

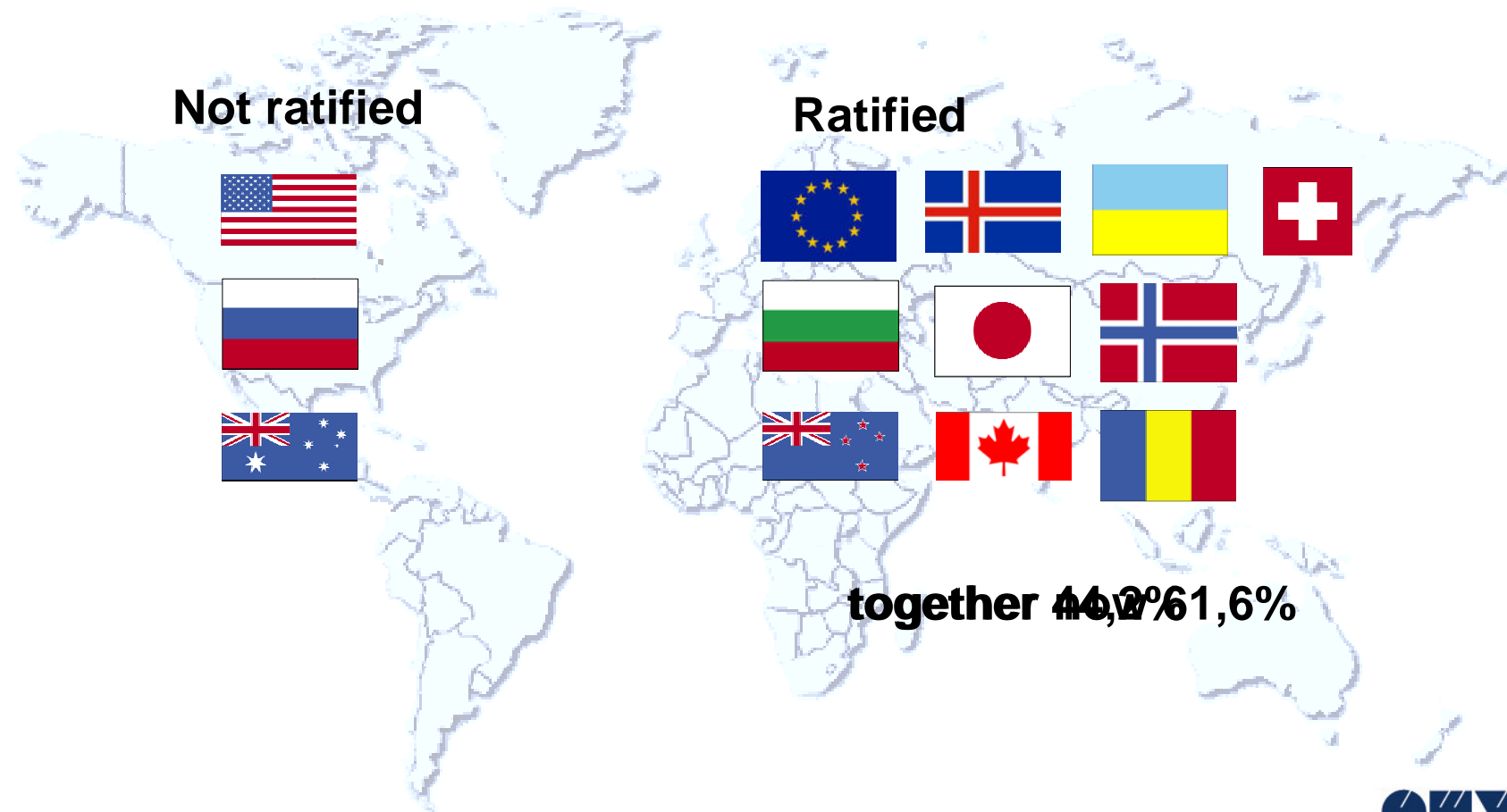
CCS – An emerging business opportunity?



Agenda

- ▶ CO2/CCS Market
- ▶ CCS Potential
- ▶ Austrian CCS Market
- ▶ CCS Competitors
- ▶ CCS value chain
- ▶ Legal issues
- ▶ Business barriers & strategies for breakthrough

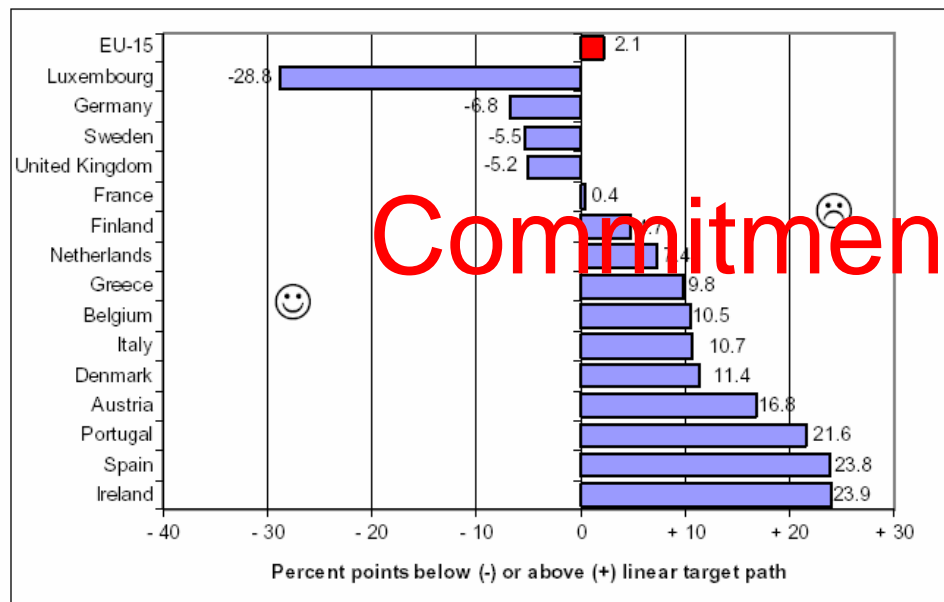
CO2/CCS Market – a global one?



The European CO2/CCS Market?

- ▶ EU15 obliged to reduce CO2 by 329 MMto (ETS-sector 143 MMto CO2)
- ▶ 1.830 MMto CO2 within ETS-sector in 2003
- ▶ Certificates for 1.790 MMto CO2 – Reduction 40 MMto CO2

Figure 2: Distance-to-target indicators (in index points = percent) for the Kyoto Protocol and burden sharing targets of EU Member States



CCS Potential

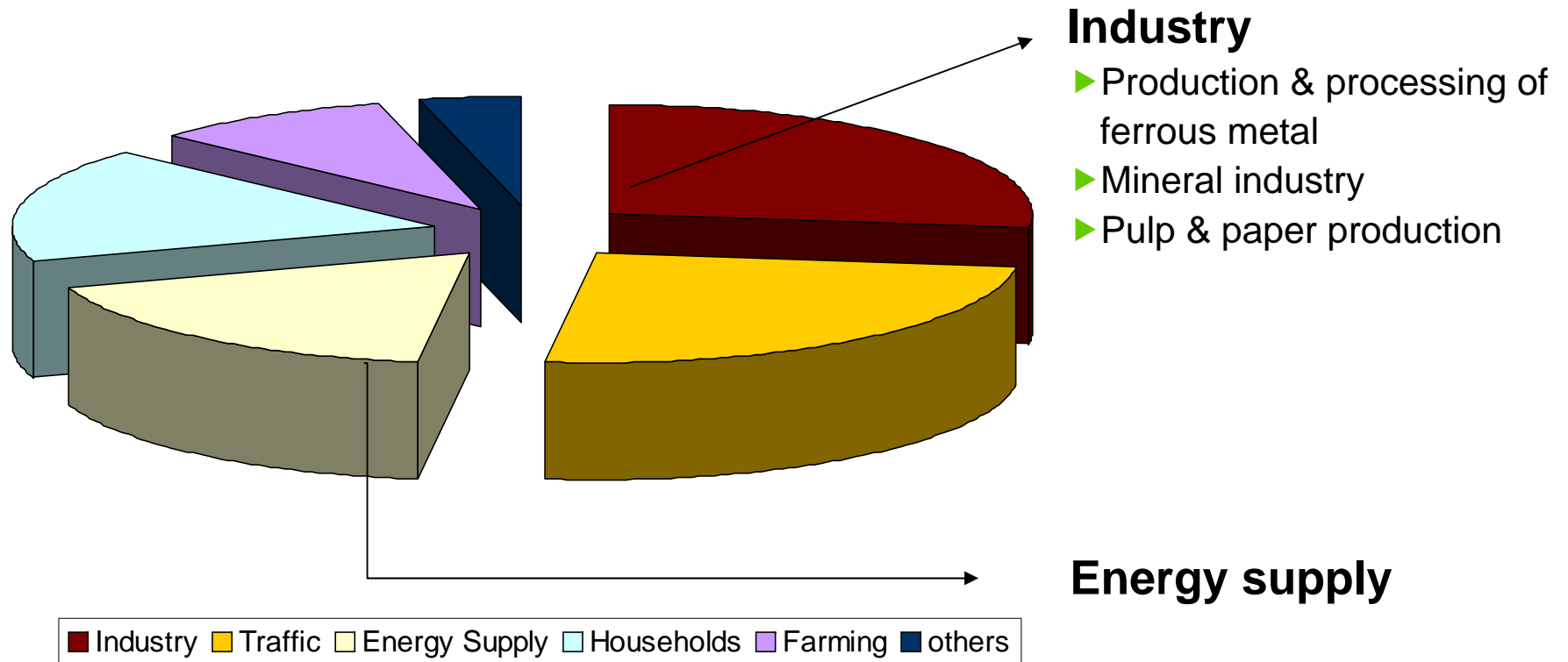
storage location	global capacity [10 ⁹ t CO ₂]
Depleted oil fields	100
Depleted gas fields	400
Saline aquifers	>1.000
Coal beds	40
Total	>1.500



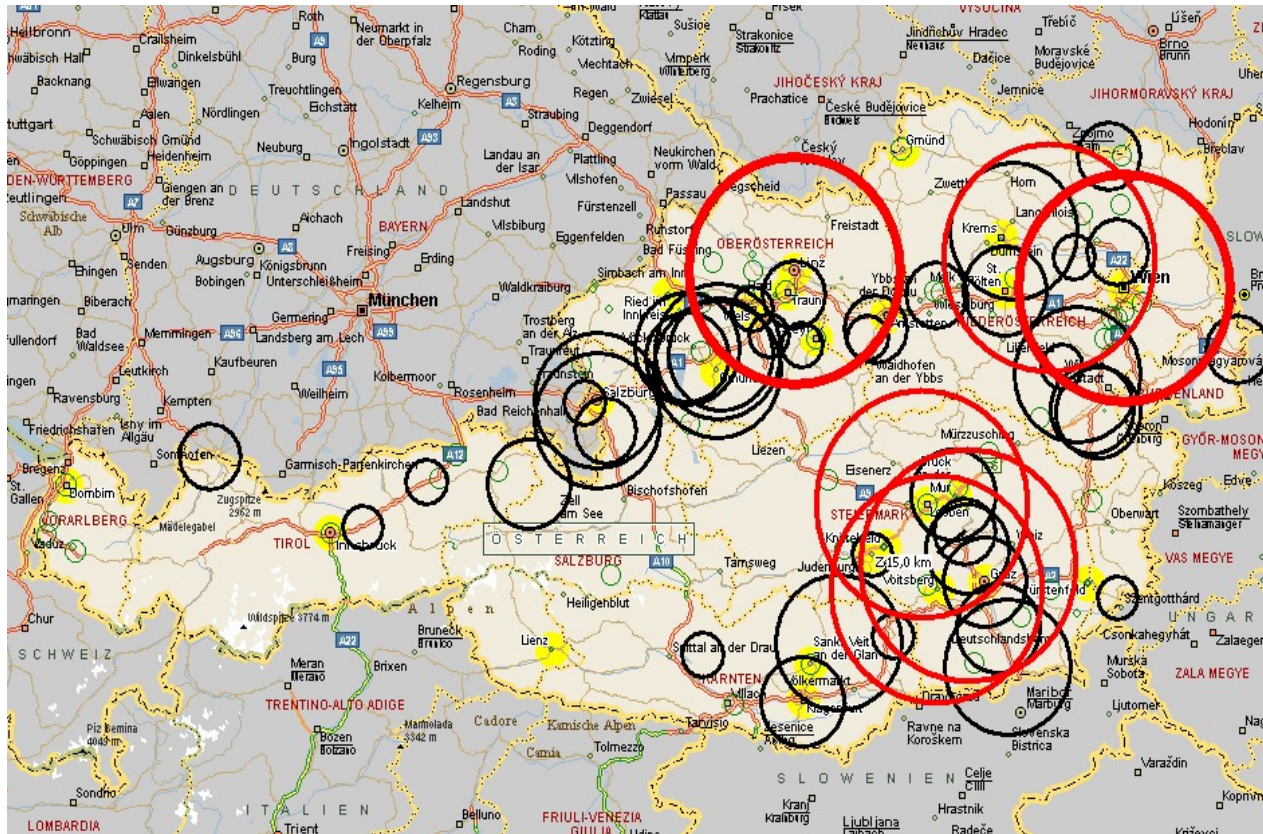
storage location	European capacity [10 ⁹ t CO ₂]	
	On shore	Off shore
Depleted oil fields	0,22	5,94
Depleted gas fields	12,5	14,4
Saline aquifers	57	716
Total	70	736

CCS Market Austria – Emitters & prospective Customers

CO2 Emissions in Austria [2002]



CCS Market Austria – Emitters & prospective Customers



Industry

- ▶ Production & processing of ferrous metal
- ▶ Mineral industry
- ▶ Pulp & paper production

Energy supply

CCS Market – A business opportunity for E&P-companies?

Up to now CO2-emission were free of charge, but now every ton gets a value and a market for CO2-Reduction techniques arises!

Strengths	Weaknesses
Know how & experience about storage Close to core business (existing) Infrastructure & facilities	Less knowledge about capture Locally bound Global competition
Opportunities	Threats
New business for mature industry Upselling potential to fuel supply Internal benefits (EOR) Positive image driver	Demand & price Legislation (e.g. approved CO2 reduction technique) Image

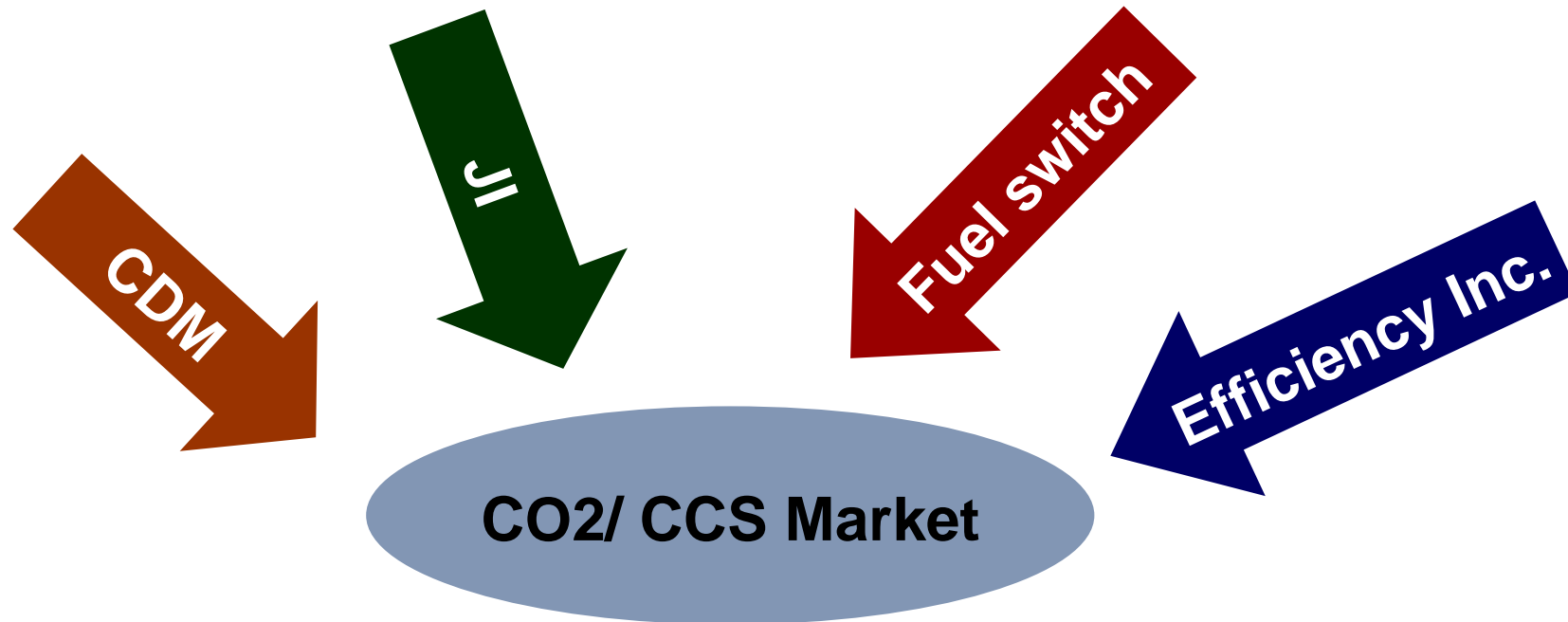
CCS Market – Competition

Direct competitors

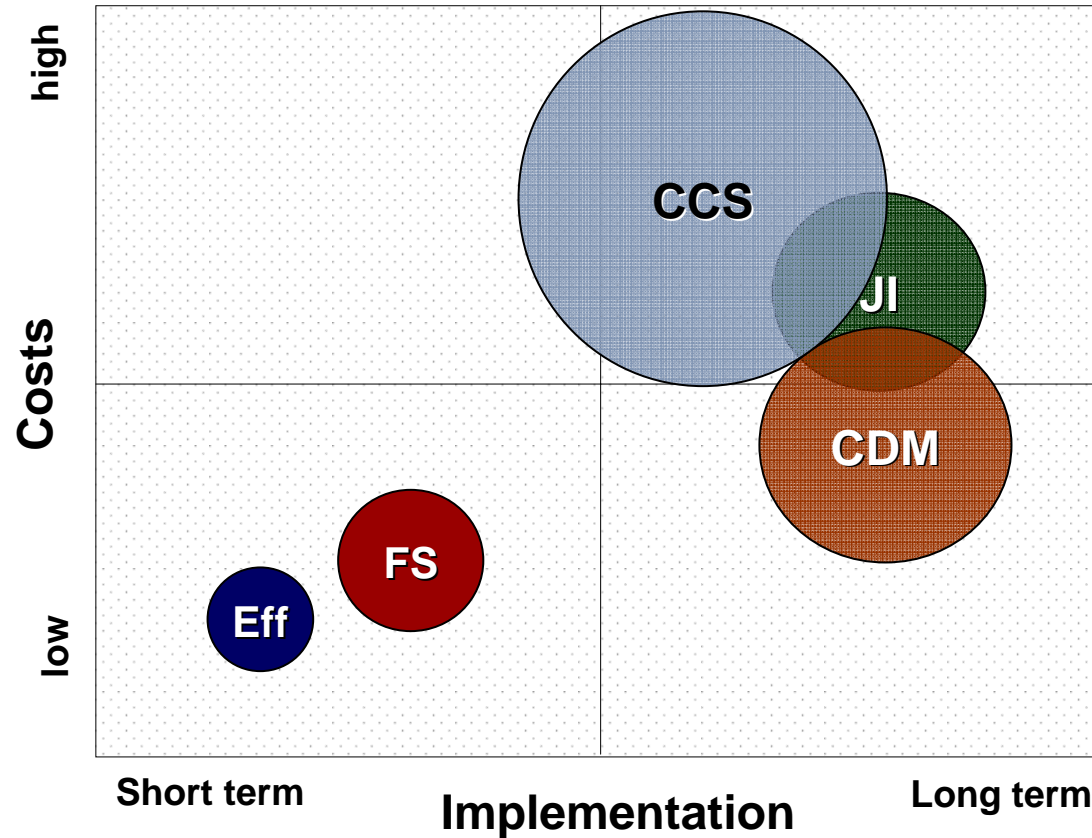
- ▶ Outsourcing the problem
- ▶ Own process not changed

Indirect competitors

- ▶ Internal action & solution
- ▶ Own process changed or modified



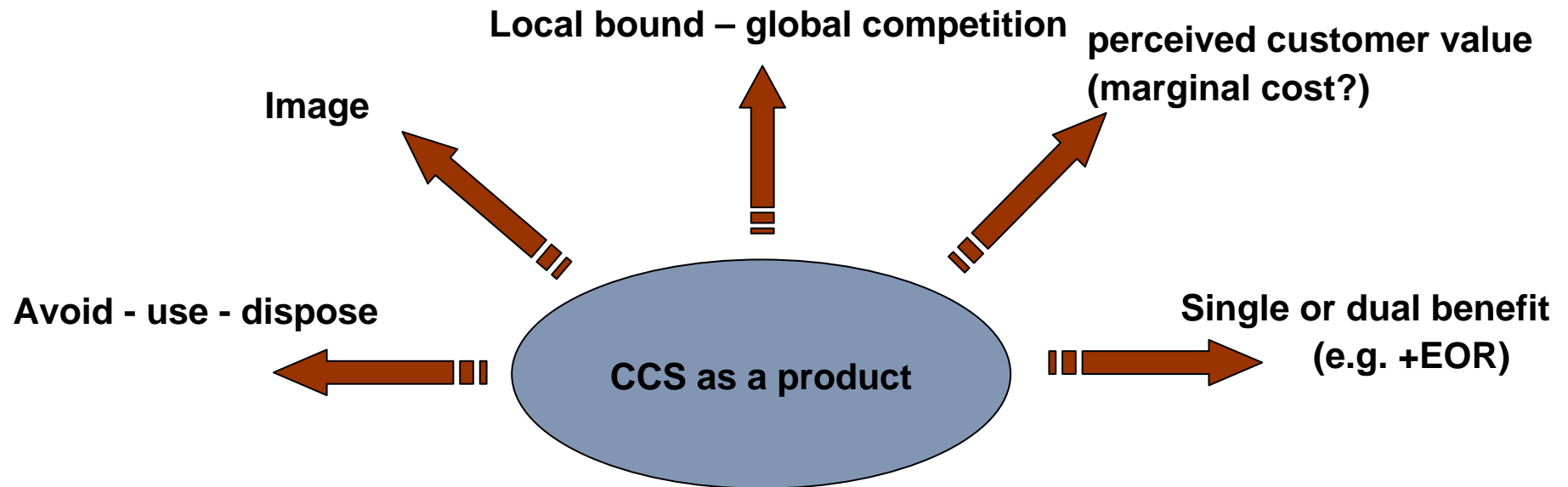
CCS Market – Competition



additional criteria:

- ▶ Risks & Uncertainties
- ▶ Flexibility
- ▶ Sustainability
- ▶ Image
- ▶ (Local) availability

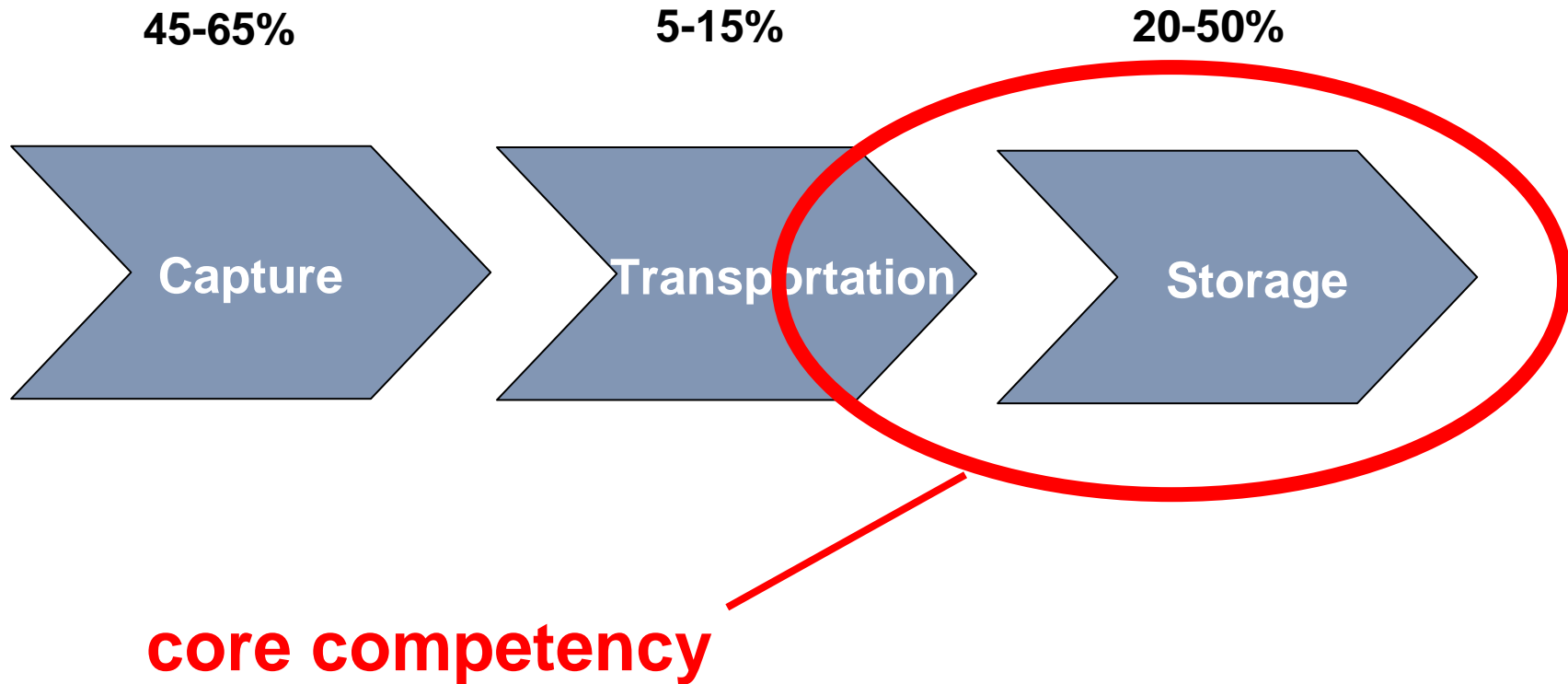
CCS Market – Competition drivers



How can CCS compete successfully?



CCS value chain



CCS business – legal issues

Major questions:

- ▶ CO2 a waste?
- ▶ CO2 stored or disposed?
- ▶ Long term ownership of CO2 & liability?
- ▶ Monitoring and verifying storage?

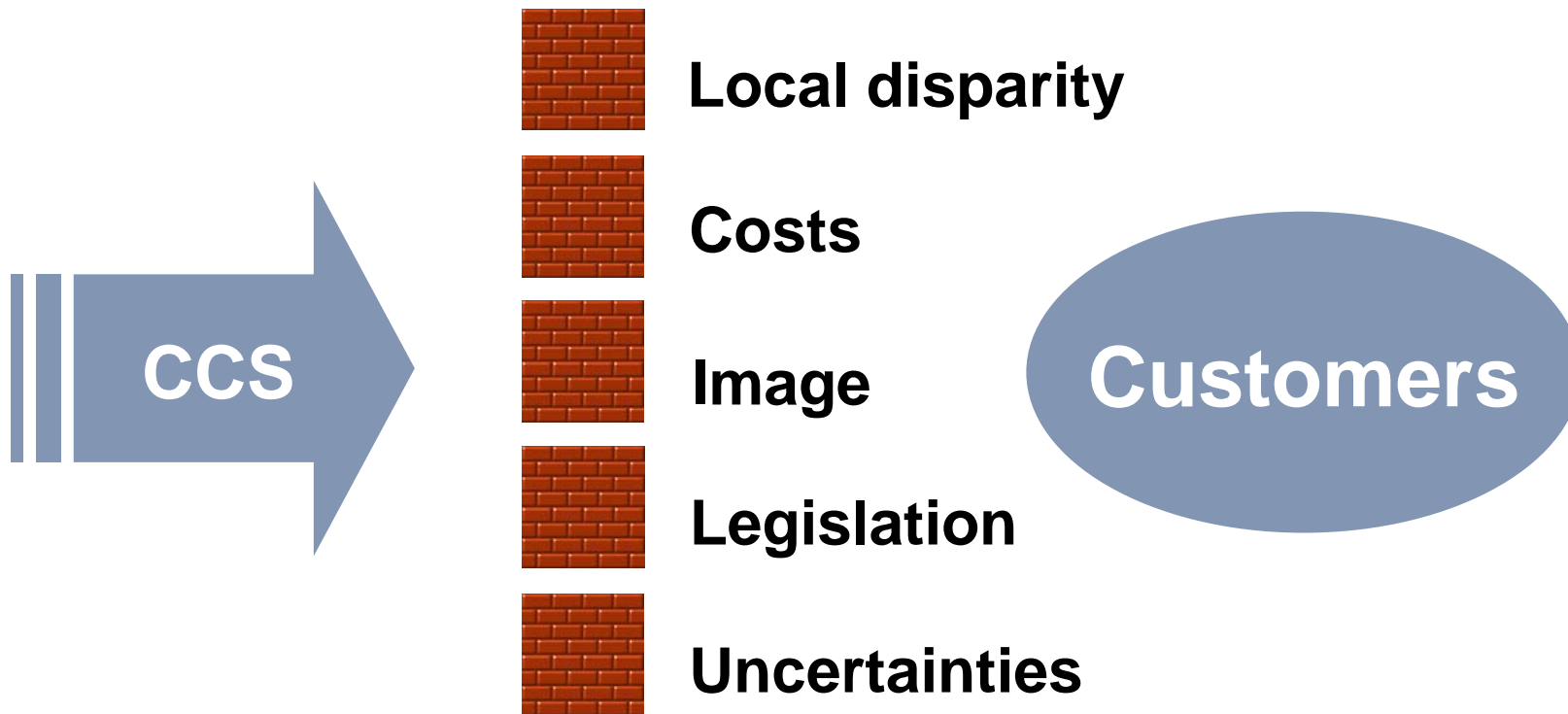
EU supports sequestration!
2004/156/EG

As CDM or JI Projects CCS
cannot create certificates
UN-basis

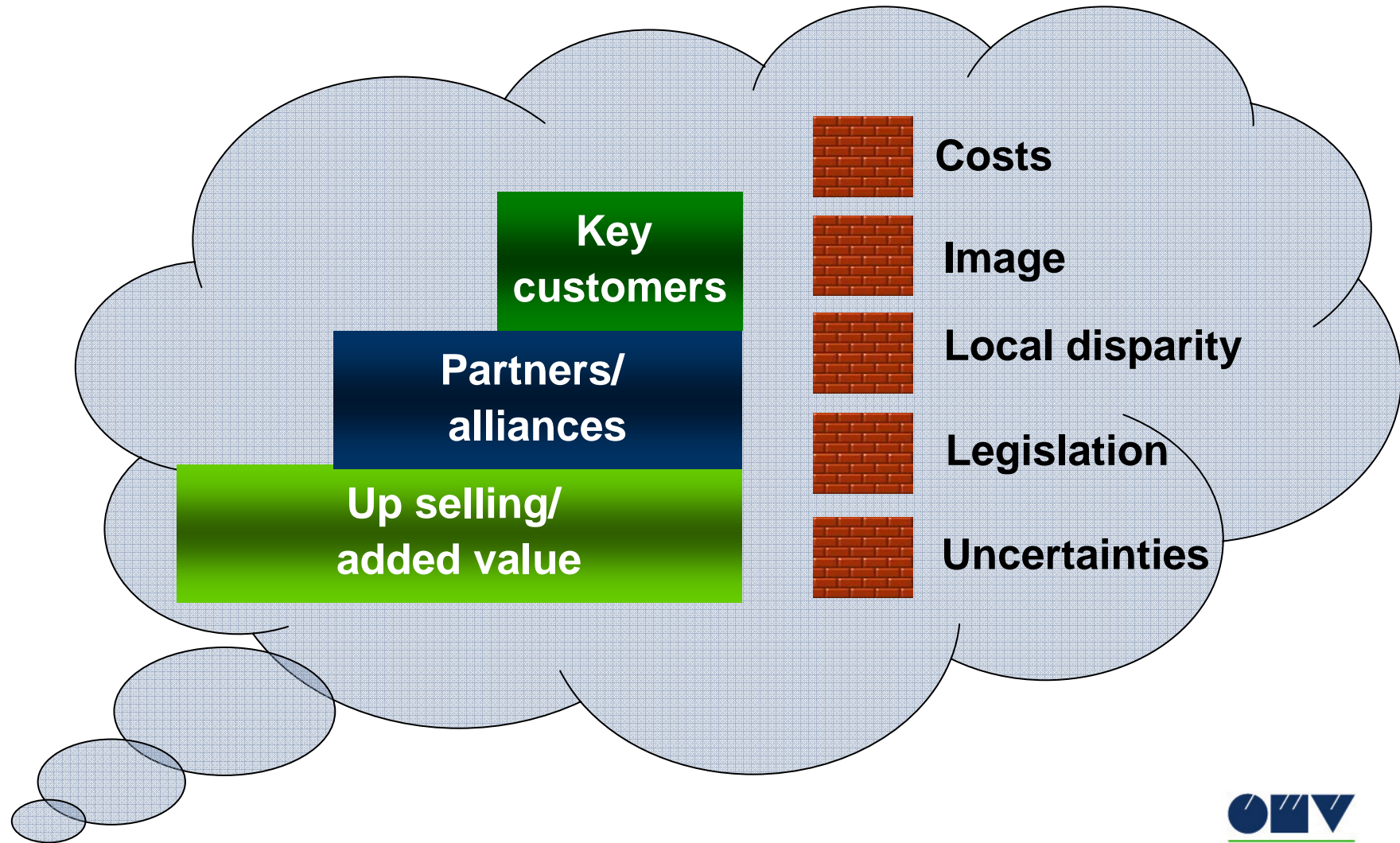
¿ Legislation spheres?

Only the storage of
hydrocarbons is regulated
MinRoG. AUT

Business barriers for CCS



CCS business strategies



Questions

