

H2020-LCE-19-2014-2015

*Supporting coordination of national R&D activities  
Coordination and Support Action type project*



**Horizon 2020**

The EU Framework Programme  
for Research and Innovation

# GATEWAY

## Developing a Pilot case for European CO<sub>2</sub> transport infrastructure

*Jana P. Jakobsen, SINTEF ER*

*EERA - Practical next steps in CCS deployment  
Brussels, September 15, 2015*

### Project facts

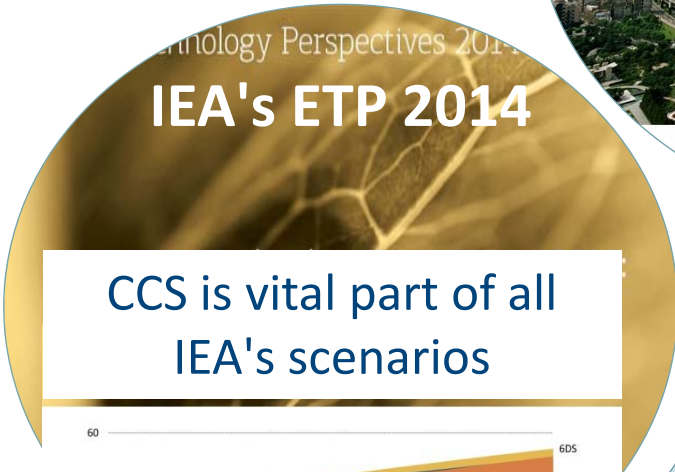
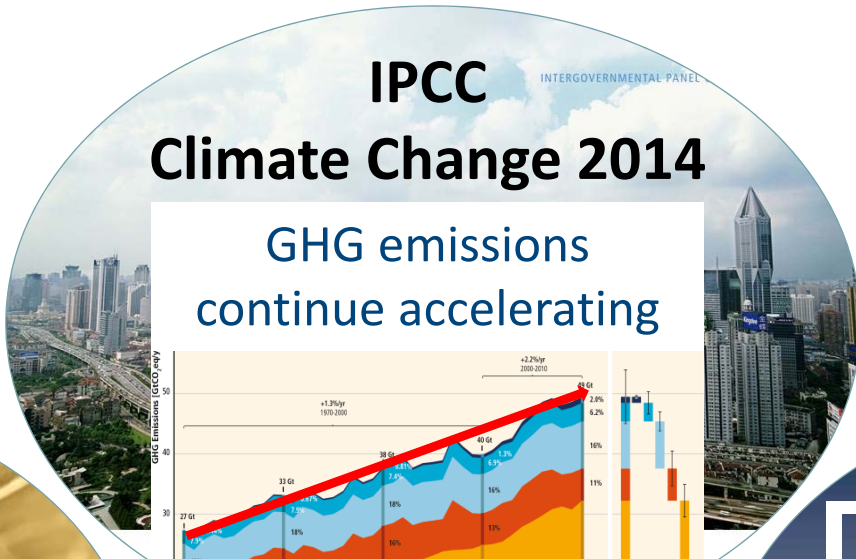
Started May 2015

Duration 2 years

Budget 787 k€

6 Partners

# Rationale



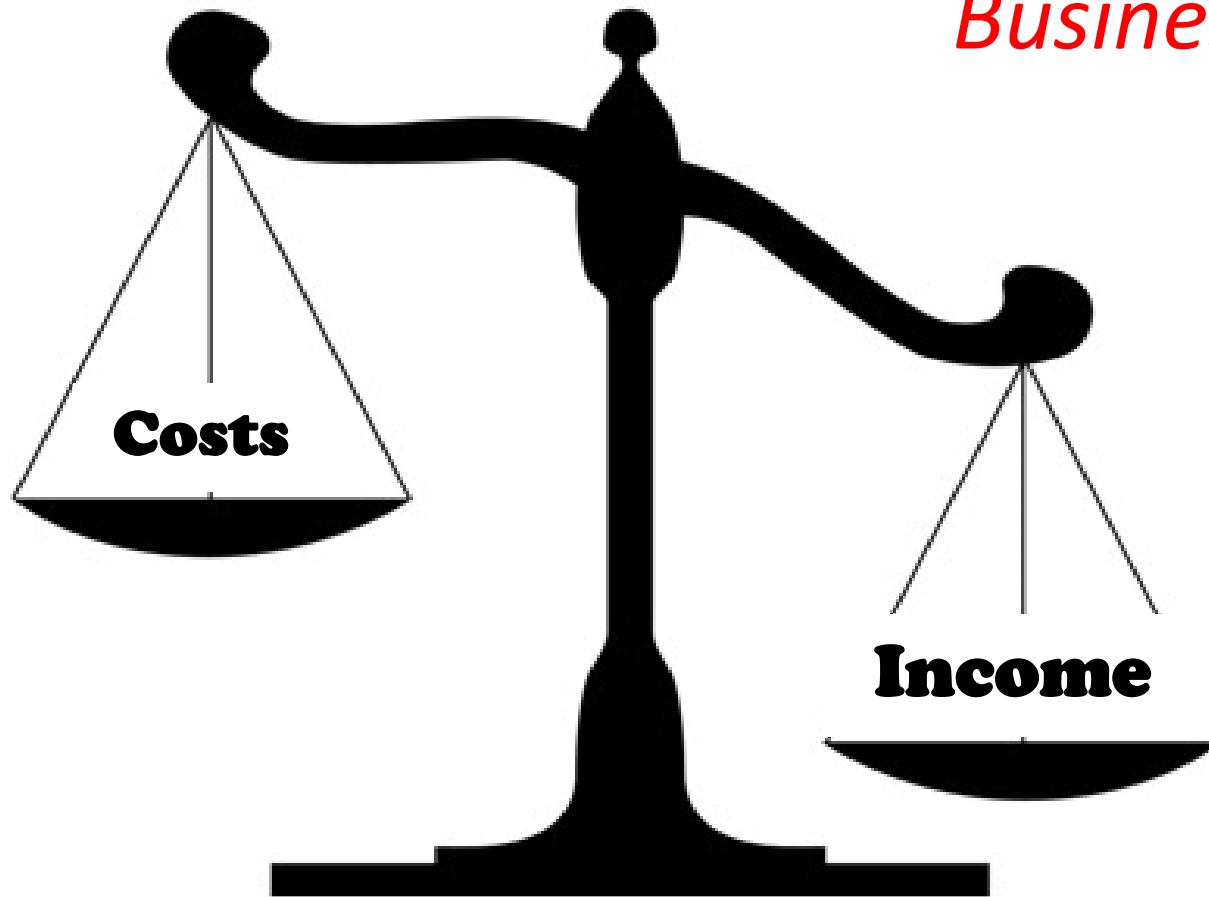
# Accelerate CCS deployment in Europe

..and we to have the tools to develop a strategy and be proactive.

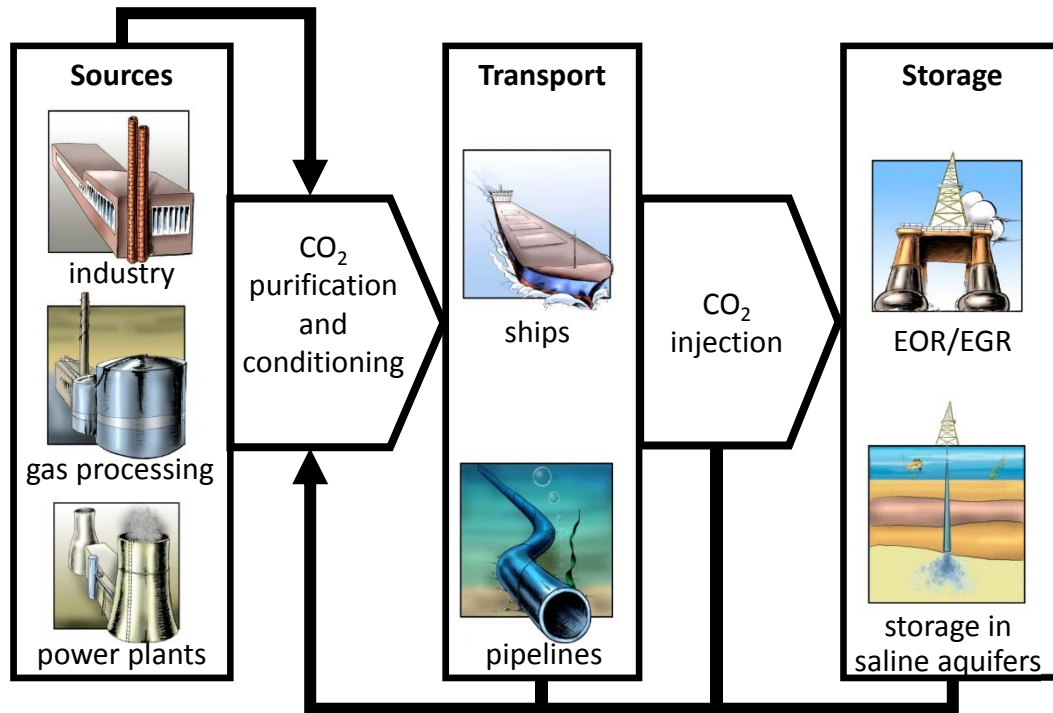


# What does it take to make CCS happen?

*Business case*

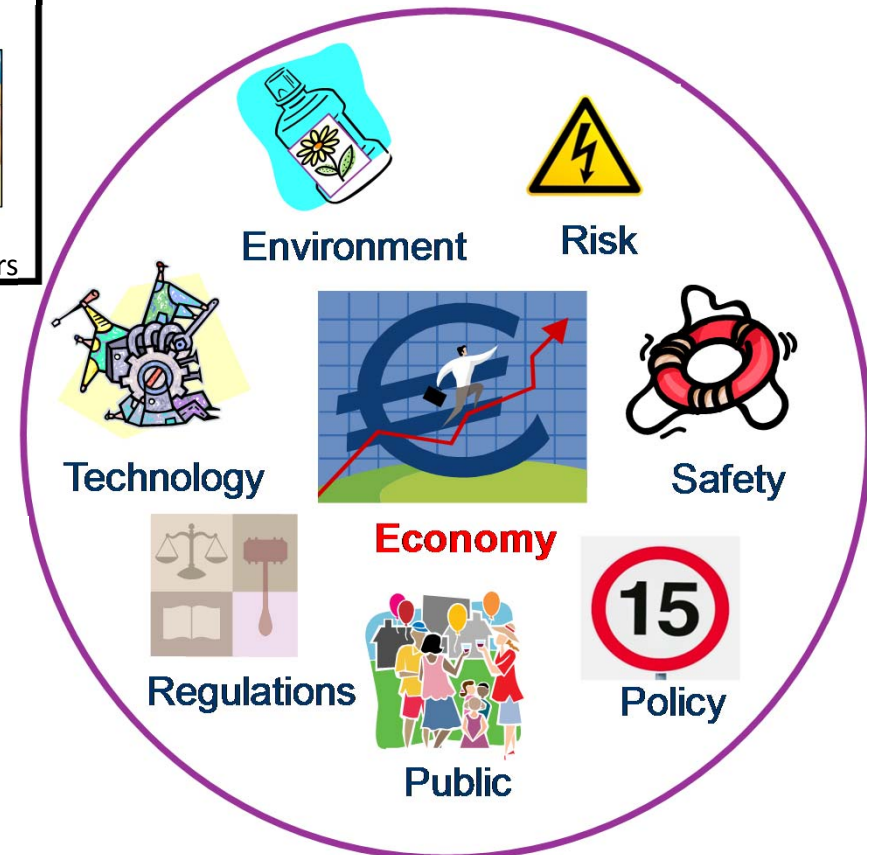


# What is special about CCS?



**CCS Chain**  
many actors

**Chain environment**  
many factors



# What are the key barriers for CCS?



## Key barriers *(Global CCS Institute)*

1. High **costs** of CCS technologies
  - 2<sup>nd</sup> generation technologies
  - Optimization and purpose tail
  - Process integration and synerg
2. Lack of **legislation** to assign value to
3. Securing government funding (lack

I THOUGHT I WAS  
INTERESTED IN UNCERTAINTY  
BUT NOW I'M NOT SO SURE

# Uncertainty!

4. **High costs** of CO<sub>2</sub> transport and storage
5. **High costs** of CO<sub>2</sub> storage
6. **High costs** of CO<sub>2</sub> storage
7. **High costs** of CO<sub>2</sub> storage
8. Private sector debt and equity financ
9. **Public perception and acceptance**
10. **Critical common user infrastructure** investment, ownership and operatc
11. **Knowledge** of geologic characterist



JUSTIN

# Aligning interests and fighting uncertainty

ZEP Delivering large-scale CCS in Europa by 2030

**Business models for commercial CO<sub>2</sub> transport and storage report**

*ZEP report June 2014, by members of ZEP's Temporary Taskforce CO<sub>2</sub> transport and storage*

## Proposed actions

1. Develop understanding the CCS market in Europe
2. Identifying applicable business models
3. Identifying effective financing mechanisms
4. Development of long-term strategic vision for CCS financing



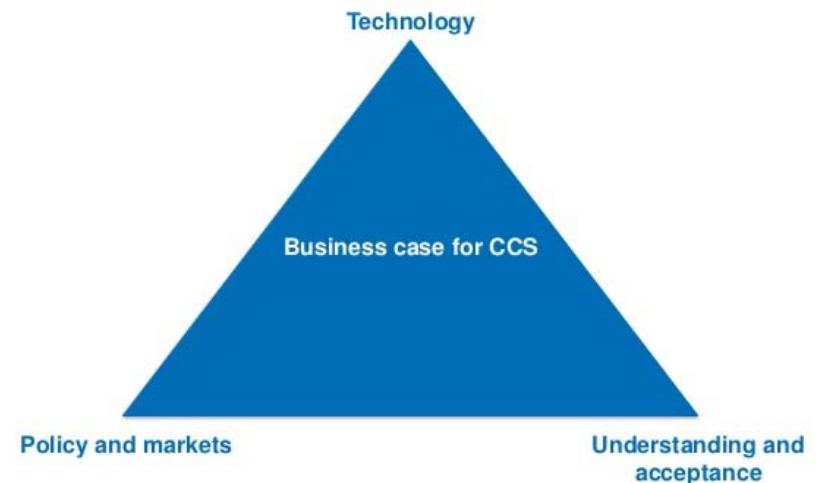
**GLOBAL  
CCS  
INSTITUTE**

## 3 Pillars

1. Technology
2. Policy and markets
3. Understanding and acceptance



**'Three pillars' of the business case for CCS -reprise**



# How does GATEWAY respond to that?

1. Develop a Pilot case for European CO<sub>2</sub> transport infrastructure
2. Provide a model for establishing European CO<sub>2</sub> transport infrastructure
3. Define a subsequent Project of Common Interest (PCI) ref. as Pilot Case
4. Align the stakeholders interests and develop a business case for the Pilot Case project
5. Address the risks associated with the Pilot Case and propose measures for de-risking incorporating
  - Technology, policy-making, law and regulatory aspects, public perception
6. Assess the funding needs and propose possible financing mechanisms for the Pilot Case

# How does GATEWAY respond to that?

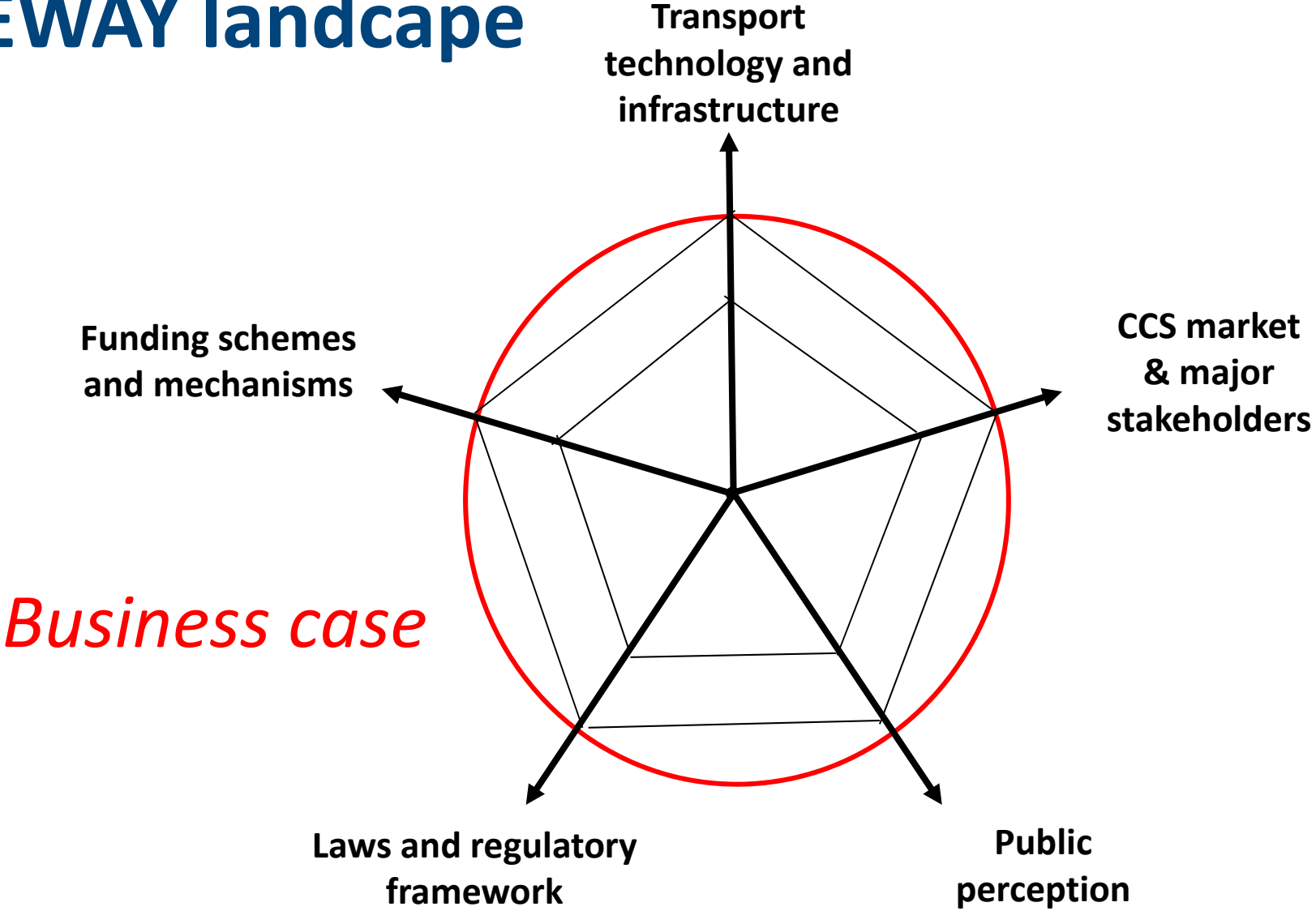
.... a different project

It is not the originality of the idea which drives most business successes, it is the commitment to making the idea happen.

*Stephen Bayley & Roger Mavity, Life's a pitch*

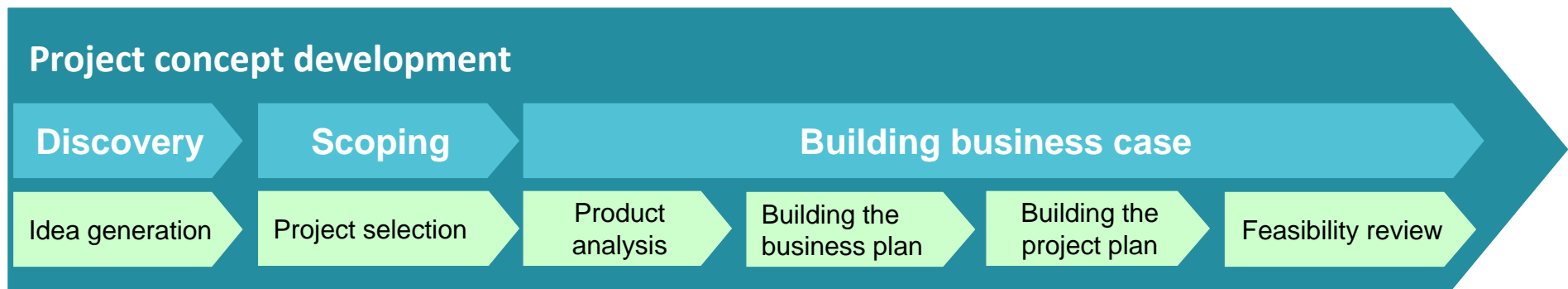


# GATEWAY landscape

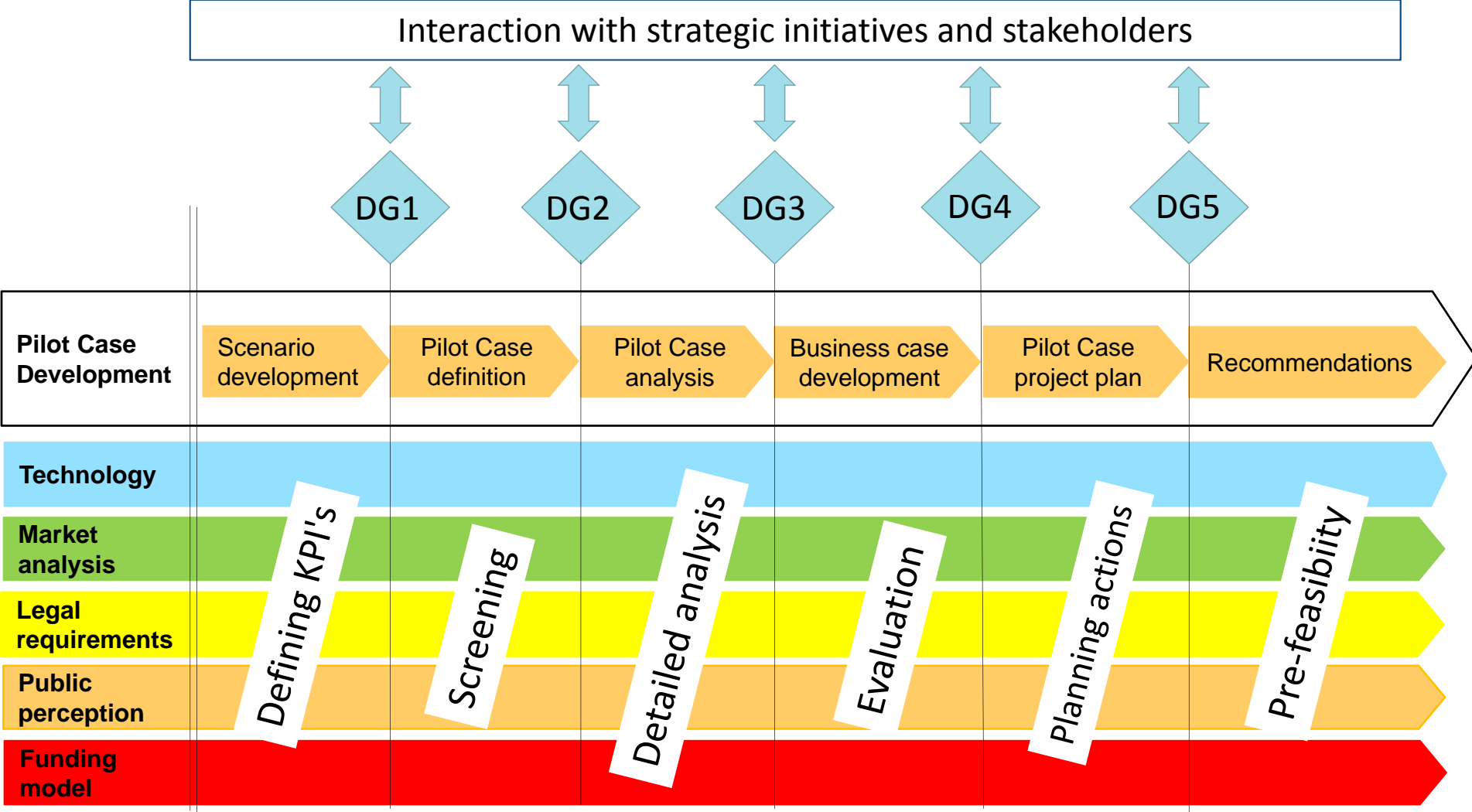


# GATEWAY Concept

New product or service development  
Phase-gate process



# GATEWAY implementation plan



# GATEWAY

Developing a Pilot case  
for European CO<sub>2</sub> transport infrastructure

## A different project



It is not the originality of the idea which drives most business successes, it is the commitment to making the idea happen.

*Stephen Bayley & Roger Mavity, Life's a pitch*

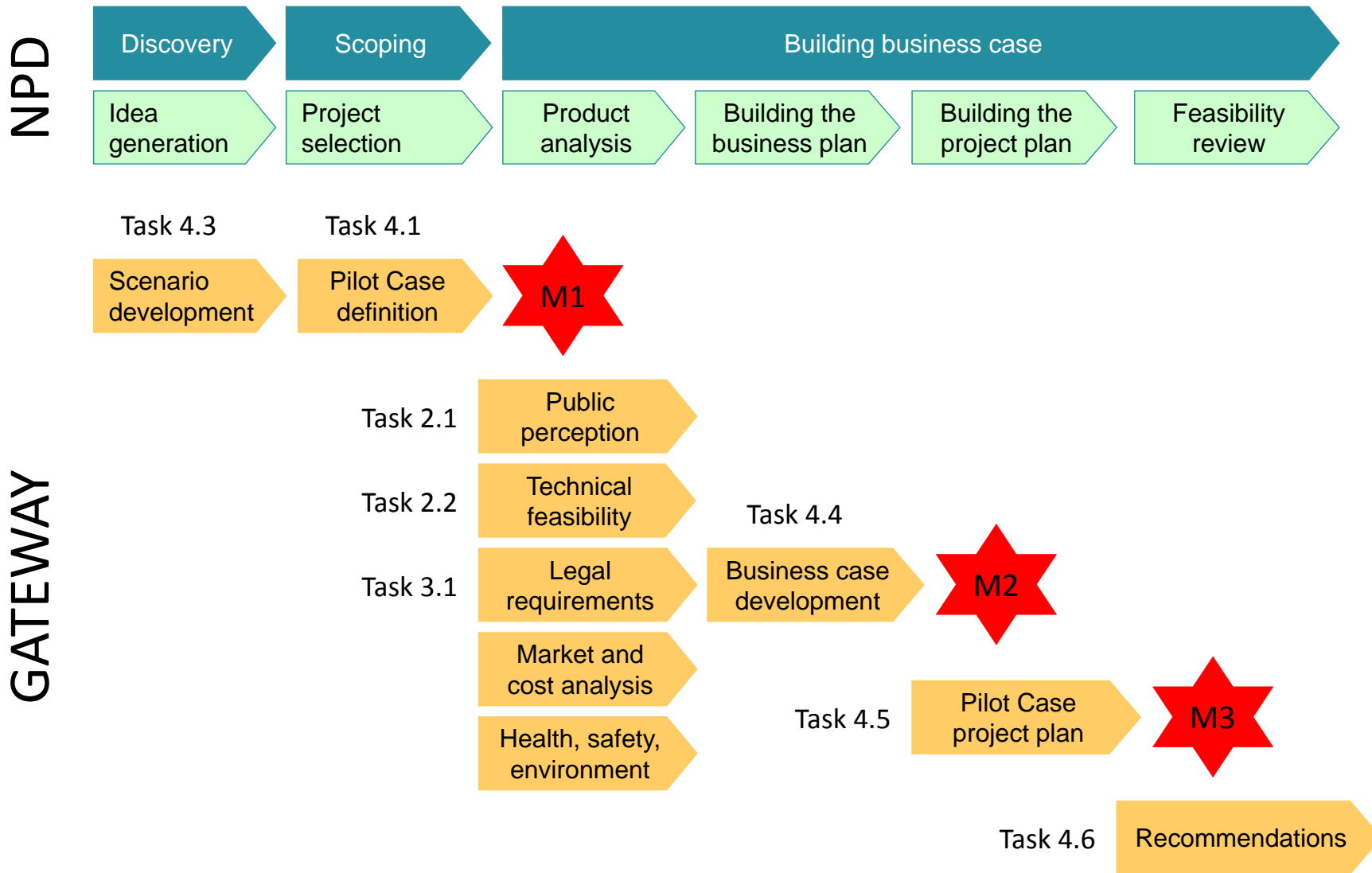
# Thank you for your time and attention!

## Please contact us with questions!



Jana P. Jakobsen  
Senior forsker, SINTEF ER GT  
Adjunct professor, NTNU IKP  
mobil: +47 90 84 77 46  
epost: [jana.p.jakobsen@sintef.no](mailto:jana.p.jakobsen@sintef.no)

# Phase gate model for GATEWAY



# ZEP Delivering large-scale CCS in Europa by 2030

## Business models for commercial CO<sub>2</sub> transport and storage report

*ZEP report June 2014, by members of ZEP's Temporary Taskforce CO<sub>2</sub> transport and storage*

### Conclusions

- The significant counterparty risk in CCS assuming independent businesses along the chain must be handled
- Acceptable rate of return on investments need to be estimated
- Liability issues need to be resolved

### Proposed actions

1. Develop understanding the CCS market in Europe
2. Identifying applicable business models
3. Identifying effective financing mechanisms
4. Development of long-term strategic vision for CCS financing