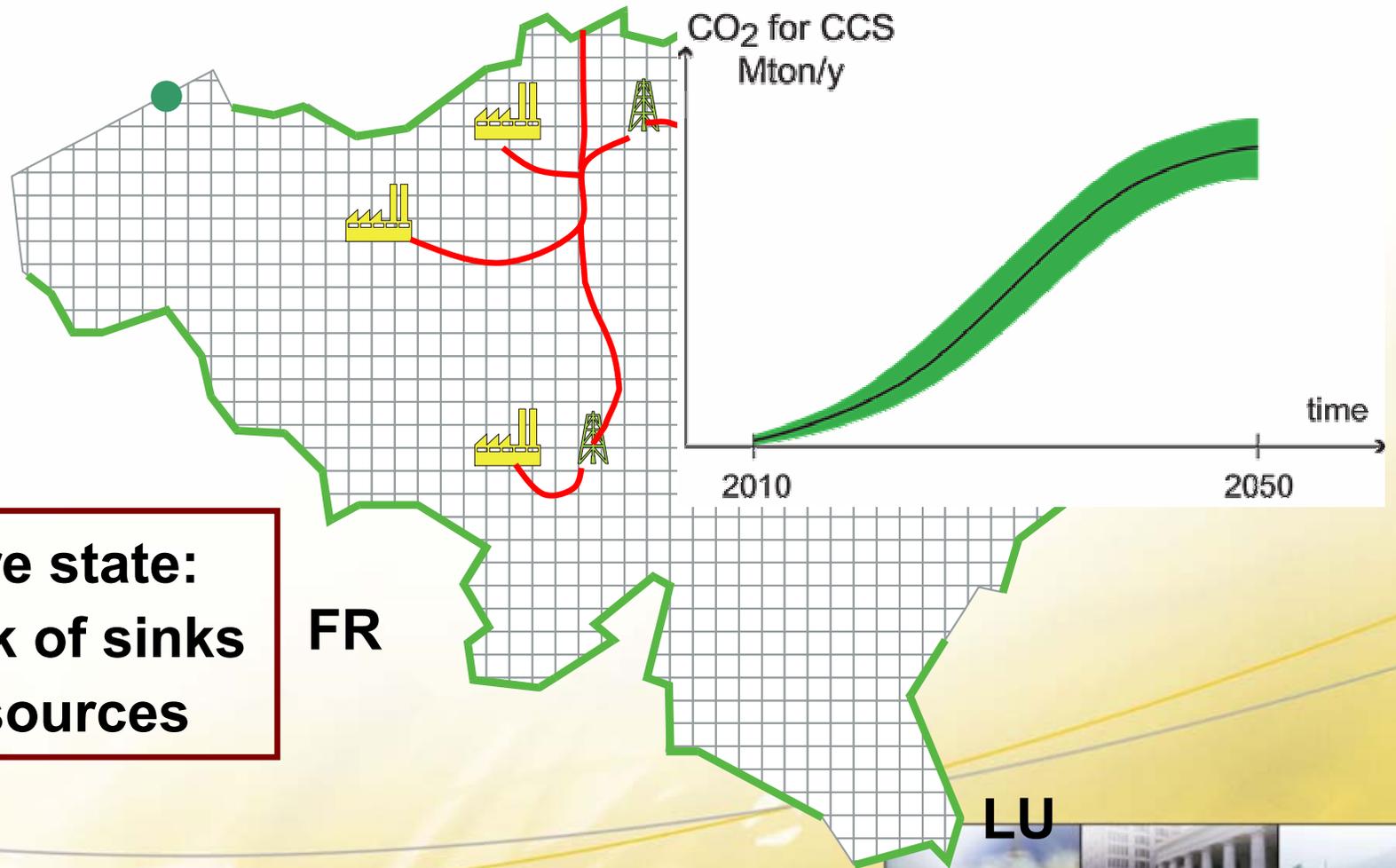


# Concept of the support tool



**Growth stage:  
up scaling of  
the system**

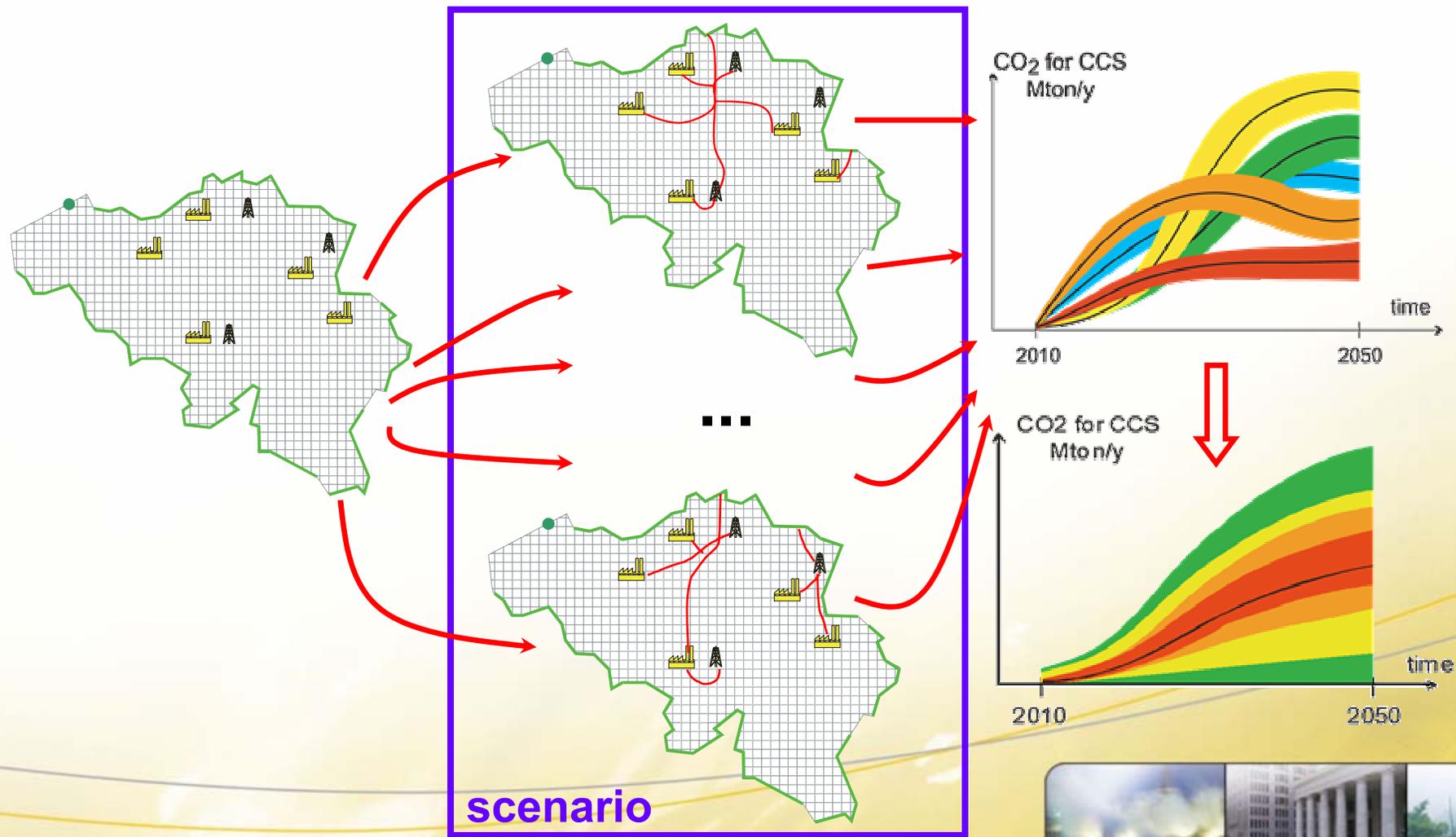
# Concept of the support tool



**Mature state:  
network of sinks  
and sources**



# Concept of the support tool



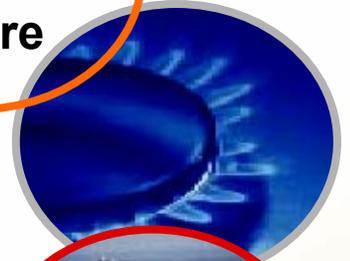
# Scenarios

- Main question to be answered

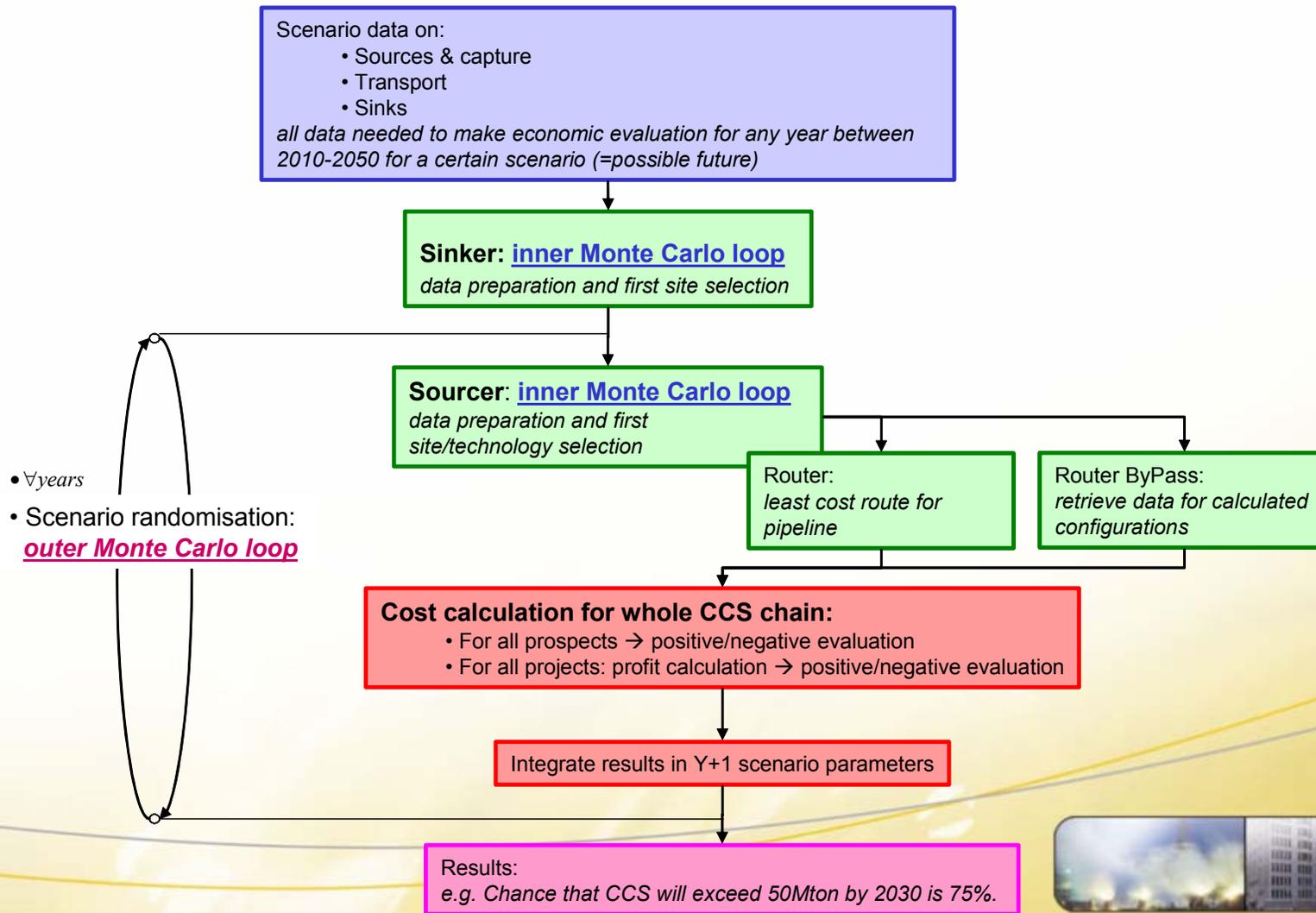
## What will the future bring?

- Technological, economical and social evolution
- Climate policy and supportive measures
- Public acceptance

View on  
the  
future



# Architecture



# Conclusions

- Project status
  - simulator currently under development
  - fully operational simulator by 2007
- Final goal
  - to come up with quantitative predictions for
    - relevant scenarios
    - relevant time-frame (2010-2050)
    - Belgium in international context
    - top-down decisions (for or against CCS)
  - provide clear-cut conclusions



**PSS-CCS** Policy Support System for Carbon Capture and Storage

home

you are here: home » public area » carbon capture and geological storage

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- Global change
- Carbon Capture and geological Storage
- PSS-CCS
- Partners
- Agenda
- Contact
- Links
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28	29	30	31			

upcoming public events

**www.naturalsciences.be\PSS-CCS**

**Contract: SD/CP/04**

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**Belgian Science Policy Office**  
 Science for a Sustainable Development (SSD)