



sustainable energy for everyone



CCS Implementation Plan and status in the Netherlands

Joop Oude Lohuis

Keeping CCS moving

Brussels 25 February 2015

Joop Oude Lohuis, Carbon Capture Journal, 25
February 2015

Direct relevance: CCS Directive Evaluation

Recommendations:

“Request Member States to develop **national 2050 roadmaps**, based on an 80% emission reduction target and including an assessment of whether or not CCS is required.”

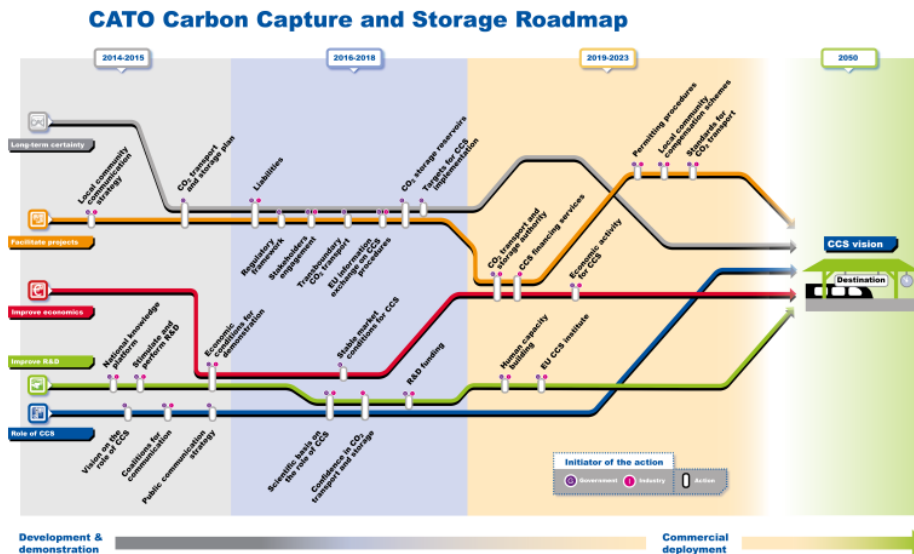


“Develop an EU roadmap for CCS with **binding targets** for 2030 and integrate CCS in the ongoing 2030 national roadmaps if needed.”

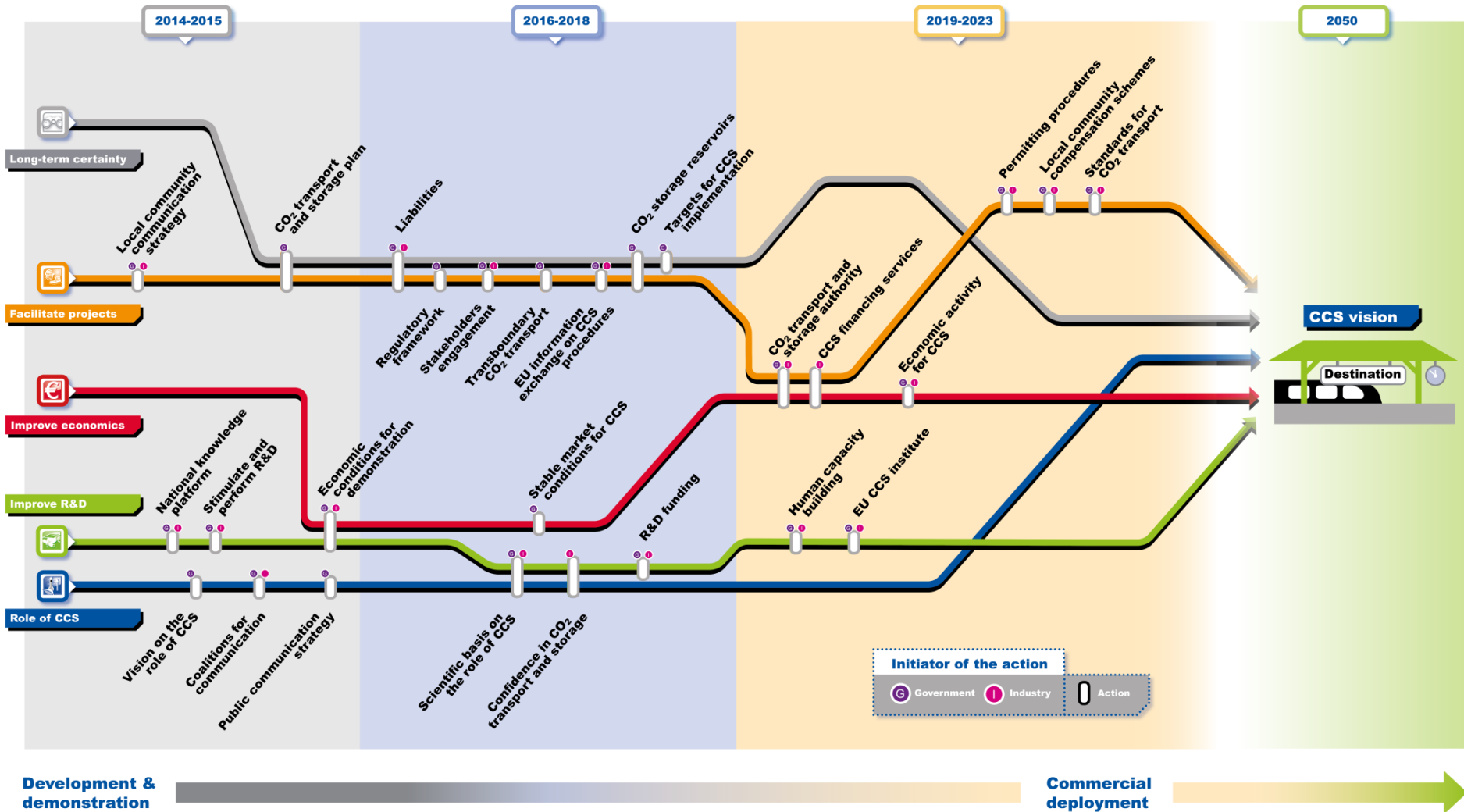


Implementation Plan and Roadmap for Netherlands

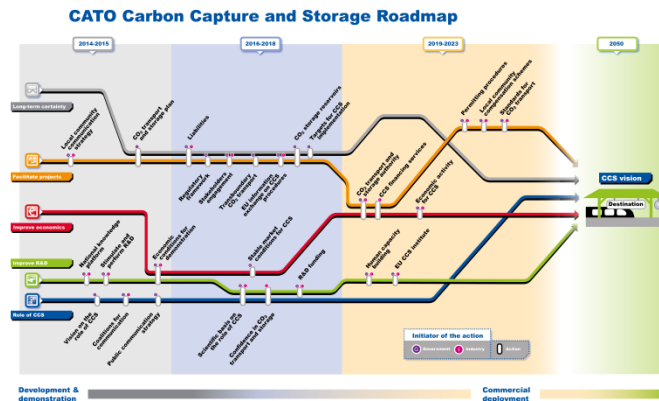
The Implementation Plan (IP) and Roadmap supports the government and other stakeholders in defining their roles and responsibilities in shaping the right conditions for the implementation of CCS in the Netherlands



CATO Carbon Capture and Storage Roadmap



Research institutes and academia



Public and NGOs

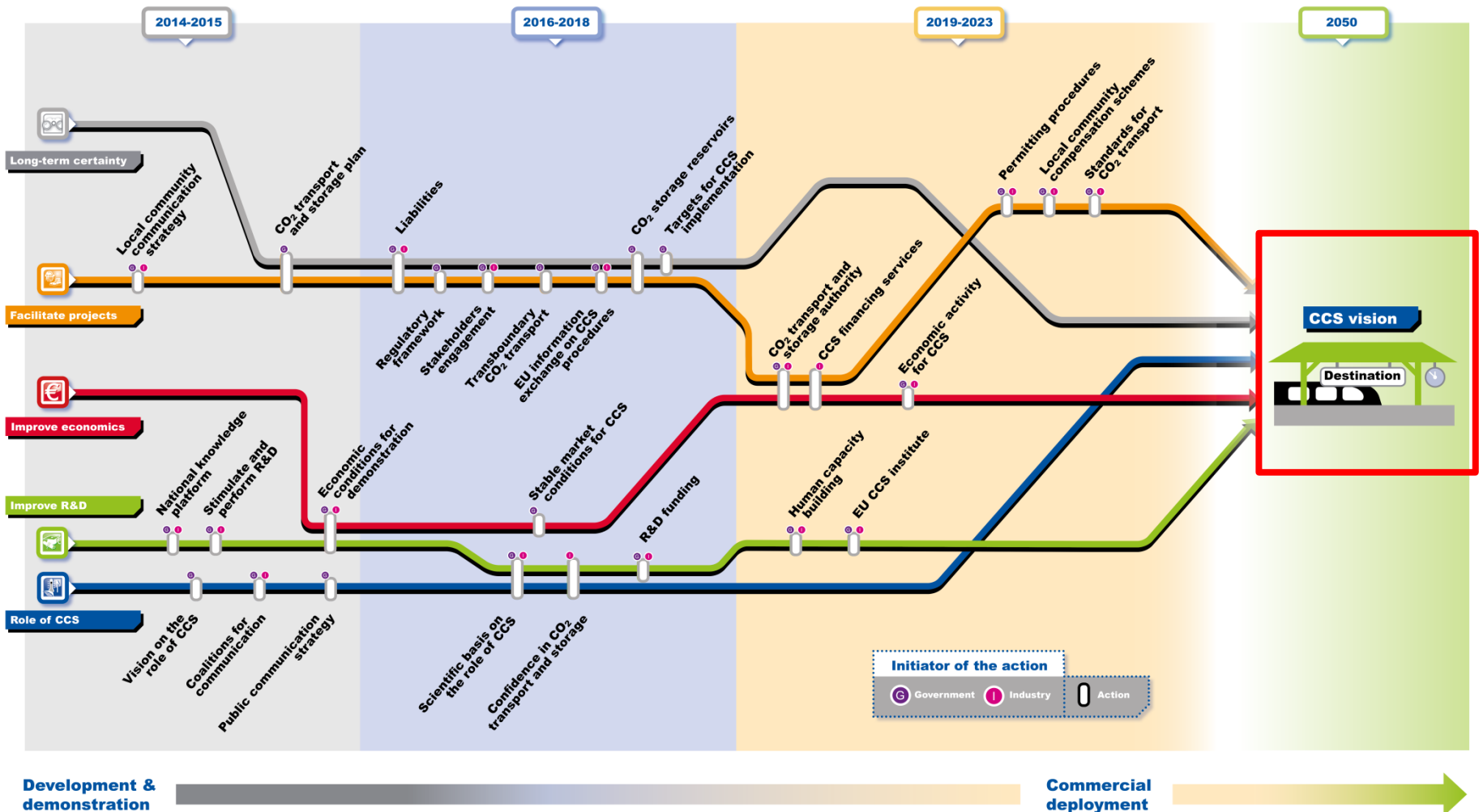


Government

Process of developing a roadmap



CATO Carbon Capture and Storage Roadmap

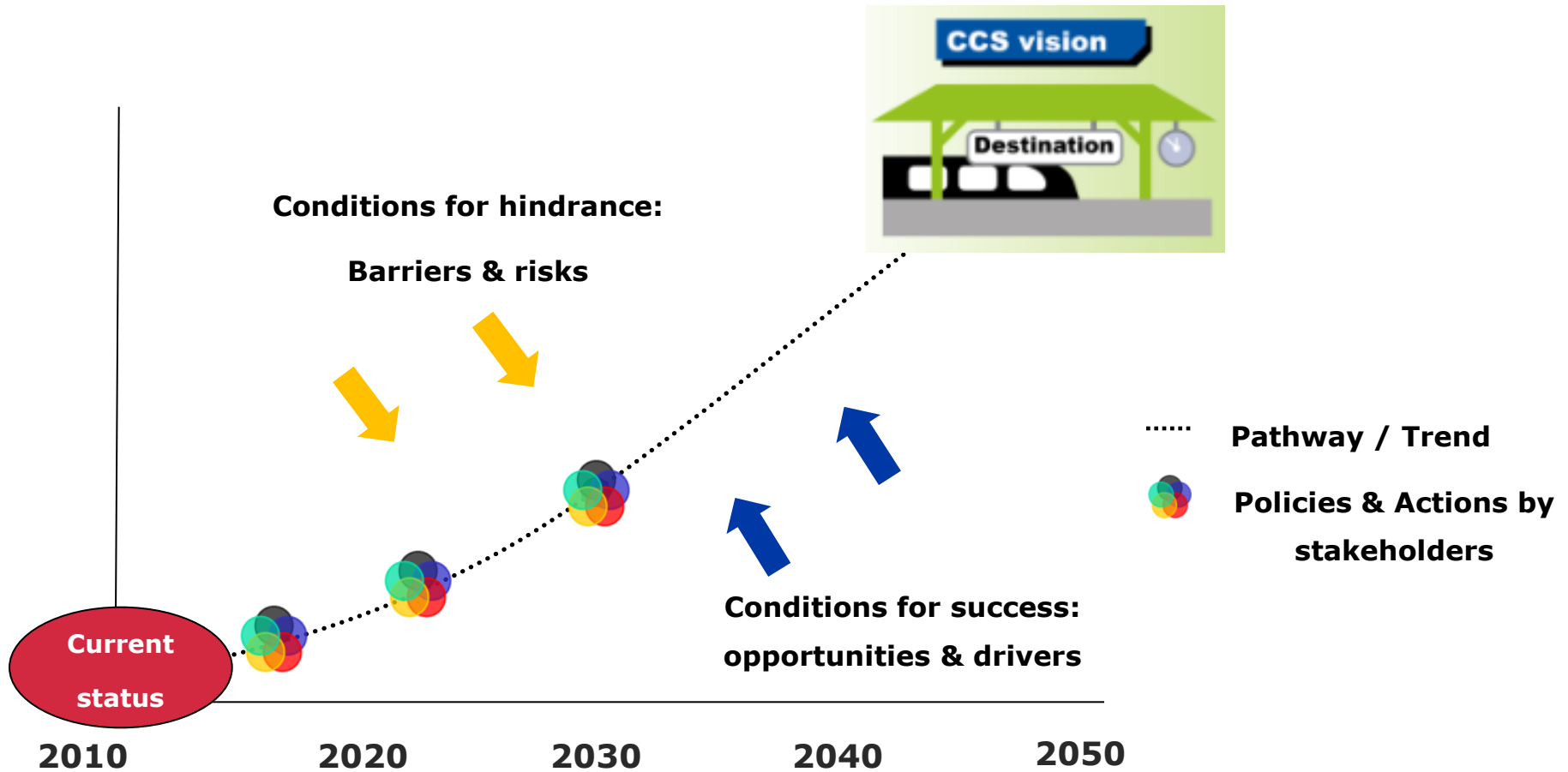


Start with a vision for 2050

2050 CCS
Vision

Issues

Actions



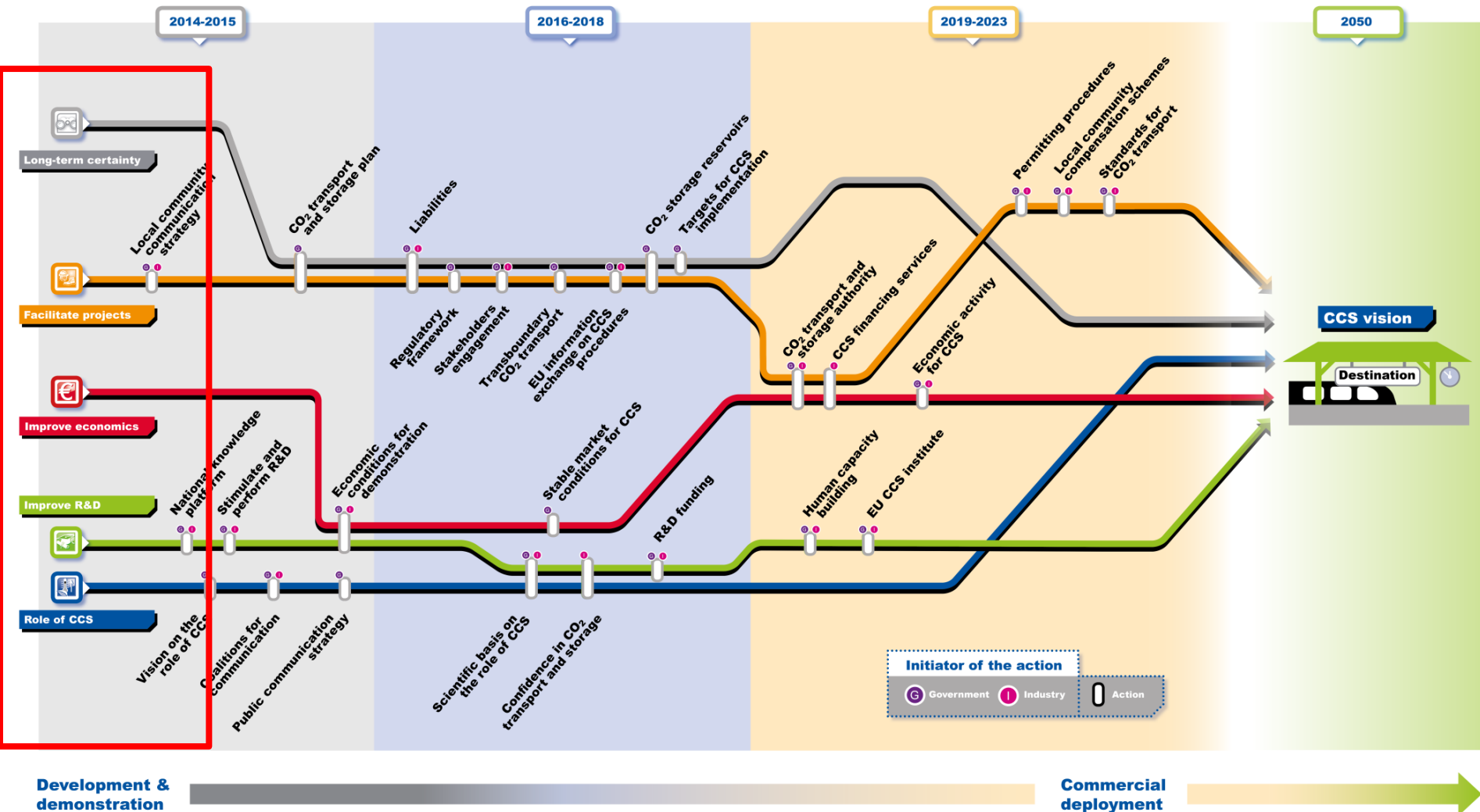
Identify issues

2050 CCS
Vision

Issues

Actions

CATO Carbon Capture and Storage Roadmap





- Role of CCS in abating CO₂ emissions



- Research and development to improve performance of CCS and improve stakeholder capacity building



- Improvement of economic conditions to accelerate the deployment of CCS



- Establish short, effective and transparent procedures to develop and implement CCS projects



- CCS project developers need sufficient certainty about long-term spatial planning, political commitment and economic viability

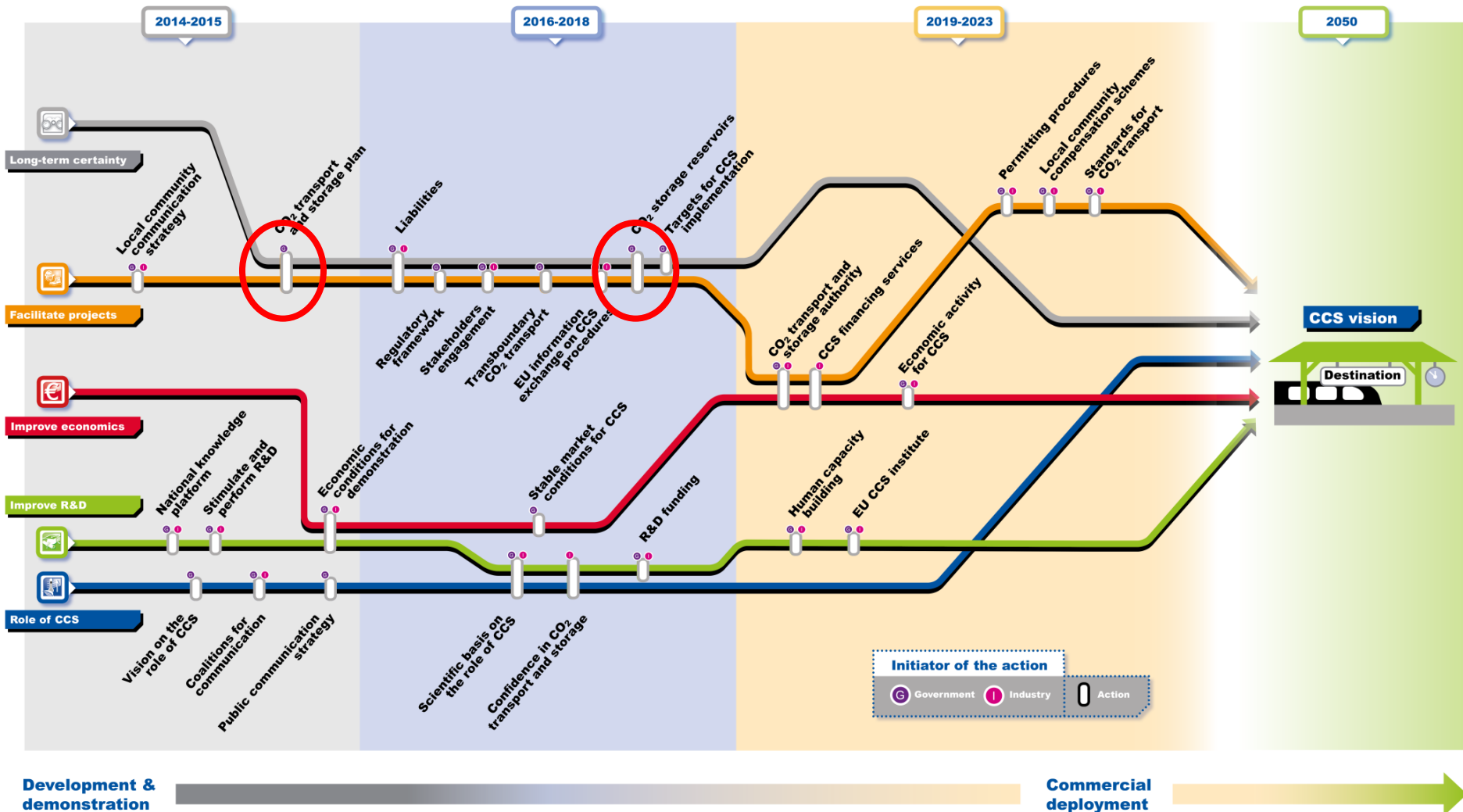
Identify actions

2050 CCS
Vision

Issues

Actions

CATO Carbon Capture and Storage Roadmap



Example: Develop Transport and Storage plan

2050 CCS
Vision

Issues

Actions

> Description:

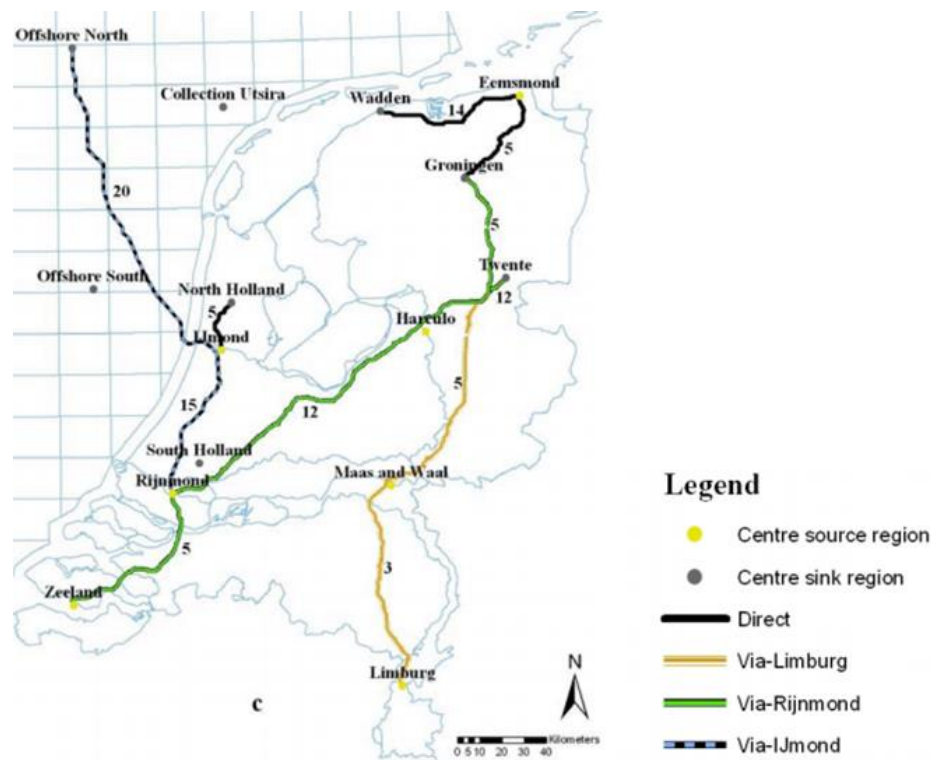
- Design a transport and storage strategy including a spatial plan for CO2 transport and storage. Goal is to allocate sites and routes to transport and storage of CO2 to ease future project implementation.

Objective:

- More certainty is provided on availability of (planned) storage and transport capacity. Projects can be implemented faster while reducing costs. Public engagement is arranged at very early stage of decision making.

Issue(s) addressed:

- Facilitate projects, Long-term certainty



> **Description:**

- Determine which fields are allowed for CO₂ storage through reservoir characterization and certification by an independent party

> **Objective:**

- Certainty in an early stage concerning availability of storage capacity: projects can be implemented faster while reducing costs

> **Issue(s) addressed:**

- Facilitate projects, Long-term certainty



The impact of the Dutch Energy agreement on strategic importance of CCS



2013

Energy
agreement



2014-2015

CCS Vision
(draft)



2015

Energy
Report
Netherlands

***"CCS is inevitable in a
transition to a
sustainable energy
supply"***

**Potential role for
Transport and
Storage plan**

**CCS plays an role in
new energy strategy
alongside:**

- **Energy efficiency**
- **Renewables**
- **Nuclear**

Key recommendations for discussion (1/2)



Envision and prepare

- > Develop a common vision and start roadmapping to bring together stakeholders
- > Formulate no-regret actions to prepare for easy and fast implementation of CCS when economic conditions permit
 - Transport and storage plan
 - CO2 storage appraisal



Understand and communicate economic benefits

- > Understand under which conditions climate action with CCS in the portfolio is cheaper than without
- > Get key insights into the argument that CCS can provide large added value for regions and sectors in Europe because of low(er) CO2 mitigation cost and competitive advantage (e.g. export of products and services).



Get the right stimulation mechanism in place

- > Learn lessons from NER300 → NER400 to improve development and deployment of CCS (cascading subsidies, scale, duration, technology readiness level)
- > Create additional incentives to stimulate CCS deployment and create long term certainty by project investors (CfD, EPS, CCS Targets)

Thank you !

More information:

Implementation Plan and Roadmap website

<http://ccs-roadmap.ecofys.com/>

Example of an action (2)

> **Name of the action:**

- Develop local community communication strategy.

> **Description:**

- Define a vision on and strategy for project specific communication for local communities close to a CCS project. The communication strategy should be developed and supported by broad set of stakeholders with different interest in CCS, including authorities, industry and (environmental) NGOs.

> **Objective:**

- Support of local community is essential for successful implementation of CCS projects. Communication is required to explain the choice of technology and location, and the potential impact of the project on the community and environment. (...)

Example of an action (2)

> **Issue(s) addressed:**

- Facilitate projects

> **What are results of the action:**

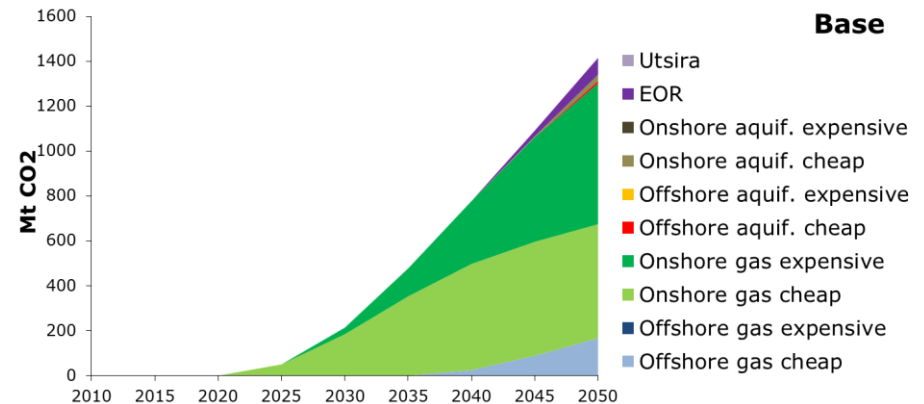
- The result of this action is a common strategy from government and other stakeholders to communicate with the local public.

> **Who should initiate it and when should the action be implemented:**

- This action should be initiated by the government in close cooperation with all stakeholders, including NGOs and industry. This communication strategy should be in place at the start of the demonstration phase.

Context and background information Roadmap

- > CCS Scenarios
- > CCS context
 - Role of CCS
 - Developments of CCS
 - Policies to support CCS
 - Main topics on CCS
 - Commercialisation of CCS
 - Governance of CO₂ transport
 - Regulatory issues
 - Communication to public
 - Field strategy
 - Interfaces
- > Linking (CATO) Research to Roadmap
- > History of CCS in the Netherlands



Barriers to deployment of CCS

- > Lack of confidence in (climate) policies
- > CO₂ prices are too low, uncertain and unstable
- > CCS consists of multiple chain elements with likely result that multiple investors depending on each other and decisions are delayed.
- > CCS technologies are often not proven at a scale required for CCS operations and often not integrated into large-scale industrial operations.
- > Regulatory environment is not yet fully developed for CCS activities, both on national and international level, e.g. cross-border arrangements.

Commitments

- > **Regulations** to properly account for external costs of CO₂ emissions. This could be arranged through Emission Trading Scheme, CO₂ tax or other financial compensation measures.
- > **Vision** on the future of the CO₂ transport and storage infrastructure
- > **Creating stable and predictable regulatory environment**, both on national and international level, e.g. by establishing cross-border arrangements
- > **Support pilot or demonstration projects** to ensure that learning is well-distributed among the stakeholders to guarantee optimal learning
- > **Take up long-term liability** for full storage after an agreed set of preconditions have been fulfilled

Requirements for policy instruments

- > does it make a business case viable?
- > does it bring costs down?
- > is it political acceptable?
- > doesn't it lead to carbon leakage?
- > does it lead to the necessary scale of CCS?

Policy instruments

- > Both financial and regulatory instruments and can help to stimulate CCS technologies
- > Potential instruments are:
 - emission trading
 - carbon tax
 - CCS certificates
 - emission performance standards
 - feed-in tariff
 - public financing institutes
 - Backloading (EU ETS)