

An outline map of Europe and its surrounding regions, including parts of North Africa, the Middle East, and Iceland. A dark blue horizontal bar is overlaid on the top portion of the map, containing the title and author information.

Overview of coal in Europe

Matt Phillips, European Climate Foundation

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Dimensions of risk for NGOs

An outline map of Europe is visible in the background, showing the continent's borders and major islands. The map is centered on the continent, with the British Isles to the west and the Mediterranean coast to the south.

How large is the 'coal risk' in Europe?

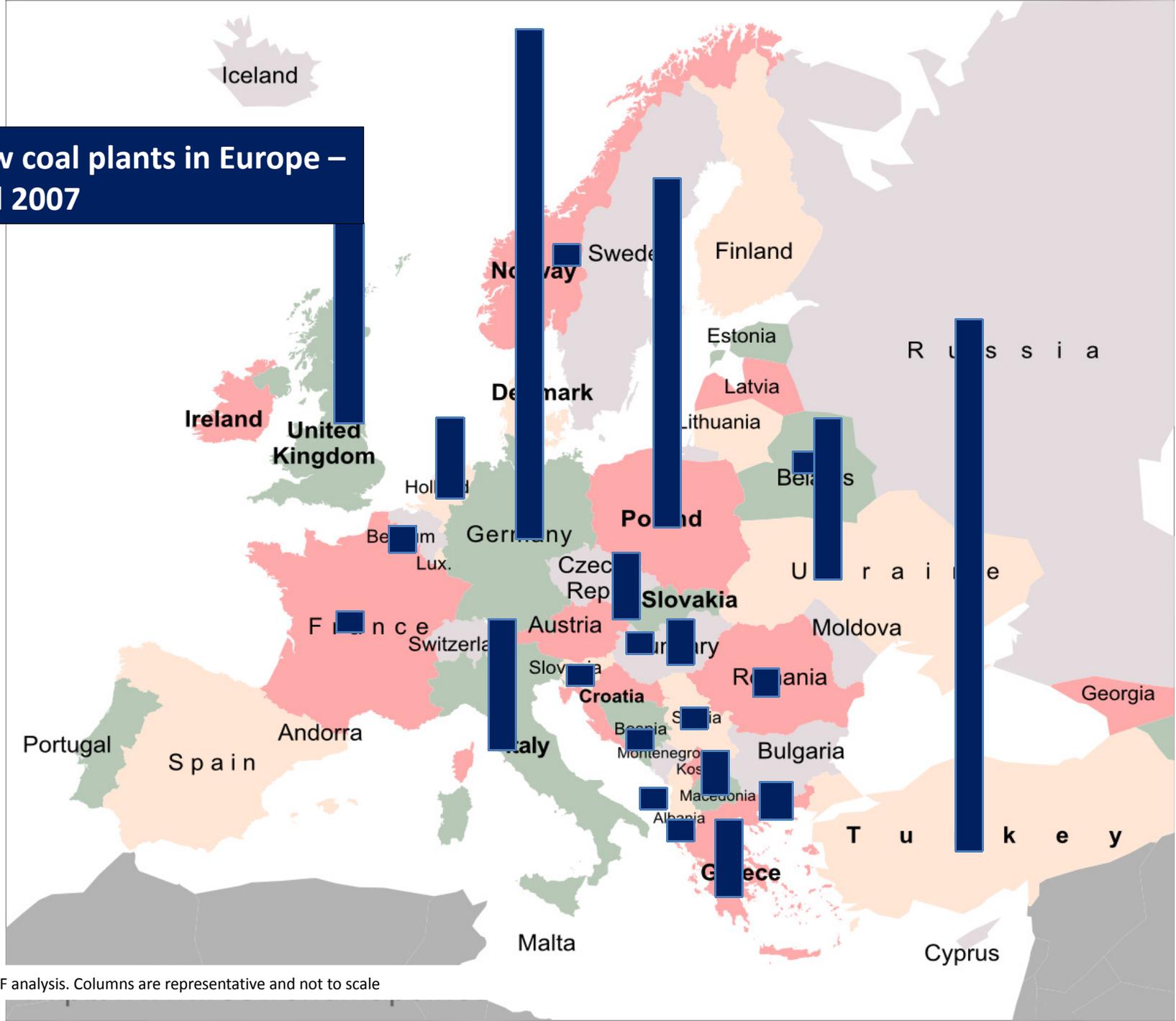
What is the geography of coal risk?

What is the corporate profile of the risk?

Where are the active flashpoints?

Where is the network addressing coal?

New coal plants in Europe – mid 2007



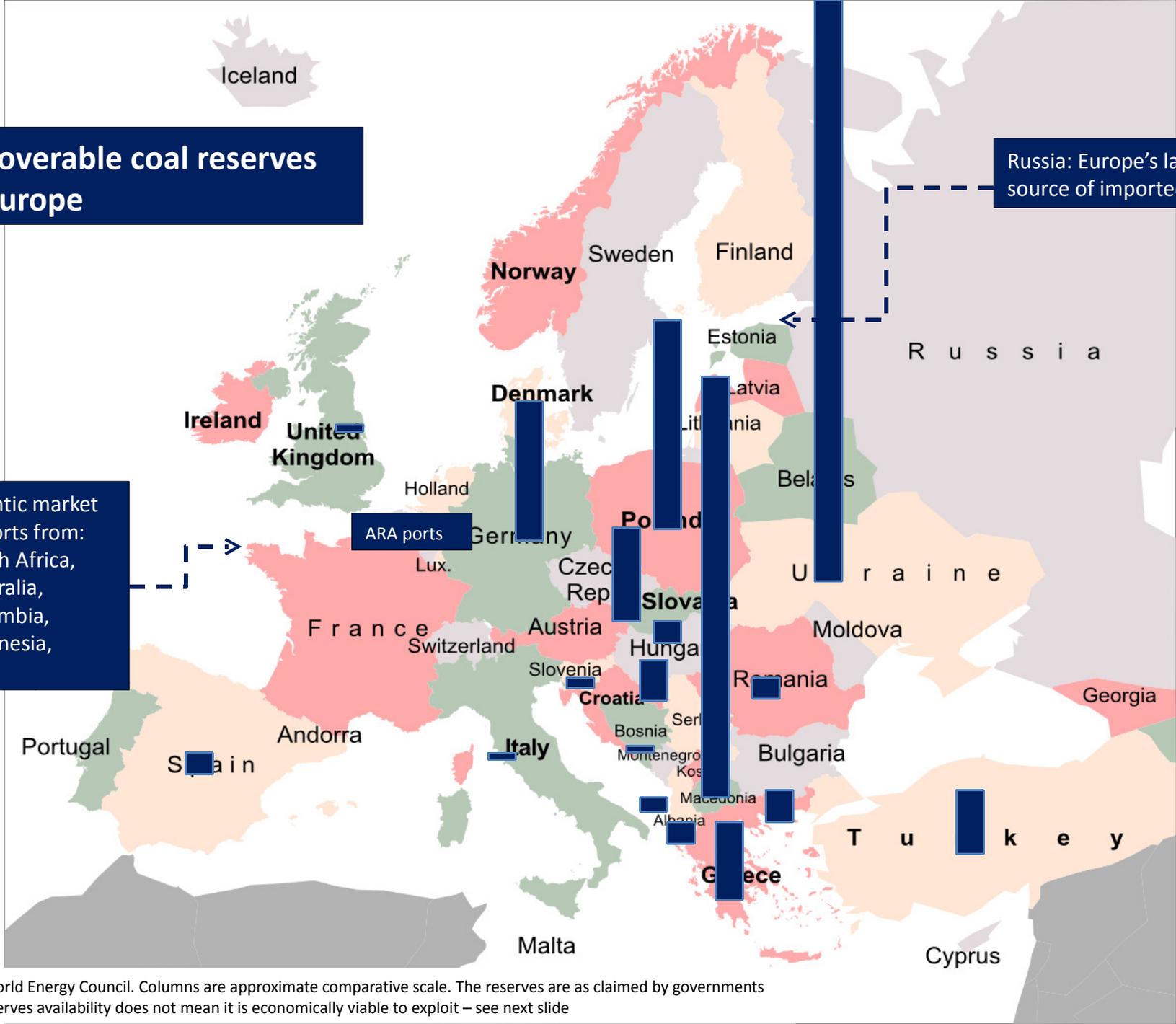
Source: ECF analysis. Columns are representative and not to scale

Recoverable coal reserves in Europe

Russia: Europe's largest source of imported coal

Atlantic market imports from: South Africa, Australia, Colombia, Indonesia, US

ARA ports



Source: World Energy Council. Columns are approximate comparative scale. The reserves are as claimed by governments and so reserves availability does not mean it is economically viable to exploit – see next slide

Iceland

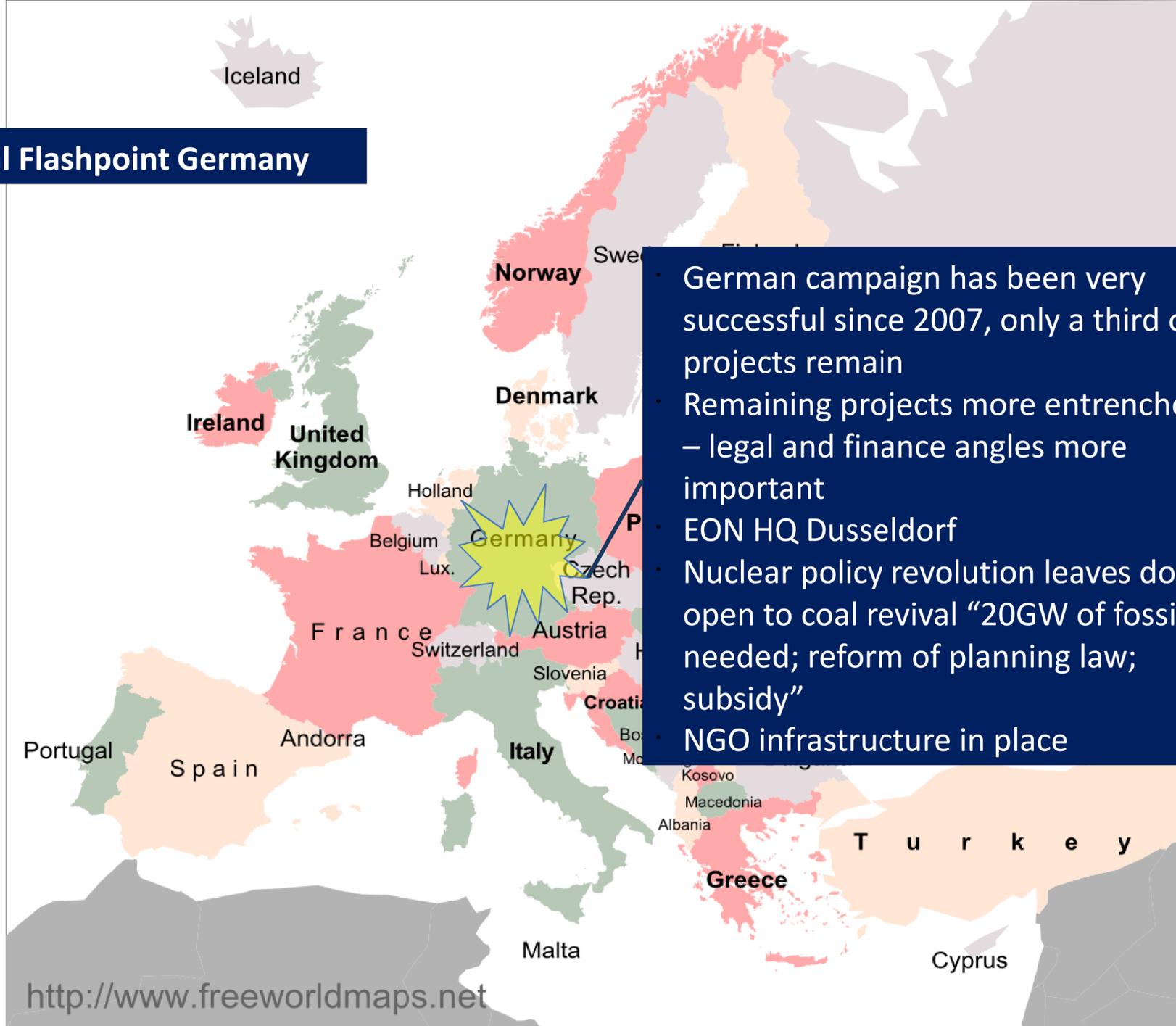
Coal Flashpoint Poland

- Polish government ambition is for 15GW of new coal
- Projects have uncritical political support, coal is Poland's 'treasure'
- 10c Derogations issue limits Poland's ambition
- Western investors other than GDF Suez pulled out
- Government and utilities say they will apply to EIB
- Coalition of NGOs now establishing
- Opole delayed
- Belchatow CCS commitment in crisis
- ENEA wobbling?



<http://www.freeworldmaps.net>

Coal Flashpoint Germany

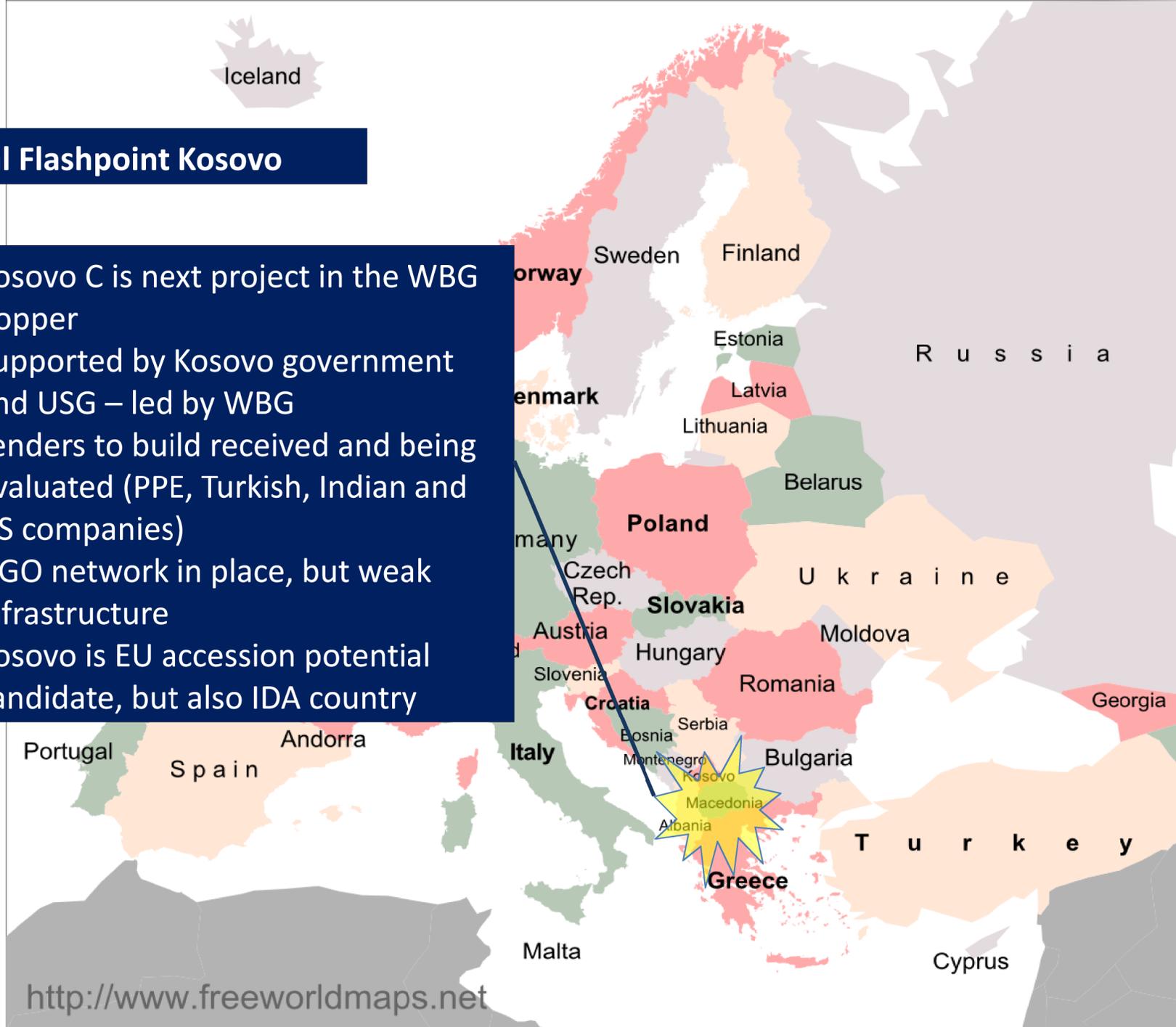


- German campaign has been very successful since 2007, only a third of projects remain
- Remaining projects more entrenched – legal and finance angles more important
- EON HQ Dusseldorf
- Nuclear policy revolution leaves door open to coal revival “20GW of fossil needed; reform of planning law; subsidy”
- NGO infrastructure in place

Iceland

Coal Flashpoint Kosovo

- Kosovo C is next project in the WBG hopper
- Supported by Kosovo government and USG – led by WBG
- Tenders to build received and being evaluated (PPE, Turkish, Indian and US companies)
- NGO network in place, but weak infrastructure
- Kosovo is EU accession potential candidate, but also IDA country

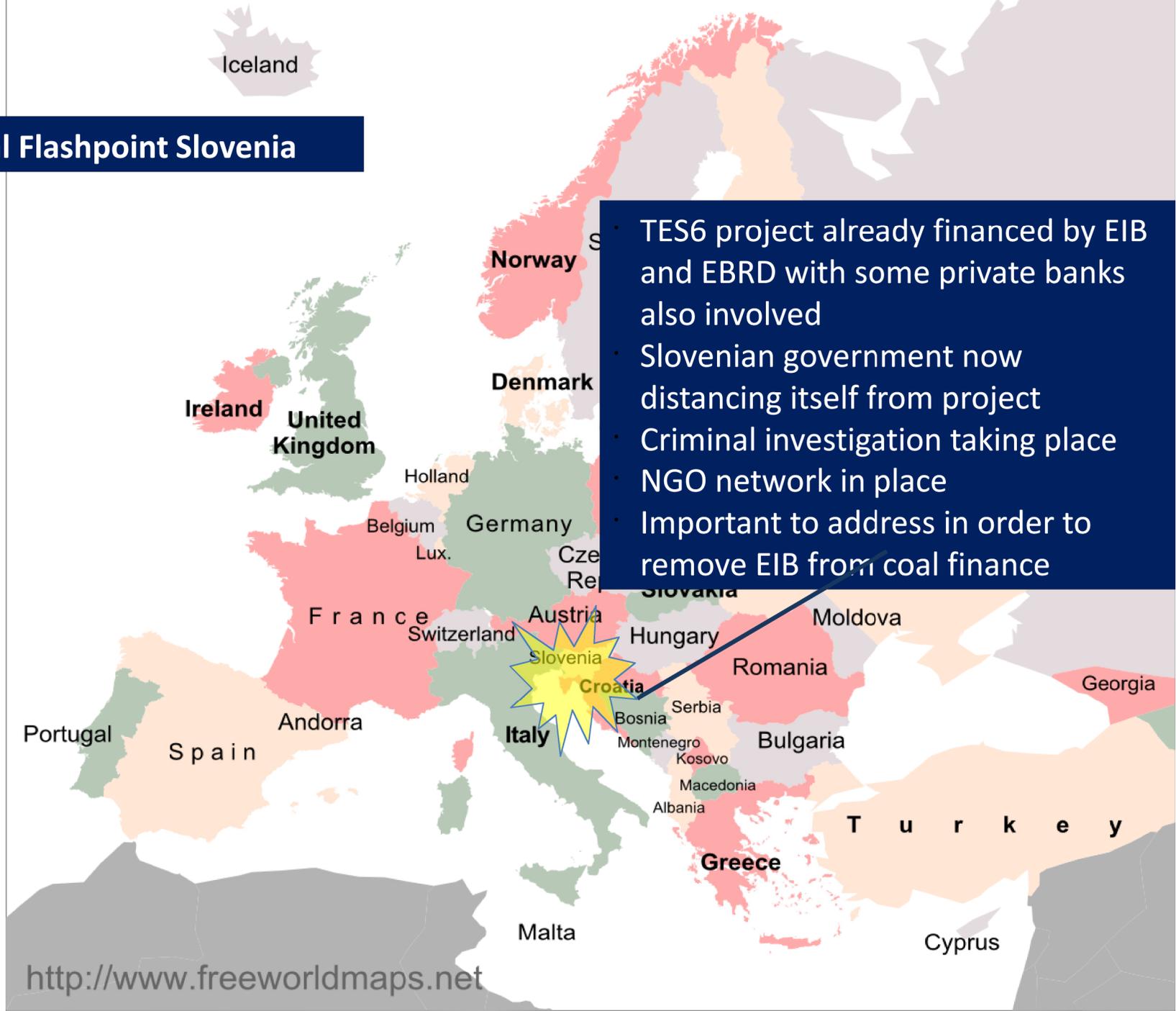


<http://www.freeworldmaps.net>

Iceland

Coal Flashpoint Slovenia

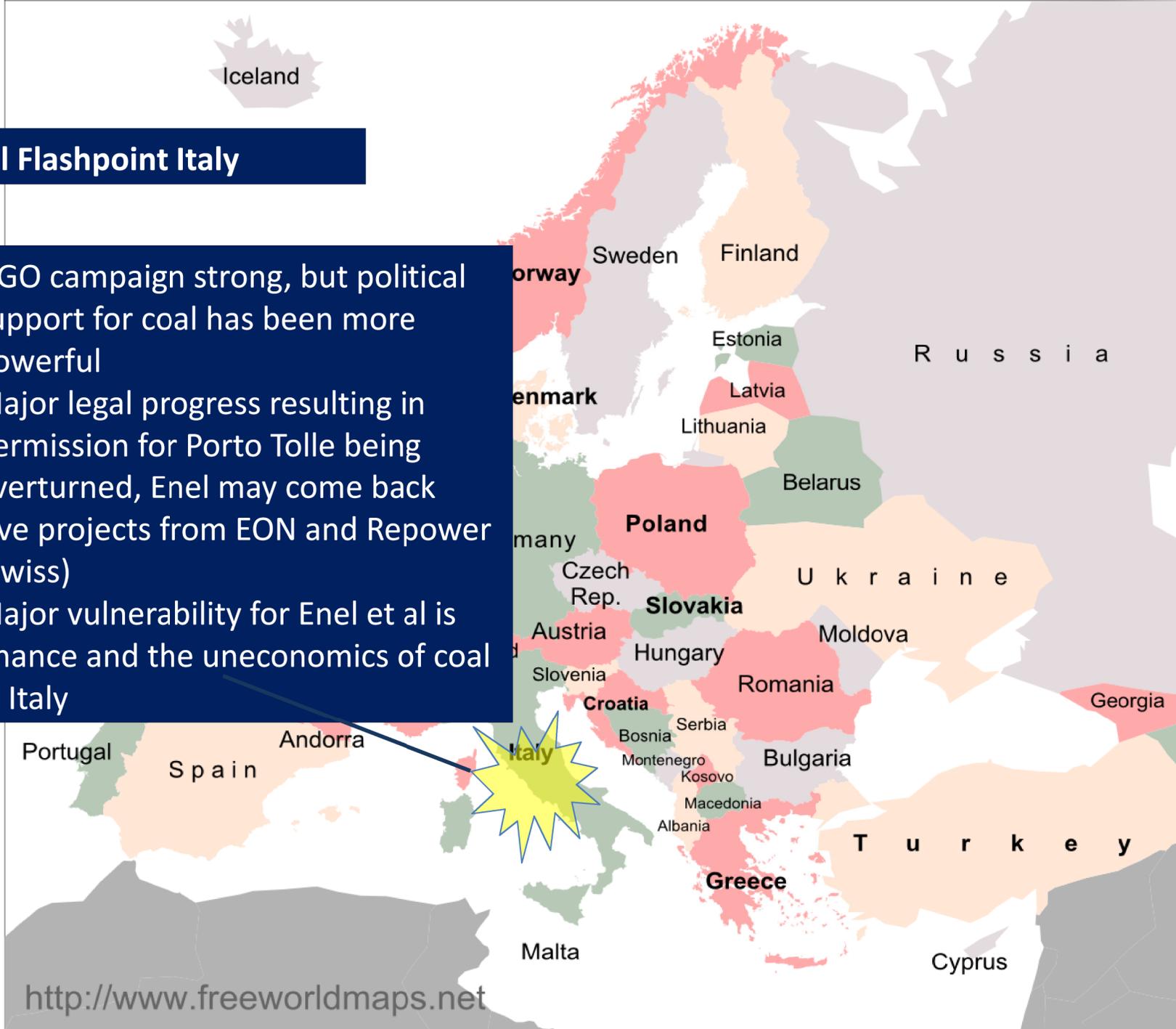
- TES6 project already financed by EIB and EBRD with some private banks also involved
- Slovenian government now distancing itself from project
- Criminal investigation taking place
- NGO network in place
- Important to address in order to remove EIB from coal finance



Iceland

Coal Flashpoint Italy

- NGO campaign strong, but political support for coal has been more powerful
- Major legal progress resulting in permission for Porto Tolle being overturned, Enel may come back
- Live projects from EON and Repower (Swiss)
- Major vulnerability for Enel et al is finance and the uneconomics of coal in Italy



Iceland

Other Coal Flashpoints

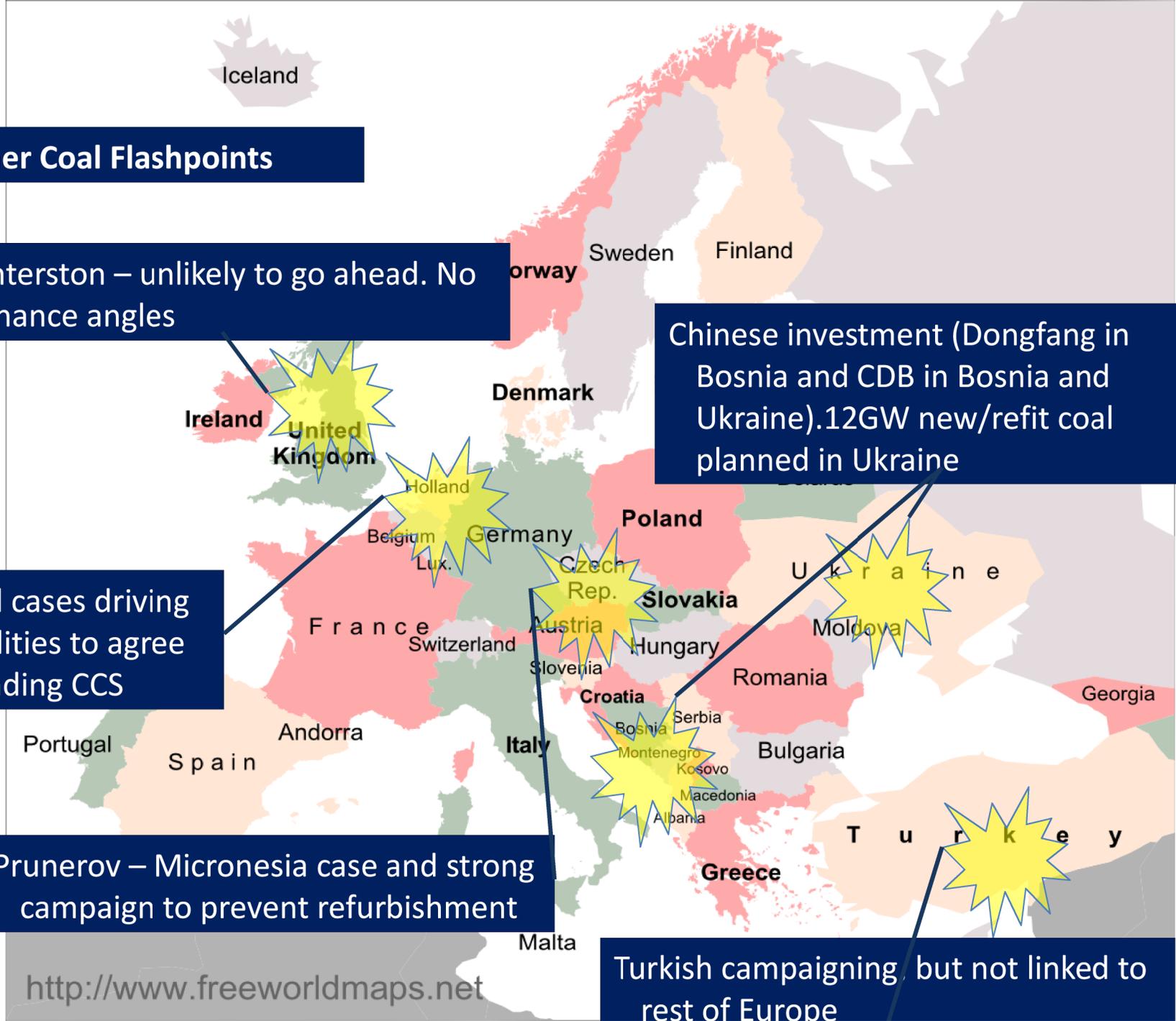
Hunterston – unlikely to go ahead. No finance angles

Chinese investment (Dongfang in Bosnia and CDB in Bosnia and Ukraine). 12GW new/refit coal planned in Ukraine

Legal cases driving utilities to agree binding CCS

Prunerov – Micronesia case and strong campaign to prevent refurbishment

Turkish campaigning, but not linked to rest of Europe



Iceland

Utility Flashpoints

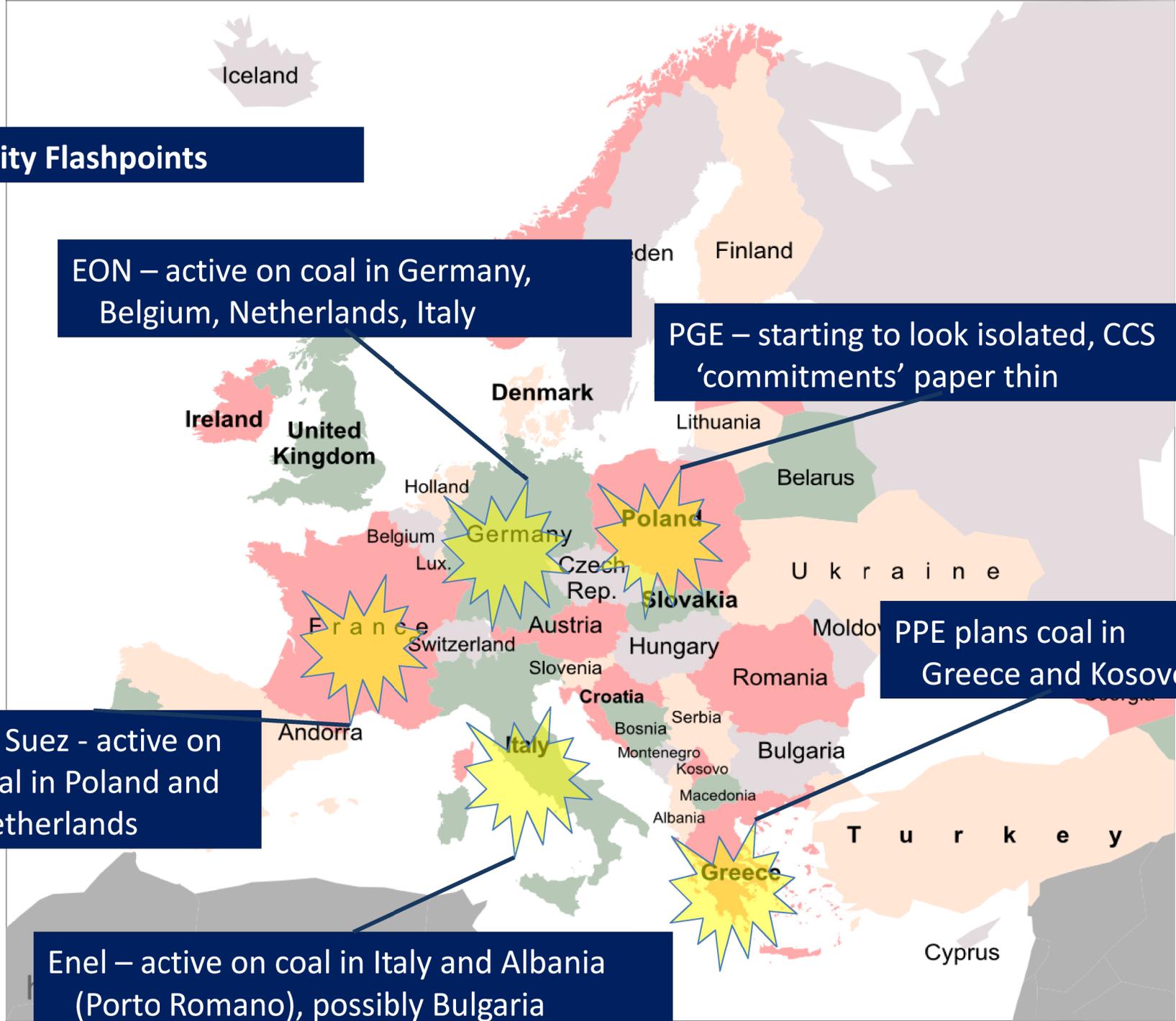
EON – active on coal in Germany, Belgium, Netherlands, Italy

PGE – starting to look isolated, CCS 'commitments' paper thin

PPE plans coal in Greece and Kosovo

GDF Suez - active on coal in Poland and Netherlands

Enel – active on coal in Italy and Albania (Porto Romano), possibly Bulgaria



Denmark Finland

Ireland United Kingdom

Denmark

Lithuania

Belarus

Poland

Germany

Czech Rep.

Slovakia

Ukraine

France

Switzerland

Austria

Hungary

Moldova

PPE plans coal in Greece and Kosovo

Andorra

Italy

Croatia

Slovenia

Romania

Bosnia

Serbia

Bulgaria

Montenegro

Kosovo

Macedonia

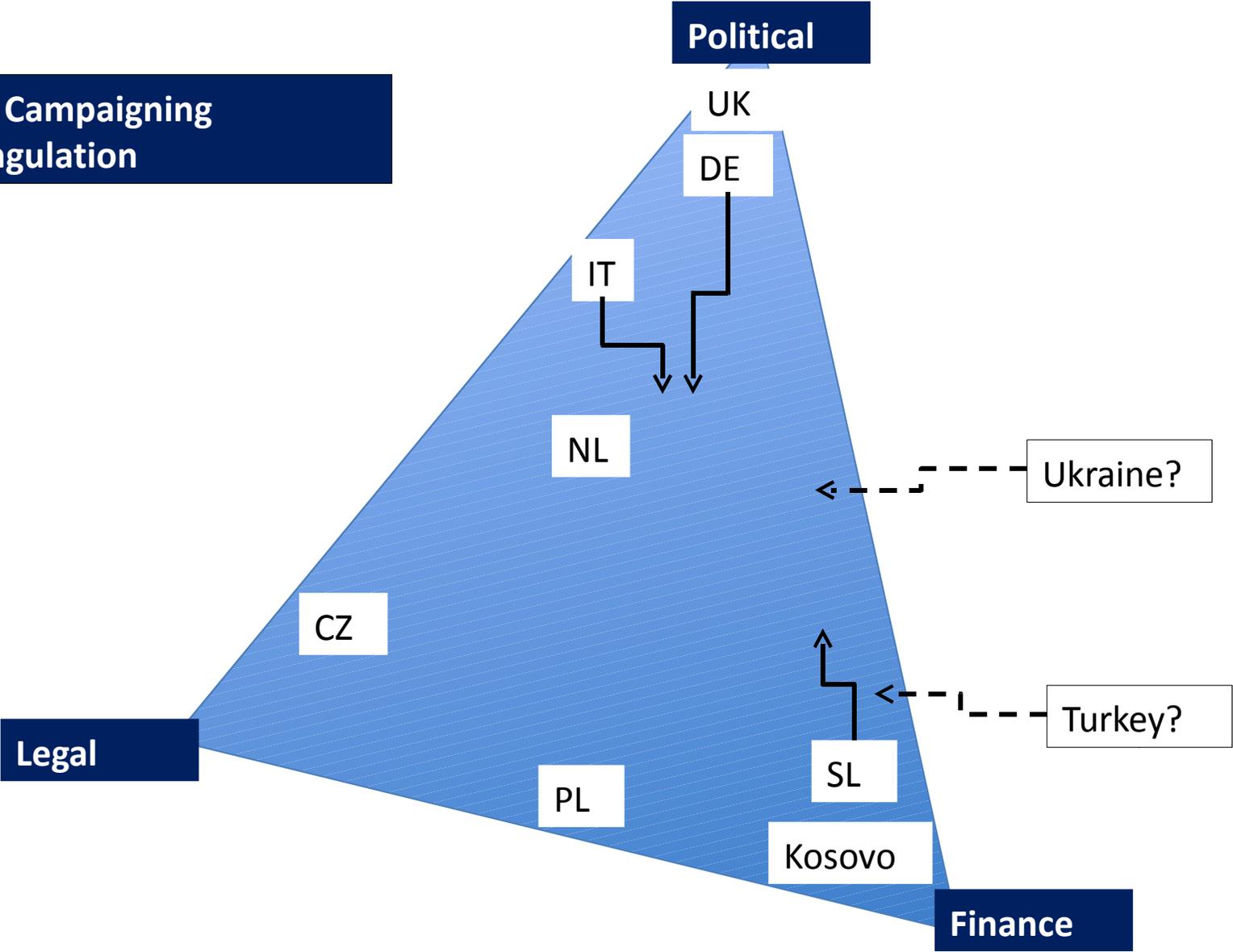
Albania

Turkey

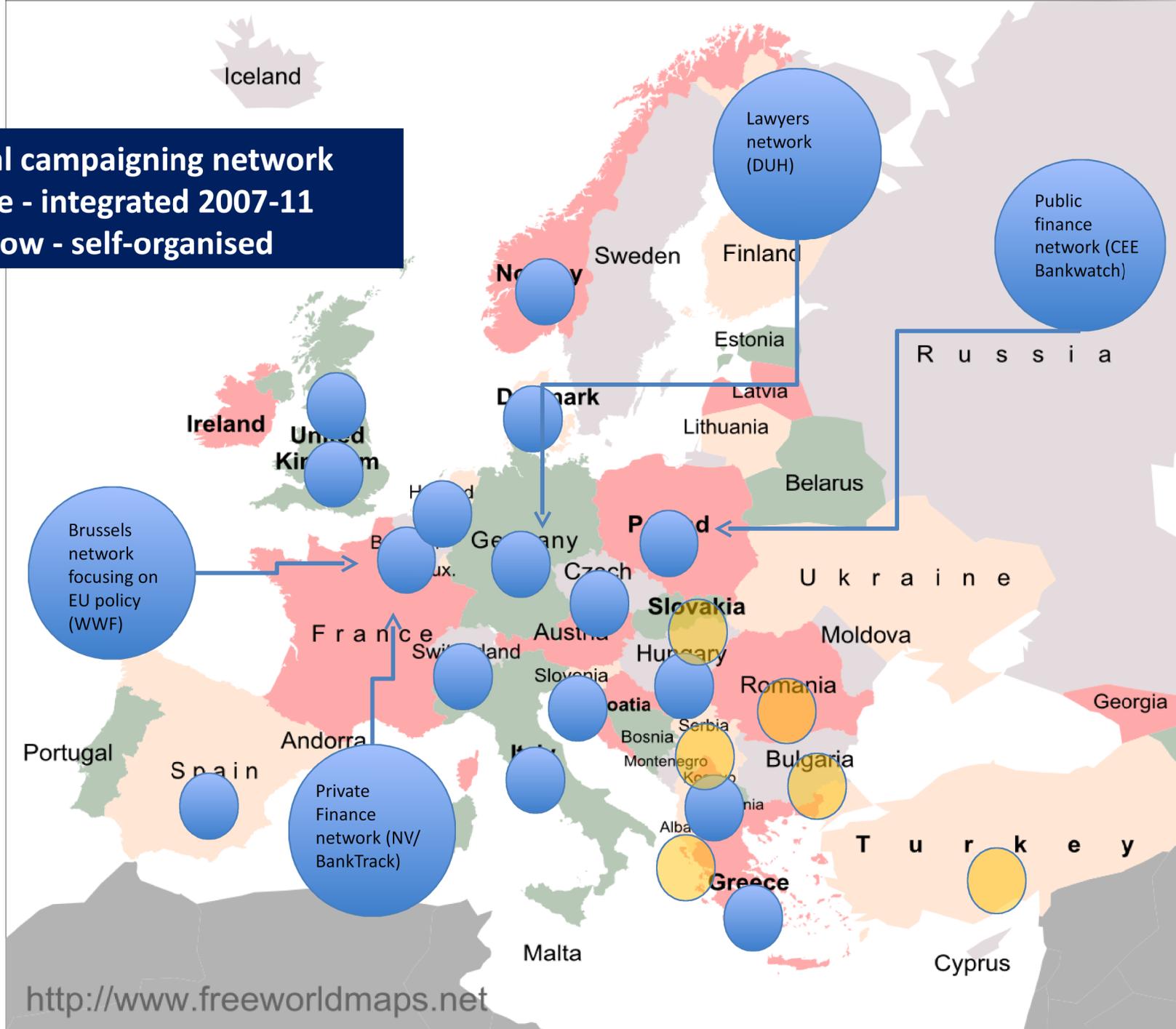
Greece

Cyprus

**Coal Campaigning
Triangulation**

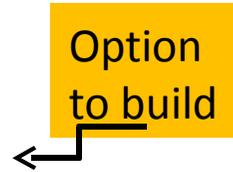


Coal campaigning network
Blue - integrated 2007-11
Yellow - self-organised

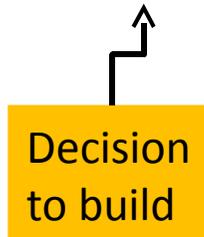


Project pipeline

Option
to build



Decision
to build



Political campaigning



Legal campaigning



Equity finance



Project
finance



NGO interventions





Coal sector messaging





Key messages

The energy supply of the 21st century is more than ever shaped by coal. Almost all developing and threshold countries trust that coal is a long-term, reliable basis for the development of the economy and society.

According to estimates of the International Energy Agency (IEA), coal will have the same importance as oil for the world-wide supply of energy until 2030.

Hard coal and lignite represent approximately 80% of EU reserves of fossil fuels. As coal ensures safe, reliable, affordable and sustainable energy for all, it will be very much needed in the decades to come.

On a global scale coal is and will be energy No.1 for power generation. Coal-fired power generation technology still has substantial potential for development and cost-efficient climate protection with coal is already possible today.

Carbon Capture and Storage (CCS) is important for international climate protection policies; it is expected to deliver one fifth of very ambitious GHG reductions by 2050. For CCS to become commercial in the next decades, an EU CCS demonstration network has to be created in this decade.

An appropriate climate protection policy must consider all greenhouse gas emissions from all fossil fuels.

An efficient and affordable CO₂ transport network on European level is needed and the EU should pro-actively promote the creation of a CO₂ infrastructure together with EU Member States.

Coal utilisation can co-exist with the development of power generation based considerably on renewables. Precisely new coal-fired power plants will be able to meet the variable feeding in of larger quantities of power from renewables much more flexibly and cover the gaps in supply.



COAL: HERE TO STAY

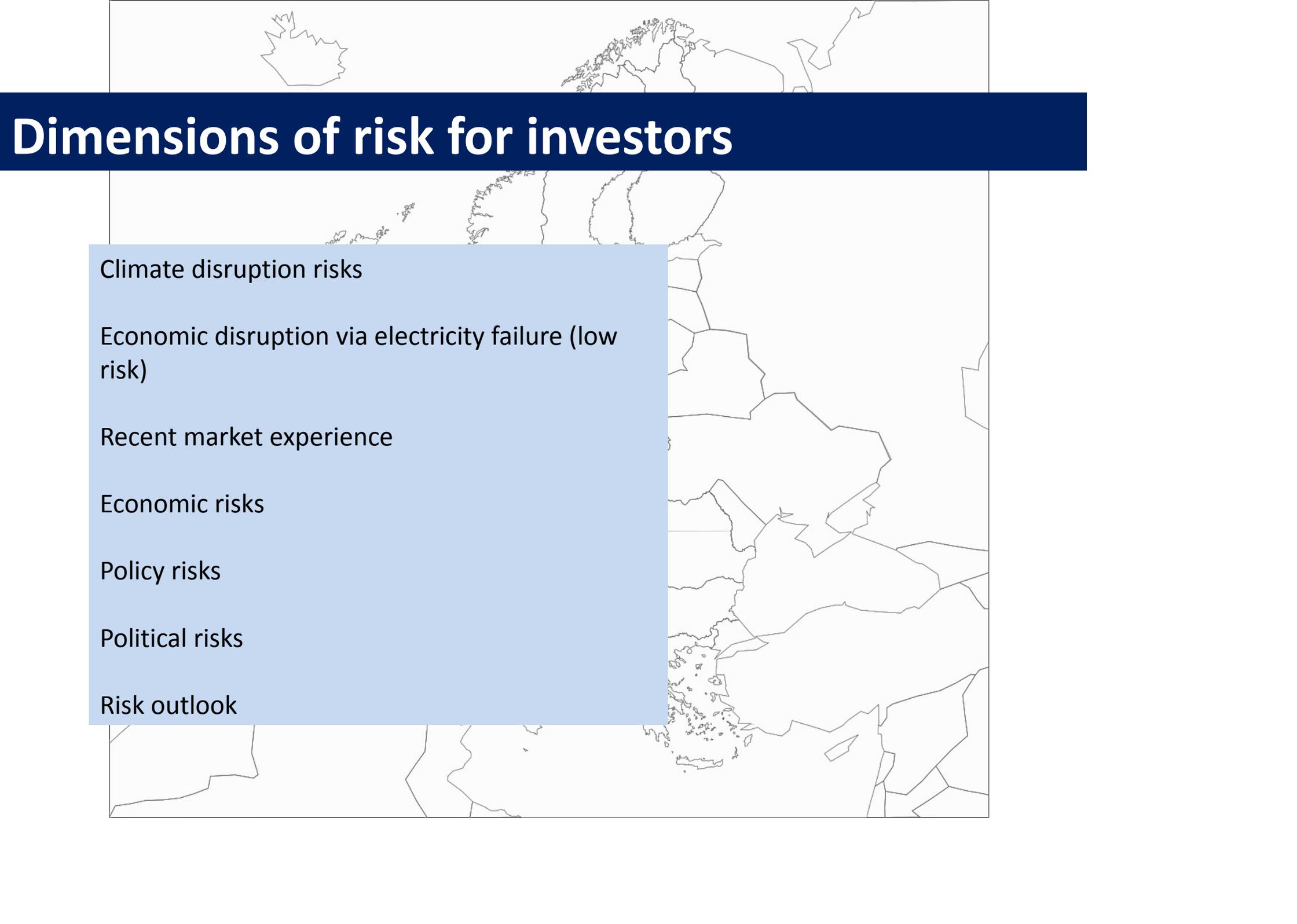
COAL-GEN Europe 2012 will reaffirm the importance of coal under the theme, *COAL: HERE TO STAY - THE REALITY OF EUROPE'S ENERGY MIX*.

"Coal is here to stay" are the words echoed by Milton Catelin, head of World Coal Institute during his presentation at the World Future Energy Summit held in Abu Dhabi in January 2011. This underlines the importance of coal that will be the mainstay of future energy security.

Coal is a vital fuel in most parts of the world. Some 23% of primary energy needs are met by coal and 39% of electricity is generated from coal. About 70% of world steel production depends on coal feedstock. Coal is the world's most abundant and widely distributed fossil fuel



BUT – coal messaging is starting to look very defensive



Dimensions of risk for investors

Climate disruption risks

Economic disruption via electricity failure (low risk)

Recent market experience

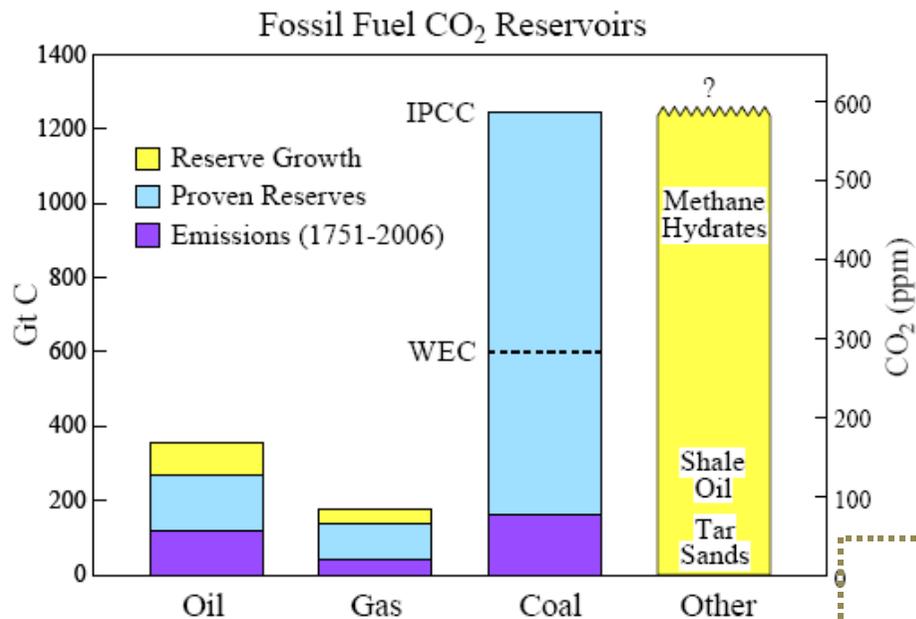
Economic risks

Policy risks

Political risks

Risk outlook

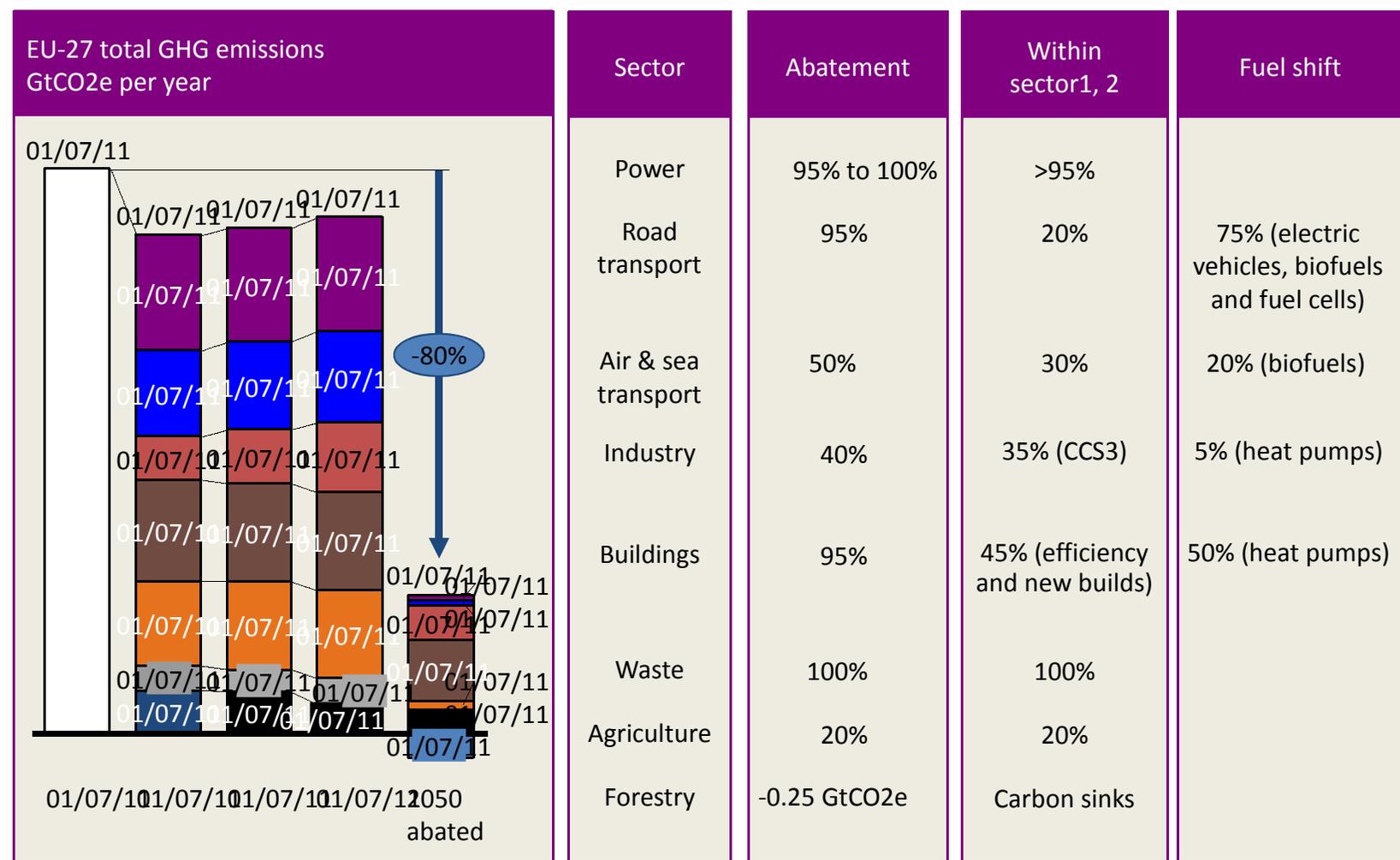
Climate disruption risks of coal



“Continued growth of greenhouse gas emissions, for just another decade, practically eliminates the possibility of near-term return of atmospheric composition beneath the tipping level for catastrophic effects.” Hansen et al, 2008

- The global consensus is that the world should be kept within a 2°C temperature rise (40-60% chance ~ 450ppm).
- Conversion of known reserves of gas and oil risks concentrations of CO₂ ~ 450ppm.
- Conversion of known coal reserves risks concentrations of CO₂ consistent with a world without ice and outside the Holocene temperature range that gave rise to human civilisation.
- 10 year turnaround required:
 - 12Gt less CO₂ must be emitted in 2020 in order to achieve 450ppm (Mckinsey CC 2.1).
 - WEO 2010 specifically projects coal use must peak by 2020 then decline to 2003 levels by 2035 in order to stay within 450ppm.
 - But new coal plants lock in coal use for 40 years.
- G20: Common but differentiated responsibility means Europe /OECD must decarbonise ahead of other economies. Nearly all EU capacity must be replaced in next 40 years.

EU's 80% by 2050 target only possible with zero-carbon power. High chance governments will address this in 2010s

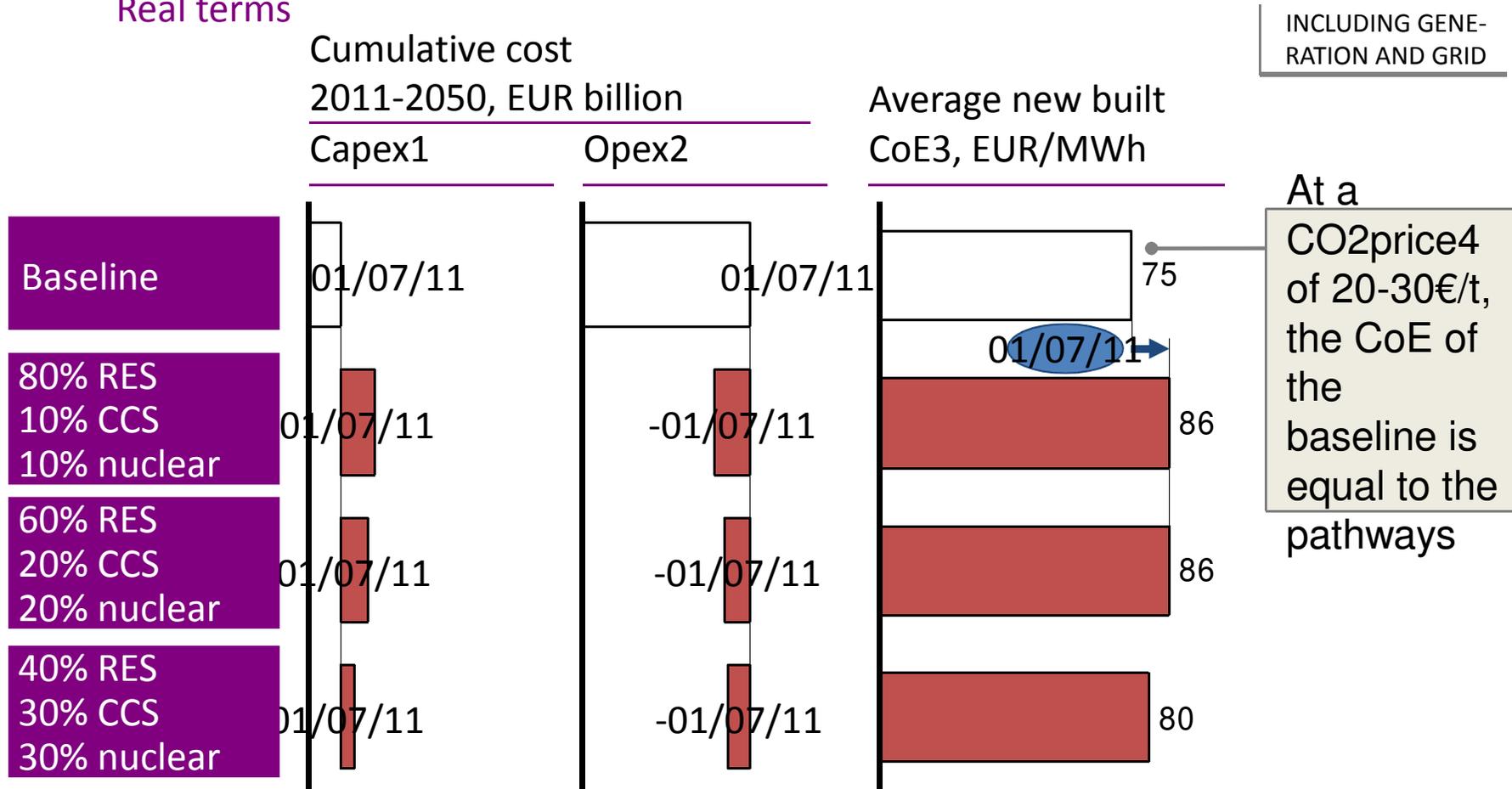


1 Based on the McKinsey Global GHG Abatement Cost Curve
 2 Large efficiency improvements already included in the baseline
 3 CCS applied to 50% of industry (cement, chemistry, iron and steel, petroleum and gas, not applied to other industries)

SOURCE: : Mckinsey et al, Roadmap 2050 – a coalition of experts, industry and academics assembled by ECF to address European decarbonisation. See www.roadmap2050.eu

Low risk of 'lights going off' if no new unabated coal (with decarbonised EU network as reliable as today)

Real terms



1 For new builds from 2011 to 2050, including additional grid capex

2 Opex for all new and operating plants includes variable, fixed, as well as fuel cost; also includes opex for additional backup plants and additional grid

3 Cost of electricity with a WACC of 7% (real after tax), weighted average based on the CoE in each 10-year time frame (2020, 2030, 2040, 2050) for new built capacity; including grid

4 Carbon prices shown in Chapter 2 were used only to develop the macro-economic analysis of the baseline

New European coal projects projected in mid 2007

16 projects permitted	Mainly Germany and Italy
98 projects in the EU at various stages from early announcements of intent to seeking permission	Mostly in Germany, Poland, UK. Italy and Netherlands
46 projects given outline permission in Turkey	
5 in Western Balkans candidate accession countries plus c12GW identified in Ukraine energy strategy for refurbishment and replacement	
RWE, DONG, Vattenfall, GDF Suez, EON, Iberdrola, PGE, CEZ, ENEA, Enel all pursuing substantial new coal	

Situation 2011

16 permitted	4 operational, 3 under construction, but subject to legal challenge (Datteln, Hamburg, Mannheim); 4 face legal challenge plus significant prospect of binding CCS timetable (Netherlands - one with binding EPS); 1 with commercial scale CCS demonstration (Belchatow); 4 under construction
98 EU projects	42 remain in the pipeline, but some of these are watching brief only
46 in Turkey	?
5 in Western Balkans plus c12GW Ukraine	Albania delayed, Kosovo, Serbia, Montenegro, Bosnia all advancing
RWE, DONG, Vattenfall, Iberdrola all abandoned new coal projects ENEA wobbling Enel, EON, GDF Suez, CEZ, PGE all still pursuing new coal	

Economic risk environment - Coal not turned out to be

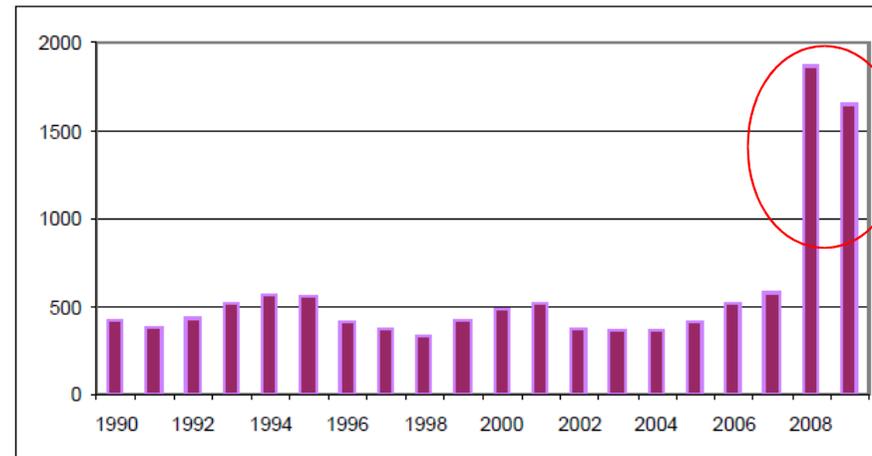
Return risks

- > Capex risen compared to CCGT leading to diminishing competitiveness. Specifically in context of high load factors becoming less achievable as intermittent RES advances & high WACC).
- > Diminishing project value as utility economies of scale disrupted (eg EON's)
- > Structural over-capacity in some markets (eg DE) compounded by reduction in demand and lower near term demand projections.
- > CCGTs and RES are being built as considered more economic, flexible, or supported. Platts Power in Europe Jan 2010 suggests 106 CCGTs (61.1GW) under construction and in advanced development and 47GW of RES projects.

Commodity price volatility

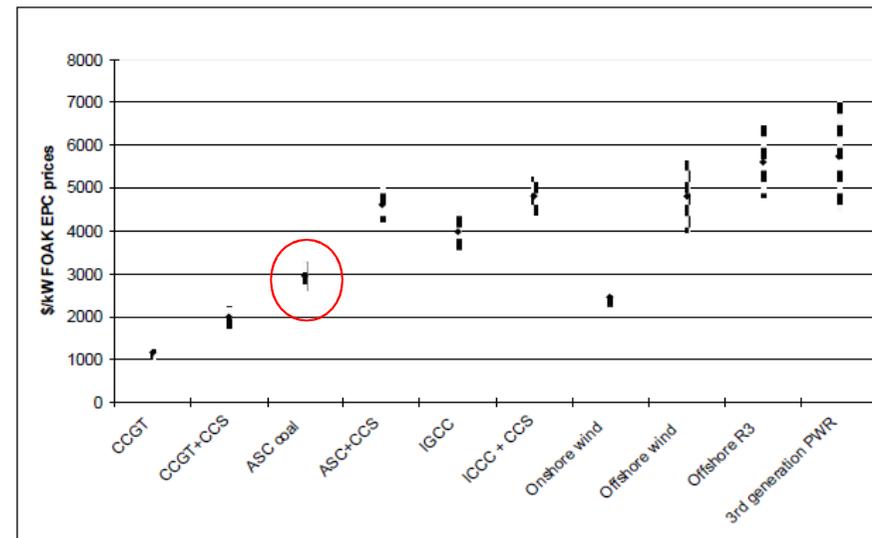
- > Coal prices have proved volatile. 2008 price shock – coal not efficient hedge when all fossil prices rise.

Figure 3.4: Coal's EPC premium versus CCGT in \$/kW



Source: Mott MacDonald

Figure 6.1: Overnight prices for FOAK plants ordered in early 2010



Source: Mott MacDonald

Mott Macdonald June 2010 update for UK government on generation costs

Policy risk environment – governments have regulated

Incompatibility risk

- Climate policy has continued on a 20 year tightening trend. Unabated coal is systematically in conflict with this trend.

Enforcement risk

- Article 10c derogation interpretation likely to constrain Poland's ambitions* (RWE and Vattenfall have pulled out citing uncertainty).

Legitimate policy change risks (examples)

- IPPC Directive now clarifies that MSs can introduce EPS.
- UK set to introduce EPS 'at the level of a modern gas plant'. Meantime UK requires at least 300MW net CCS on any new coal project.
- Netherlands considering CCS-EPS 'deal'.

*The IPPC directive article 10c derogation (from ETS auctioning between 2013-2020) is for plants where the 'investment process' has been 'physically initiated'. In PL and CZ. Poland maintains a loose definition and says 15GW of capacity complies. But the Commission and other member states have not yet accepted the Polish definition. This may be decided in 2011.

Political risk environment: Public opposition to new coal has influenced utility decisions and regulatory environment

Coal controversy in...	Outcome
Germany	16 projects abandoned, 9 facing protest, three projects under construction facing legal challenge
UK	13 projects abandoned. Only coal with CCS allowed. One project applying for consent. Hatfield IGCC project CCGT consented but not gasifier until CCS chain formalised
Hungary	Matra project abandoned. Coal mining subsidies ended. Vertesi to close.
Czech Republic	Controversy over Prunerov upgrade led to fall of minister
Slovakia	Trebišov project abandoned
Greece	Government policy now excludes coal plants utilising imported hard coal
Poland	Polish 10c derogation criteria being challenged. Vattenfall and RWE withdrawn from all new coal projects. Enea expressing doubts about coal
Denmark	Controversy over DONG projects in UK and Germany led to Denmark withdrawing DONG from all new coal projects in Europe
Switzerland	Swiss interests have withdrawn from projects in Germany following protests
Slovenia	Sostanj 6 project granted permits but now facing criminal investigation following critical finance ministry report
Netherlands	Four projects are likely to form part of a 'deal' involving government support for CCS alongside firm timetable. One (NUON Eemshaven) has adopted binding EPS
Belgium	EON Antwerp project delayed following protests
Italy	Delays at local level to new coal projects and Porto Tolle halted through legal action
US	Of 151 coal projects planned in the US more than 100 have been halted by campaigners; some states have an EPS; 8 banks now have coal policies



Return risks

- Uncertainties around coal related to shale gas & Caspian
 - hype chilling investment;
 - easing of gas reliance concerns (security & price) for governments & utilities;
 - increasing risks around gas lock-in; and
 - impact in Poland.

- German policy in flux since Fukushima with

Conclusion

- Investors who bet on resurgence in coal on the back of utility plans in 2007 failed to assess the political and economic risks accurately. Even fully permitted plants have been subject to CCS policy.
- There is no evidence risks around new coal are easing.
- Coal faces uncertainties around shale gas and regulation. EU governments are increasingly advancing RES and EE regardless of global climate deal because fossil-based BAU has climate, security and economic risks.
- IIGCC intervened on a coal decision: “We are concerned that this may end up as a choice
- **Working assumption: if new coal projects do not have an economically and technically credible pathway to full CCS they face limited running.**