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European Association
for Coal and Lignite

Energy transition: a multifaceted challenge for Europe

A 3-step strategy for coal technologies

3rd EGMONT – Development Group symposium:
How to foster innovation in a fast-changing EU energy landscape?

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Conseil Central de l'Economie, Brussels

Brian RICKETTS
Secretary-General, EURACOAL

What are the objectives?

EURACOAL's 3-step strategy responds to these objectives.

Because we need more power plants like this ...

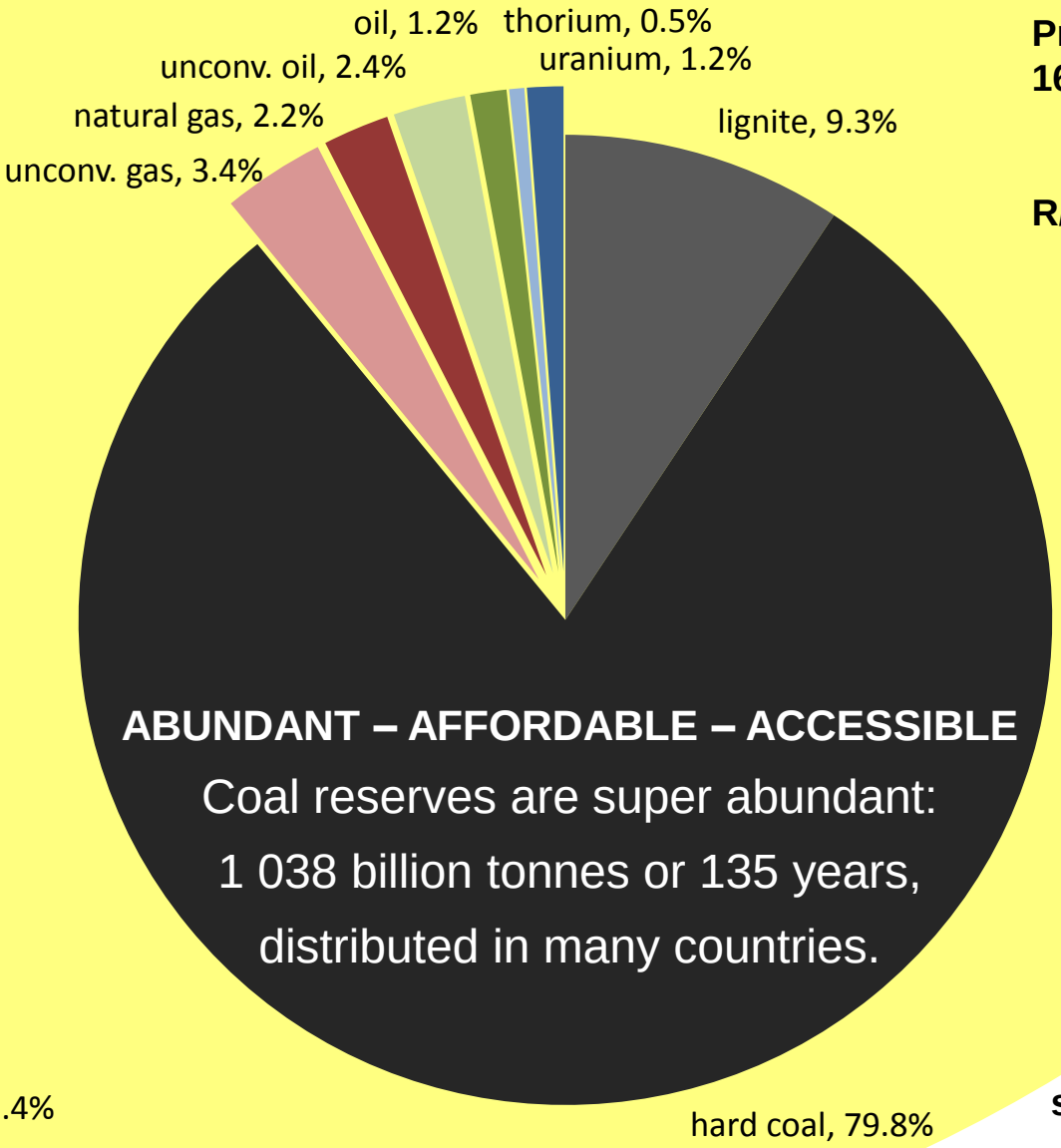
Lignite-fired power plant Schwarze Pumpe in East Germany.

... and less like this.

Replacing old with new reduces emissions – by up to 40% for CO_2.

Global energy resources, reserves and use

Resources
18 156 Gtce

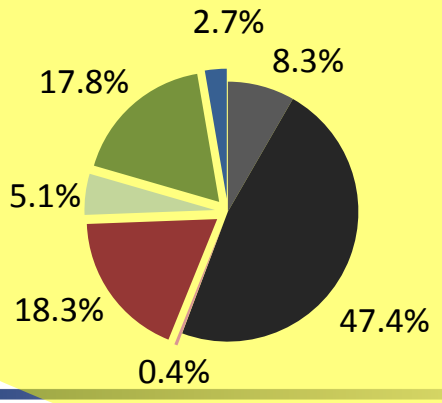


Production
16.9 Gtce

R/P = 80 years

source: Bundesanstalt für Geowissenschaften und Rohstoffe, 2012

Reserves
1 346 Gtce



Annual solar irradiance 190 000 Gtce

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41% of the world's electricity comes from coal

Coal is also important for:

- steel making
- district heating and industrial combined heat & power (CHP)
- small- and medium-size enterprises, *e.g.* food processors
- residential heating

photo courtesy of the American Coalition for Clean Coal Electricity

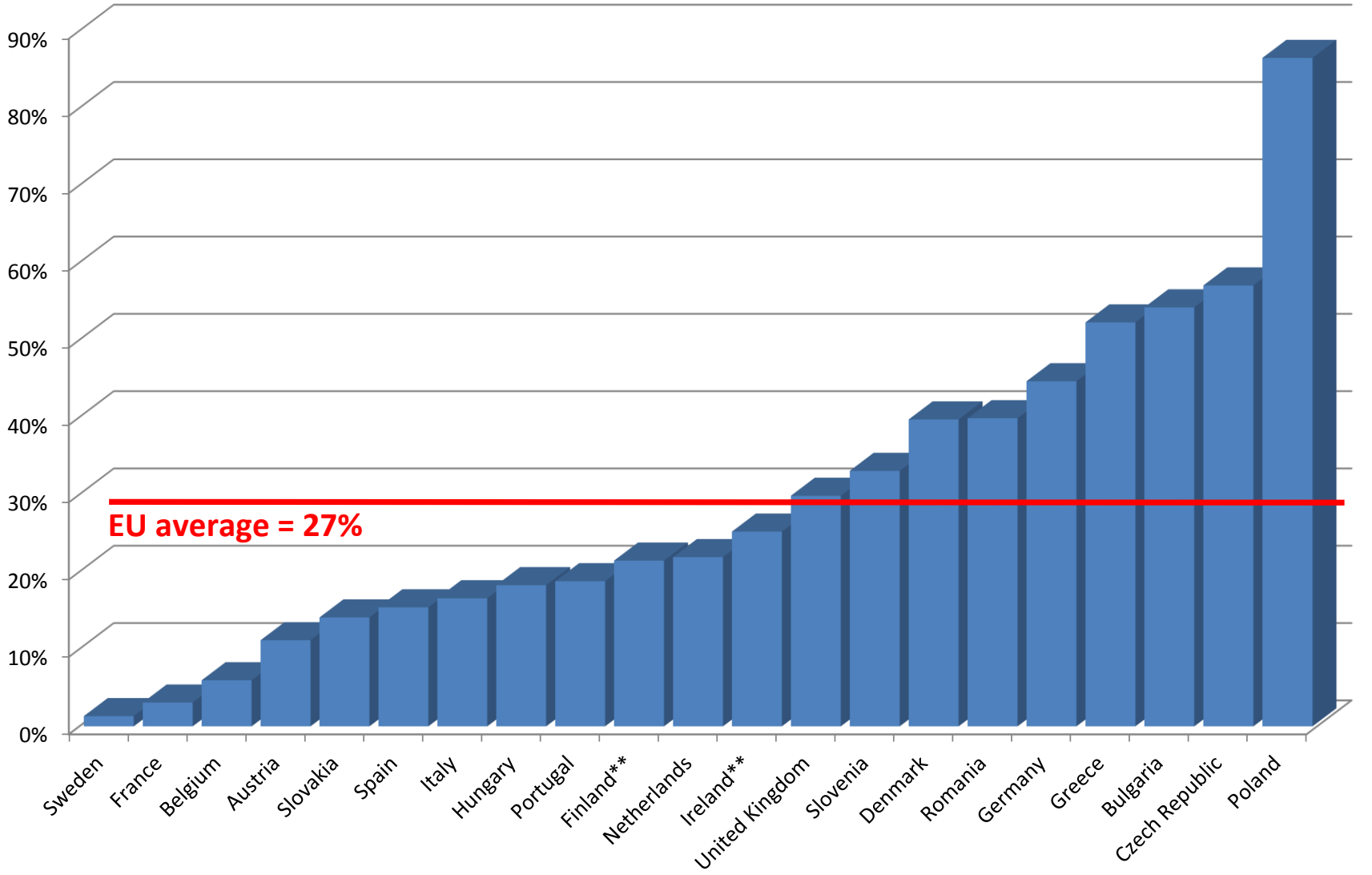
27% of the EU's electricity comes from coal with 24/7 reliability.

Coal in Europe at Garzweiler, Germany

photo courtesy of RWE

At 185 Mt in 2012, Germany is the world's largest brown coal producer.

Share of coal in EU electricity generation



source: Eurostat table nrg_105a updated 20/03/2013

** includes peat

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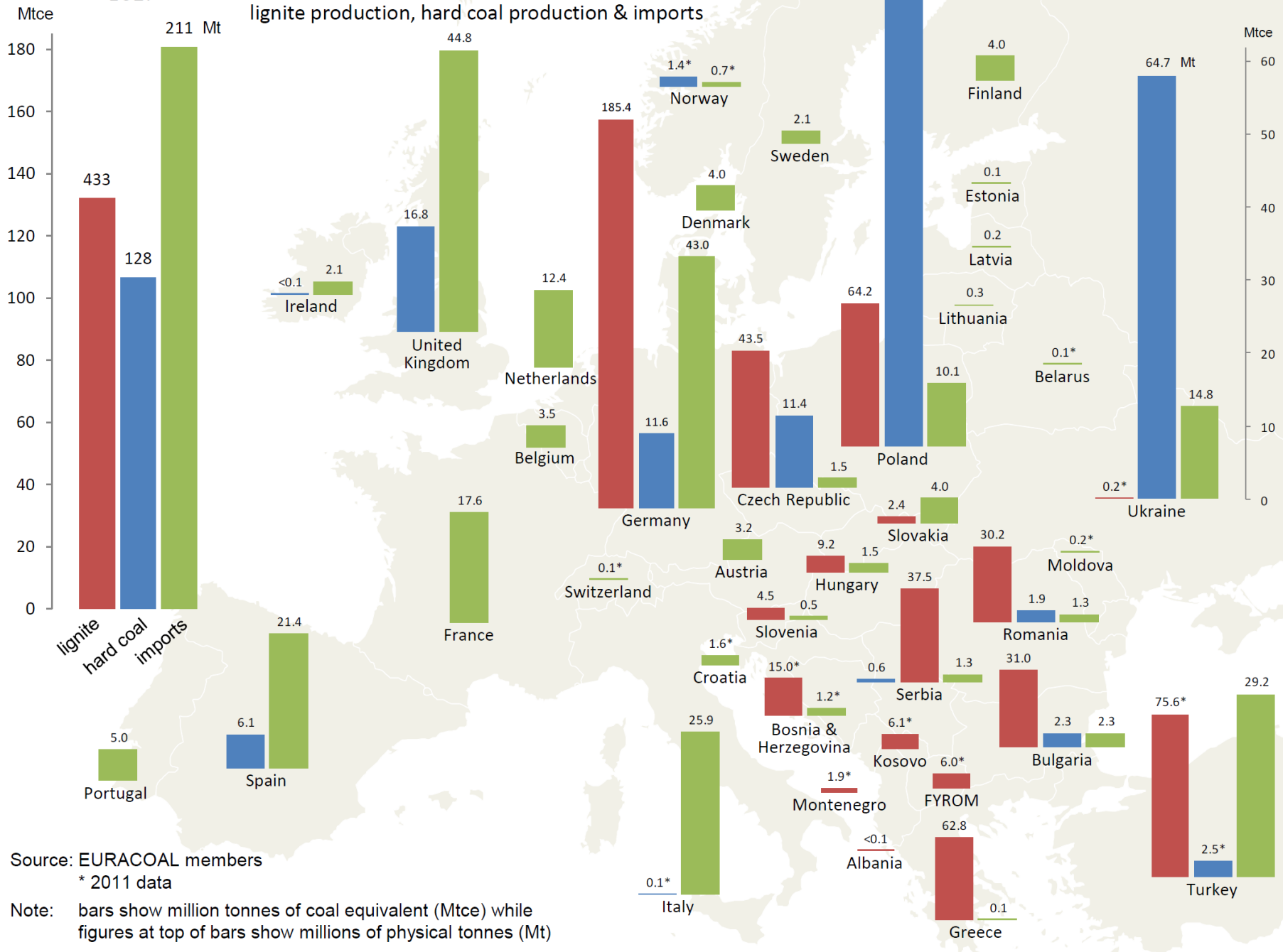
Coal in Europe 2012

lignite production, hard coal production & imports



Source: EURACOAL members
* 2011 data

Note: bars show million tonnes of coal equivalent (Mtce) while figures at top of bars show millions of physical tonnes (Mt)

EURACOAL: 34 members from 20 countries

- COALPRO - Confederation of UK Coal Producers (GBR)
- DEBRIV - Deutscher Braunkohlen-Industrie-Verein (DEU)
- GVSt - Gesamtverband Steinkohle (DEU)
- MMI - Mini Maritza Istok (BGR)
- PPC - Public Power Corporation (GRC)
- PPWB - Confederation of the Polish Lignite Producers (POL)
- ZPWGK - Polish Hard Coal Employer´s Association (POL)
- ENEL (ITA)
- ZSDNP - Czech Confederation of Coal and Oil Producers (CZE)
- APFCR - Coal Producers and Suppliers Association of Romania (ROU)
- BRGM - French Geological Service (FRA)
- CARBUNIÓN - Federation of Spanish Coal Producers (ESP)
- CoalImp - Association of UK Coal Importers (GBR)
- D.TEK (UKR)
- EPS - Electric Power Industry of Serbia (SRB)
- GIG - Central Mining Research Institute (POL)
- HBP - Hornonitrianske bane Prievidza (SVK)
- ISFTA – Institute for Solid Fuels Technology & Applications (GRC)
- Mátrai Kraftwerke (HUN)
- Premogovnik Velenje (SVN)
- RMU Banovici D.D. (BIH)
- Swedish Coal Institute (SWE)
- TKI - Turkish Coal Enterprises (TUR)
- Ukrvuglerobotodavtsy - All-Ukrainian Coal Employer‘s Association (UKR)
- Vagledobiv Bobov dol EOOD (BGR)
- VDKI - Verein der Kohlenimporteure (DEU)
- Coaltrans Conferences Limited (GBR)
- EMAG (POL)
- Finnish Coal Info (FIN)
- Golder Associates (GBR)
- Geocontrol (ESP)
- ISSeP - Institut Scientifique de Service Public (BEL)
- KOMAG (POL)
- University of Nottingham (GBR)

Balanced energy & climate policy objectives?

Sustainability dominates debate in Brussels, but people want jobs & security.

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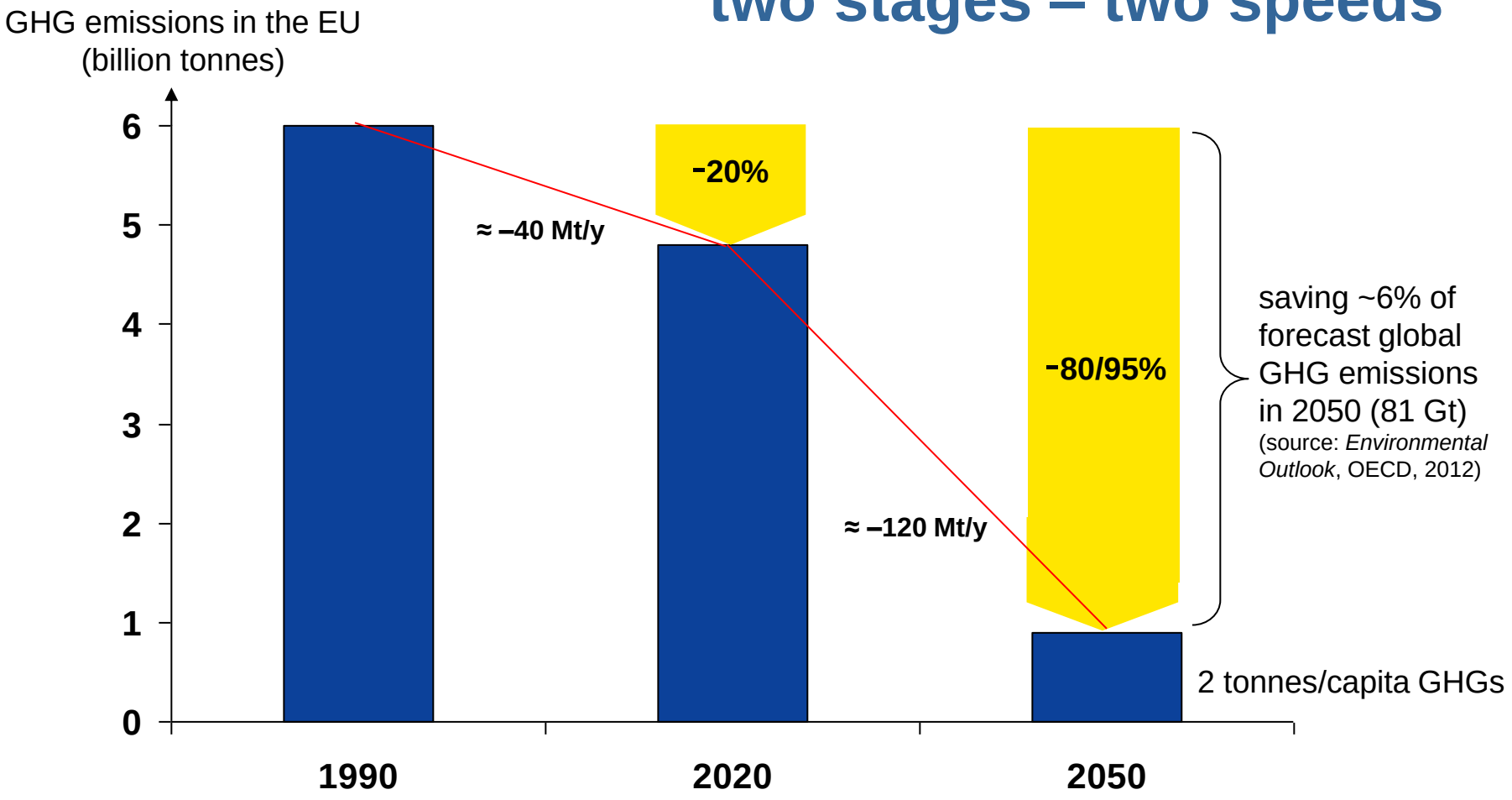
Energy Roadmap 2050

- One political target: 80-95% GHG emission reduction
- Two baseline scenarios:
  - reference
  - current policy initiatives
- Five “illustrative” scenarios:
  - high energy efficiency
  - diversified supply technologies
  - high renewables
  - delayed CCS
  - low nuclear
- Technology neutral
- Member States free to chose energy mix

“Coal in the EU adds to a diversified energy portfolio and contributes to security of supply. With the development of CCS and other emerging clean technologies, coal could continue to play an important role in a sustainable and secure supply in the future.”

Mitigation of climate change in the EU: two stages – two speeds



For the EU, this means reducing GHGs from 5.8 Gt/y in 1990, to some 4.6 Gt/y in 2020, and to some 1 Gt/y in 2050.

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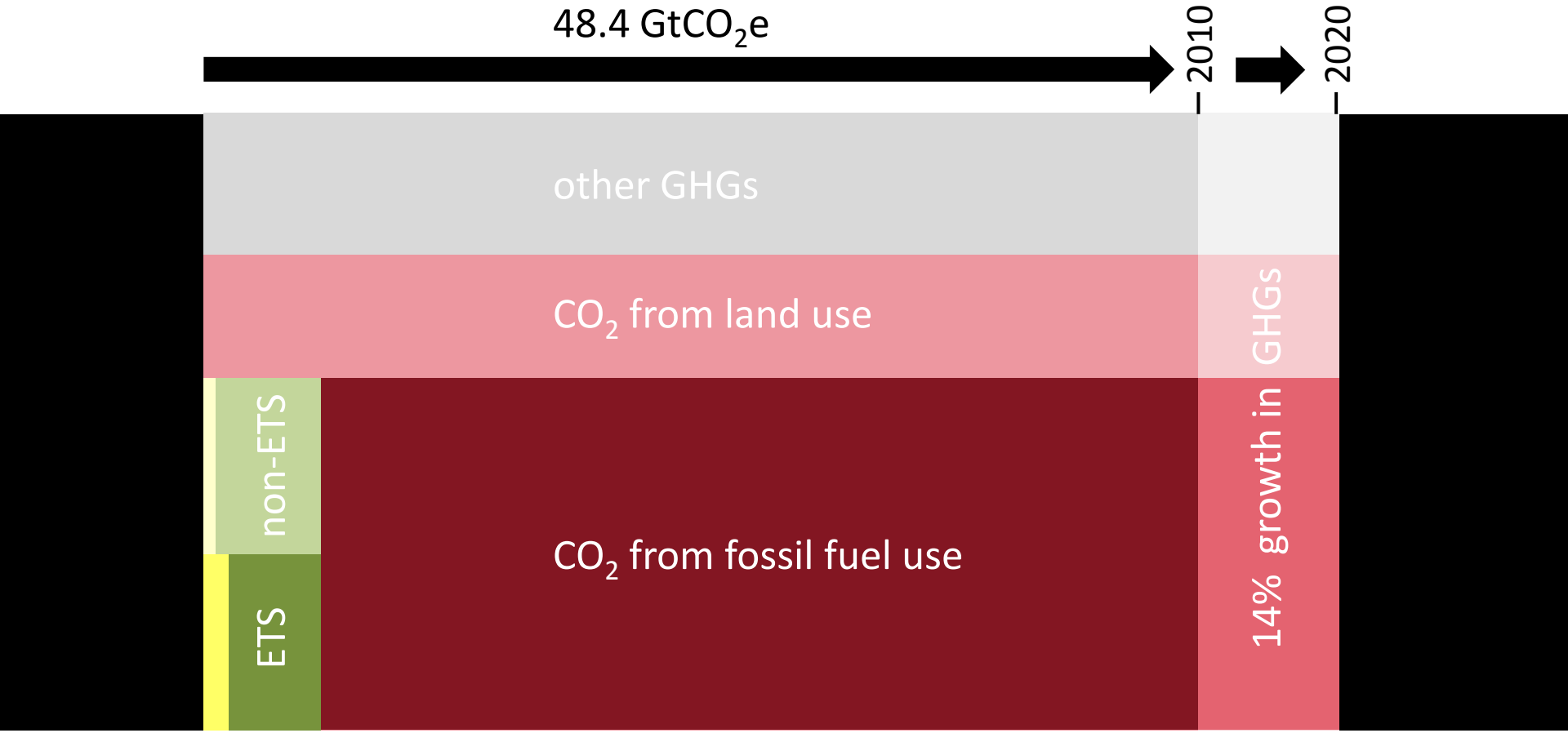
A global challenge needs a global response



EU accounts for 12% of global CO_2 emissions from fossil fuels

20-20-20 policy will reduce global GHG emissions by c.1%

sources: *OECD Environmental Outlook to 2050*, OECD, 2012; IPCC FAR, 2007; European Commission and own calculations

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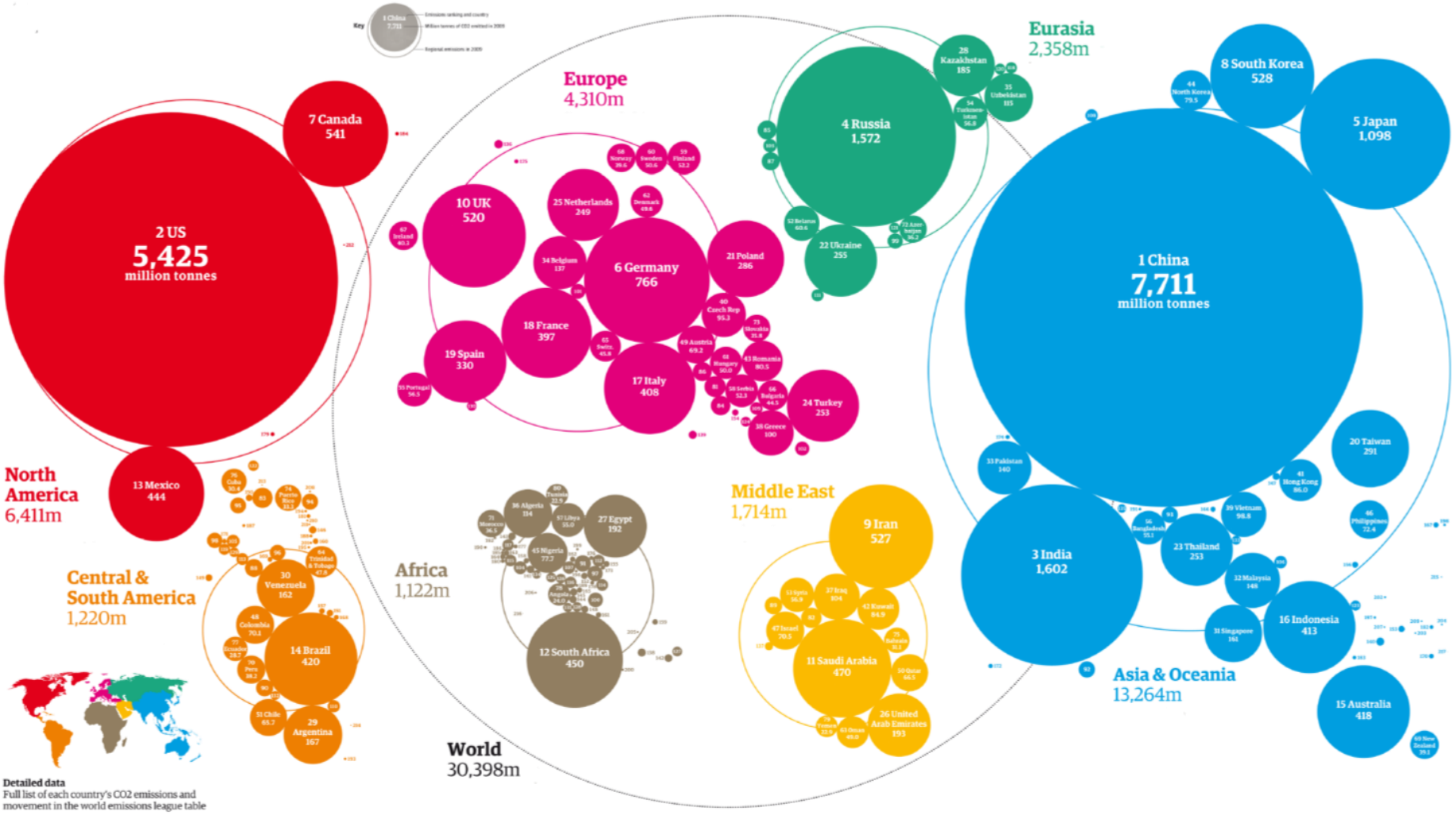
Global CO2 emissions, 2009



source: Guardian, 2011, using data from US Energy Information Administration (reproduced with permission)

EU accounts for just 11% of global GHG emissions.

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EU carbon footprint is massively influenced by inter-regional trade

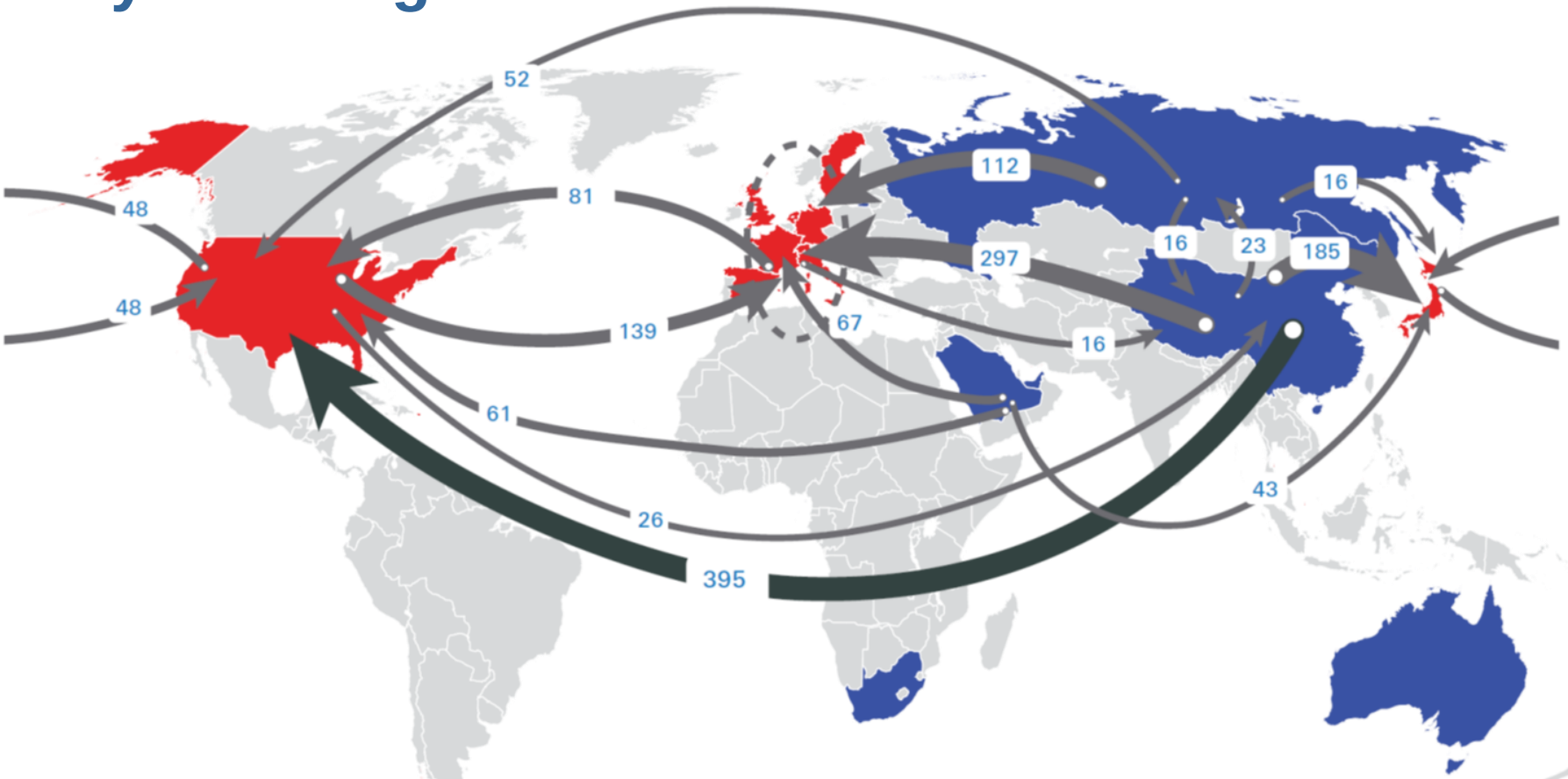

Chart shows the largest inter-regional fluxes of emissions embodied in trade ($MtCO_2$/year) from dominant net exporting countries (blue) to the dominant net importing countries (red). Fluxes to and from Western Europe are aggregated to include UK, France, Germany, Italy, Spain, Luxembourg, Netherlands & Sweden.

sources: Davis and Caldeira, 2010 and Brinkley and Less, 2010

On a consumption basis, EU carbon footprint grew 47% from 1990 to 2006.

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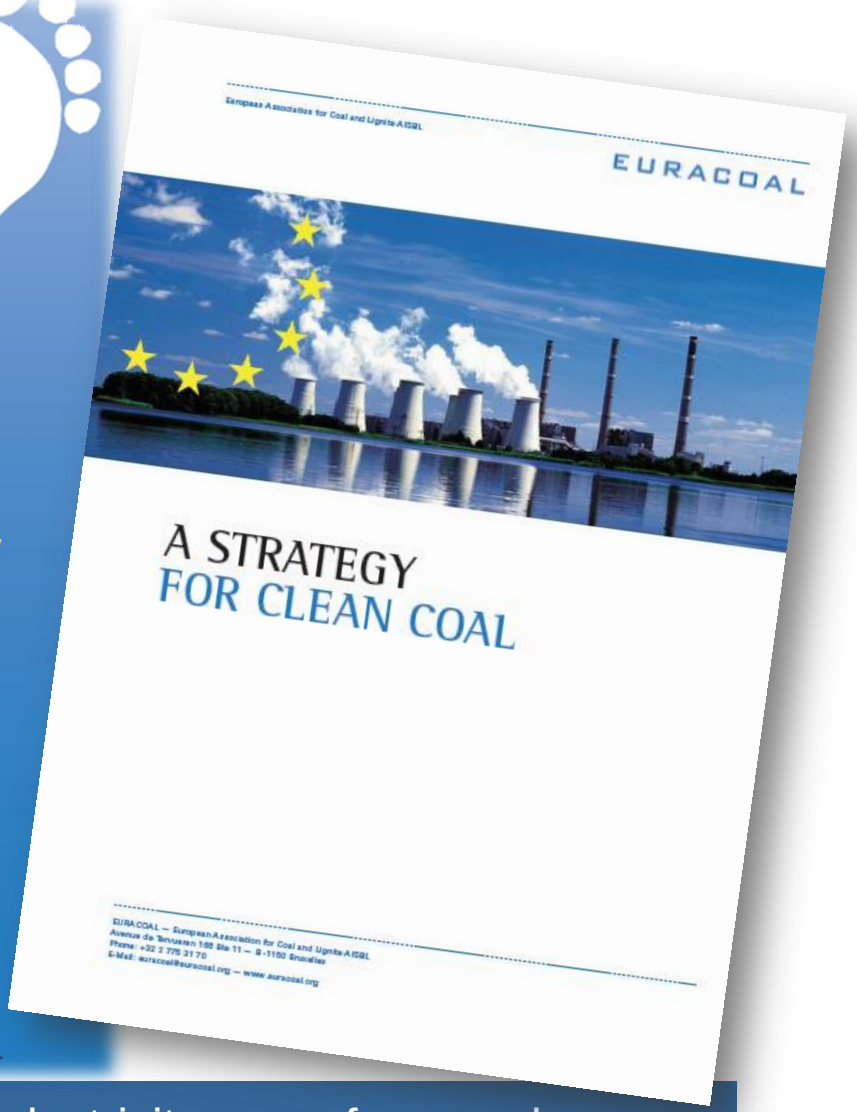
EURACOAL calls for a 3-step clean coal strategy

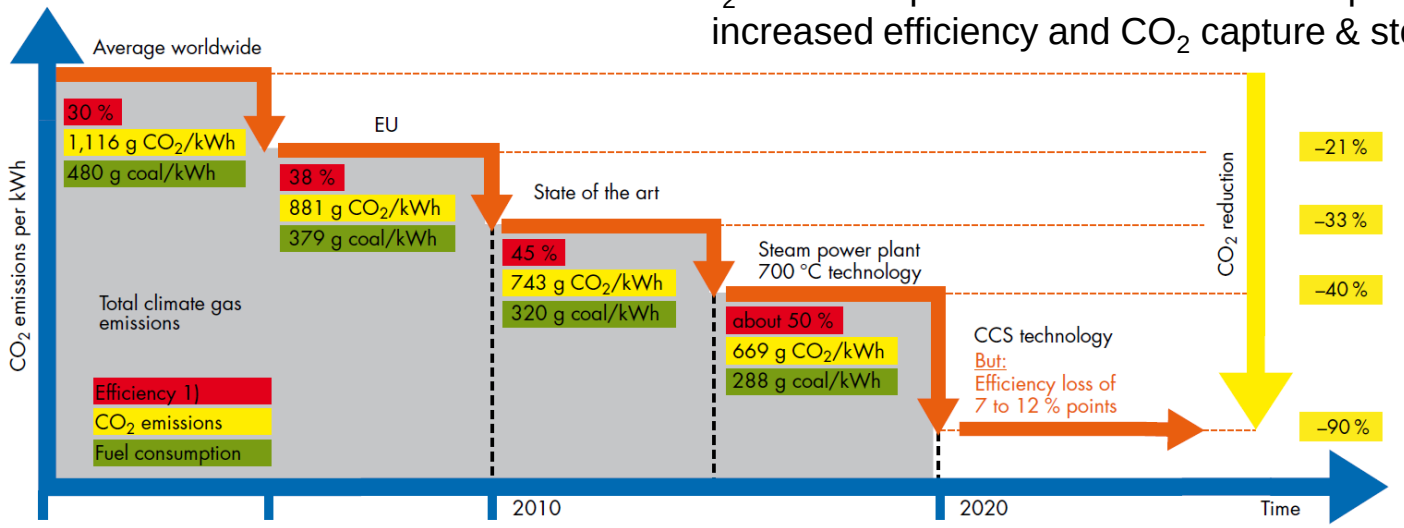


17% of EU primary energy and 27% of EU electricity come from coal.

EURACOAL calls for a 3-step clean coal strategy

1. Introduce state-of-the-art technology across the EU coal-fired generation sector to boost efficiency, enhance flexibility and reduce emissions.
2. Develop the next generation of high-efficiency, flexible technologies for coal-fired electricity generation.
3. Demonstrate and deploy CO_2 capture, transport and storage – as less integrated and therefore less complex activities – at coal-fired power stations around the world, in tandem with CCS for other fuels and other sectors.

CO_2 reduction potential at hard coal fired power plants by increased efficiency and CO_2 capture & storage (CCS)



source: VGB

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Conclusions

- Coal = Abundant + Affordable + Accessible
- Balanced energy policy = Secure + Competitive + Sustainable

Secure

indigenous resources (oil, gas, coal) + import diversity (oil, gas, coal) + flexible power plants (gas AND coal)

Competitive

internal market + rational support for low-C technologies + gas v coal competition (vital for the EU)

Sustainable

international agreement + carbon market + modernisation & renewal of old plants for higher efficiency + CCS infrastructure

EU energy and climate policy needs to recognise that the EU's carbon footprint extends well beyond the EU's borders.

Coal = domestic added value at mines, power plants & equipment suppliers.

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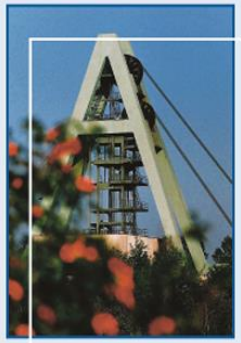

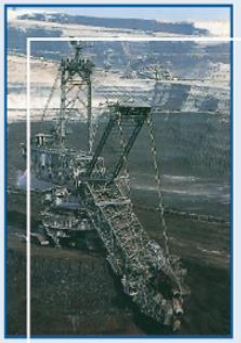

Thank you!

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