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RESPONSE TO THE CONSULTATION ON THE FUTURE "EU 2020" STRATEGY -- from the European Climate Foundation (ECF)

The European Climate Foundation (ECF), Europe's leading philanthropic organisation focused on climate, commends the Commission on its draft "EU 2020" strategy consultation and welcomes the opportunity to contribute. ECF particularly welcomes the focus placed in the working document on dramatically increased efficiency in our use of energy, natural resources and raw materials as a foundation for increased productivity, innovation and "smarter" and "greener" growth. ECF also welcomes the emphasis placed on policy convergence, based on the growing body of work showing that a commitment today to a systemic low-carbon transformation of the energy sector in line with Europe's 2050 climate commitments is ultimately the winning strategy for competitiveness and jobs[1]. Such an approach can elevate the current policy framework, which implicitly treats 2020 as the end-point of policy while leaving the underlying high-carbon energy infrastructure – and the entrenched regulatory and investment choices that go with it – largely intact. The result would be the squandering of limited resources and a failure to deliver the ultimate objectives. Quite simply, the starting point for the EU2020 strategy should be – as agreed by Europe's Heads of State and Government based on the best available science – a reduction of 80-95% in GHG emissions by 2050. Only an integrated policy framework built around that end goal – a new EU industrial policy that leverages agreed climate goals rather than simply endures them – can deliver not only the EU's climate and energy objectives but also the correlated benefits in innovation, competitiveness, jobs and growth. Europe has taken the lead in setting goals for efficiency gains, emissions reductions and the commercialisation of renewables by 2020. With this renewed EU2020 initiative, Europe has the opportunity to ensure that 2020 is a crucial milestone on the path to greater competitiveness, sustained economic growth and energy and climate security.

ECF has embarked on a project designed to assist the European Commission in its efforts to chart an Energy Policy Roadmap for the next five to ten years based on the near-term implications of Europe's existing longer-term climate and energy security commitments through to 2050. The project is based on extensive technical, economic and policy analyses conducted by four leading consultancies: McKinsey & Company; the Energy Centre of the Netherlands (ECN); KEMA; and the Office of Metropolitan Architecture. Next to this is a broad stakeholder engagement process whereby key utilities, grid operators, NGOs and industry from across Europe are involved in providing peer review to the project's underlying assumptions.

The project focuses specifically on the power sector but also informs policy decisions on energy efficiency measures. The backcasting methodology employed, working backwards from the desired outcomes to identify the policy decisions needed now, reveals the measures that must be taken at an

[1] E.g. Daniel M. Kammen, Kamal Kapadia, and Matthias Fripp, Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate? RAEL Report (Berkeley, CA : Renewable and Appropriate Energy Laboratory, University of California, Berkeley, 2004). European Wind Energy Association (EWEA), Wind at Work : Wind Energy and Job Creation in the EU (Brussels, January 2009). UNEP, Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World, September 2008.

EU level by the new Commission and Parliament within the next five years if the mutual objectives of system reliability/security and full decarbonisation are to be met. From this in-depth analysis we have derived the following recommendations.

Opportunities for European low-carbon growth on the road to 2020

- This Commission faces an historic opportunity to empower Europe to:
  (i) reach its climate security goal of an 80-95% reduction in economy-wide greenhouse gas emissions by 2050;
  (ii) enhance EU competitiveness;
  (iii) improve EU energy security; and
  (iv) preserve the reliability of service that Europe's energy consumers enjoy today.

- The current policy framework to 2020 does not put Europe on a trajectory to achieve these four equally critical objectives. Indeed, Europe is highly likely to fall short of these objectives unless urgent action is taken in the following areas:
  - **Energy Efficiency.** Current end-use efficiency measures are on track to achieve gains of only 11% by 2020; additional cost-effective efficiency measures are available to policymakers and are required to reach at least 20% in 2020 to bring the 2050 goal in reach. New jobs can be created with effective design and roll-out of national efficiency retrofit programmes. These programmes leverage the capacity of the construction industry and provide training opportunities for new skilled labour to meet demand;
  - **Reform of the ETS and additional measures.** The current linear reduction factor in the ETS, extended through to 2050, would not deliver the required level of decarbonisation in the ETS sectors. Beyond that, however, whilst the ETS will continue to be important for many reasons, it is grounded in markets, and the market is delivering a clear message: the ETS does not project the intended level of scarcity pricing information far enough into the future or with sufficient confidence to drive the required levels of investment in capital-intensive, low carbon infrastructure, nor is it reasonable to expect it will do so. Additional complementary measures are needed to give greater certainty of the scale and timing of power market demand for investment in low-carbon resources needed to replace the existing high-carbon resources.
  - **Long-distance transmission grid expansion.** Reliable, zero-carbon power supply mixes ranging from 40% renewables and 60% nuclear and fossil-with-CCS, to at least 80% renewables and 20% nuclear and fossil-with-CCS, are technically feasible and equally affordable using existing technologies[2]. However, the trans-European transmission networks will need to be expanded significantly. Failure to do so would "lock out" the predominantly renewable-based decarbonisation scenarios, leaving Europe exposed to the substantial delivery risks specific to the scenario based on 40% renewables;
  - **Regional strategic infrastructure planning.** Given the scale of the investment and the level of cross-border cooperation needed to deliver the required network, market mechanisms should urgently be aligned with these objectives and supplemented by strategic infrastructure planning on at least a regional level. Transparent processes, conducted by well resourced and properly constituted entities, and based on the goal of maximizing Europe's reliable, low-carbon supply options, would ensure the highest possible level of public support (see Fig 1);

[2] Assuming industry-expected technology and cost improvements as well as fossil fuel price increases as projected in the IEA's WEO 2009 through 2030 and extrapolated through 2050.

- **Revamped wholesale power markets.** Wholesale power markets need to be amended to attract a high and sustained level of investment in the best possible mix of low-carbon resources, far beyond what is required to meet load growth. This will only be feasible or economic with greater market certainty about the full abatement or timely retirement of existing high-carbon resources. Furthermore, wholesale power markets can, if properly structured, satisfy demand for the full range of services required to ensure low-carbon reliability on the necessary timelines (Fig 2);
- **Smart grid investments.** A business case is needed for investment in so-called "smart grid" capability, primarily at distribution level. This can be done through regulated markets, but market design and regulation should be better aligned with policy objectives. This is a more urgent priority than promoting specific "smart" technologies. The highest policy priority should be given to activating load as a balancing resource in a system with high levels of intermittent (non-dispatchable) supply.
- **EU R&D budgets.** An increased proportion of EU R&D budgets should focus on low-carbon, highly efficient technologies and industries, in order to make the EU more competitive with Asia and the US. Although the emerging findings from the ECF study show the 2050 goals can be achieved with current technologies, innovation will make these goals even more achievable, will spur growth and jobs and should be pursued.

<u>How the evidence supports the case for urgent action in the 2020 timeframe</u>

- A fully decarbonised power sector is necessary to reach the EU's 80-95% GHG emissions reduction targets for 2050; this requires a 40% decarbonised power sector by 2020 (Fig 3&4).
- Reliable, zero-carbon power by 2050 is feasible with existing technology. Pathways based on 40%, 60% or 80% renewables[3], in each case with the balance coming from a mix of fossil-with-CCS and nuclear, all fall within a similar cost range (Fig 5); planning for a higher mix of renewables ensures greatest resource diversification and lowest risk of failure to achieve energy and climate policy objectives (Fig 6).
- A large amount of new trans-European transmission infrastructure is required in order to exploit all cost-effective low-carbon opportunities while ensuring system reliability (Fig 7).
- Driving investment in active load shaping capability (e.g. through smart devices, smarter pricing and smarter regulation) will ensure a reliable, zero-carbon electricity system (Fig 8).
- Decarbonisation of key non-power sectors depends on a zero-carbon power sector (e.g., electric vehicles and electric heat pumps for space heating) (Fig 9); thus it is essential that the policy roadmap under consideration for 2020 puts Europe on a rapid and certain trajectory to reaching a zero-carbon power sector well ahead of 2050.

ECF have retained Oxford Economics to assess the macroeconomic implications of different decarbonisation scenarios. The preliminary findings show:

- Compared to the baseline, GDP growth remains strong in the near term and is enhanced in the medium to long term;
- Assuming Europe leads decarbonisation, it gains competitiveness because its carbon-free power is cheaper than fossil fuel with a carbon price;
- EU-27 comparative advantage in low-carbon technology sectors implies a net increase in EU exports in the 60% and 80% pathways.

[3] Assuming industry-expected technology and cost improvements as well as fossil fuel price increases as projected in the IEA's WEO 2009 through 2030 and extrapolated through 2050.

Conclusion

A fully decarbonised, fully reliable and fully secure power supply in Europe is achievable before 2050 with existing technology – but crucial policy decisions are required now.

A collective commitment to a new European energy infrastructure; more sophisticated market mechanisms aligned with current commitments; and smarter regulation aligned with current policy objectives are all required in the EU's 2020 policy framework to enable the full range of cost-effective options.

This commitment will provide the basis for a secure, competitive, high-growth EU industrial strategy. This is the underlying reality that has to inform Europe's 2020 strategy for increased productivity, competitiveness, innovation, jobs and growth.

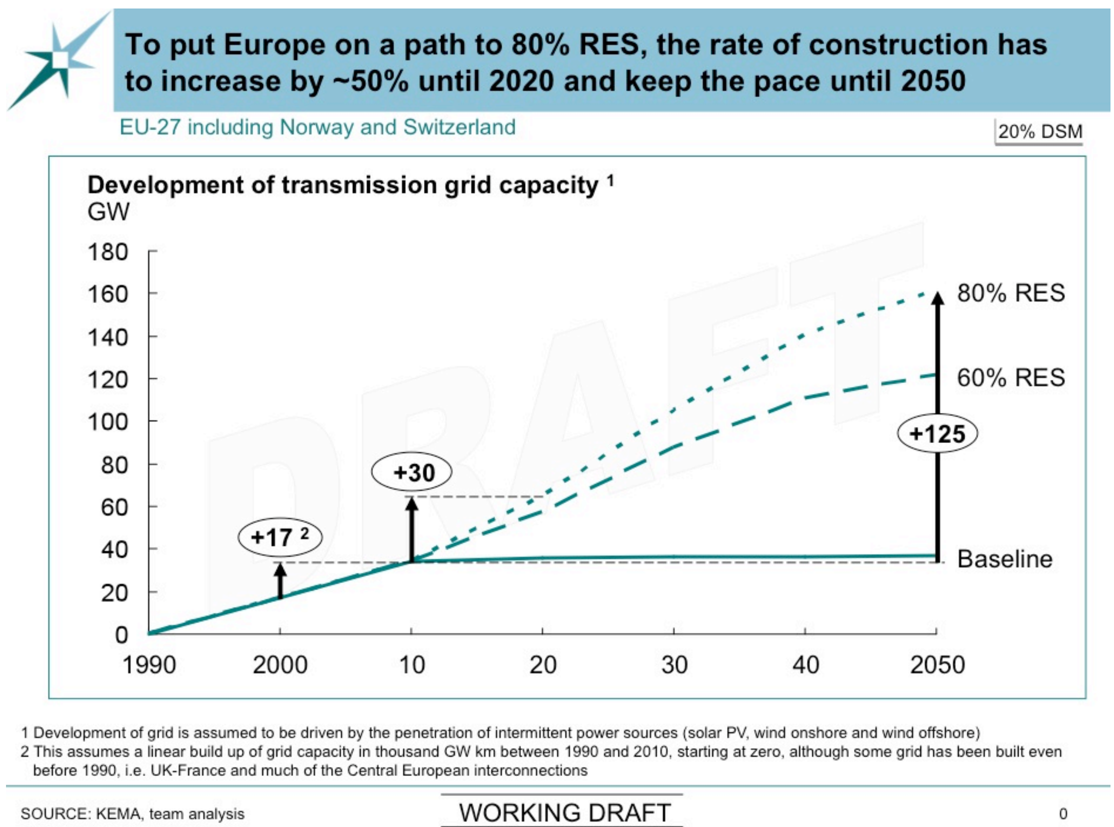


Figure 1

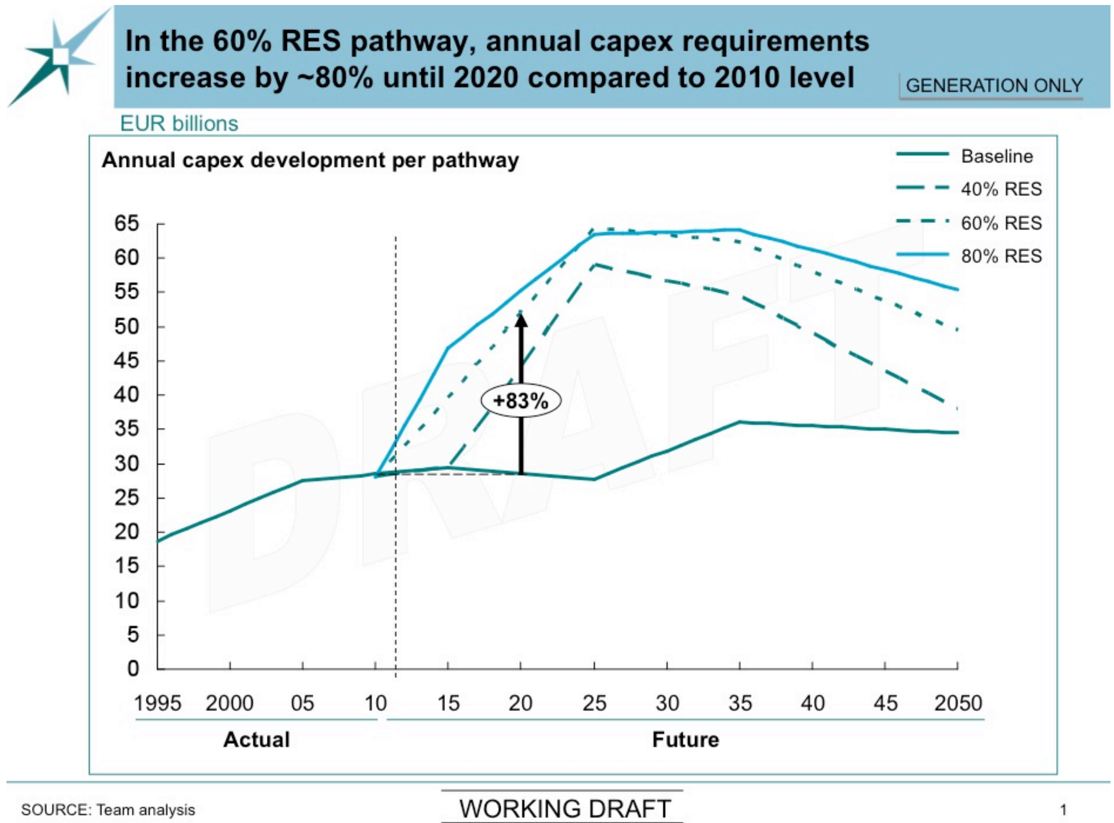


Figure 2

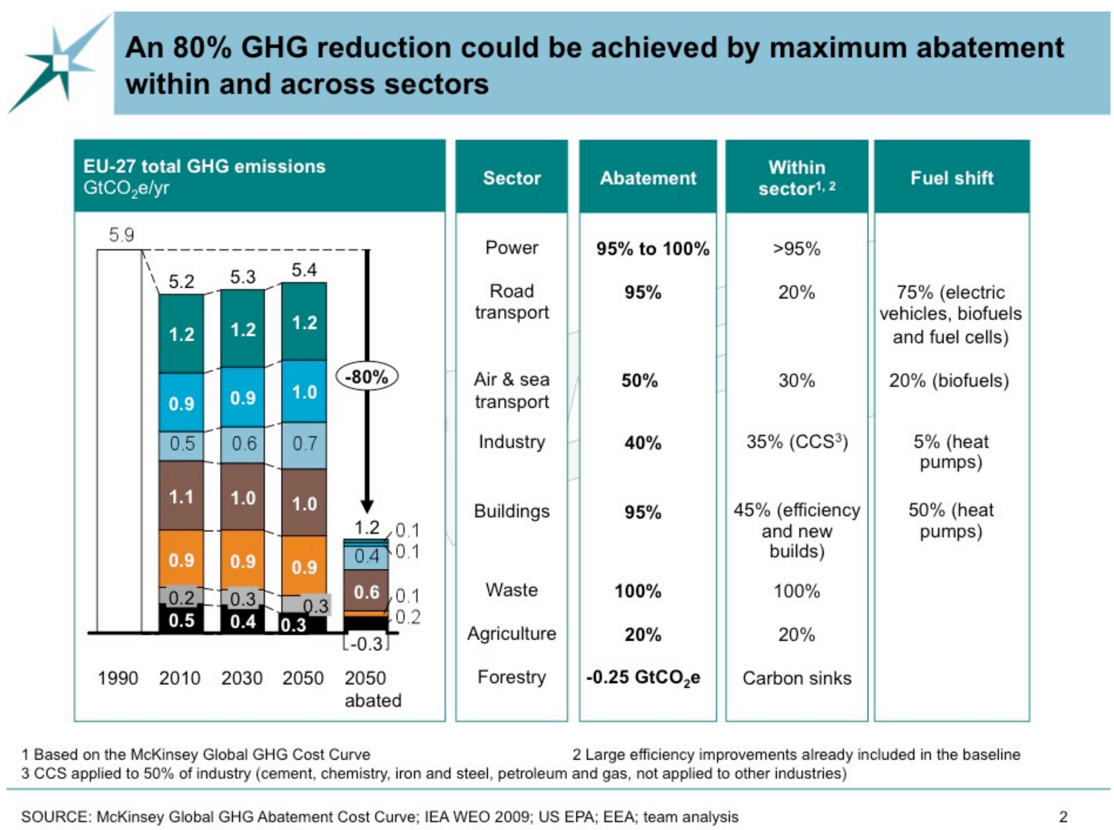
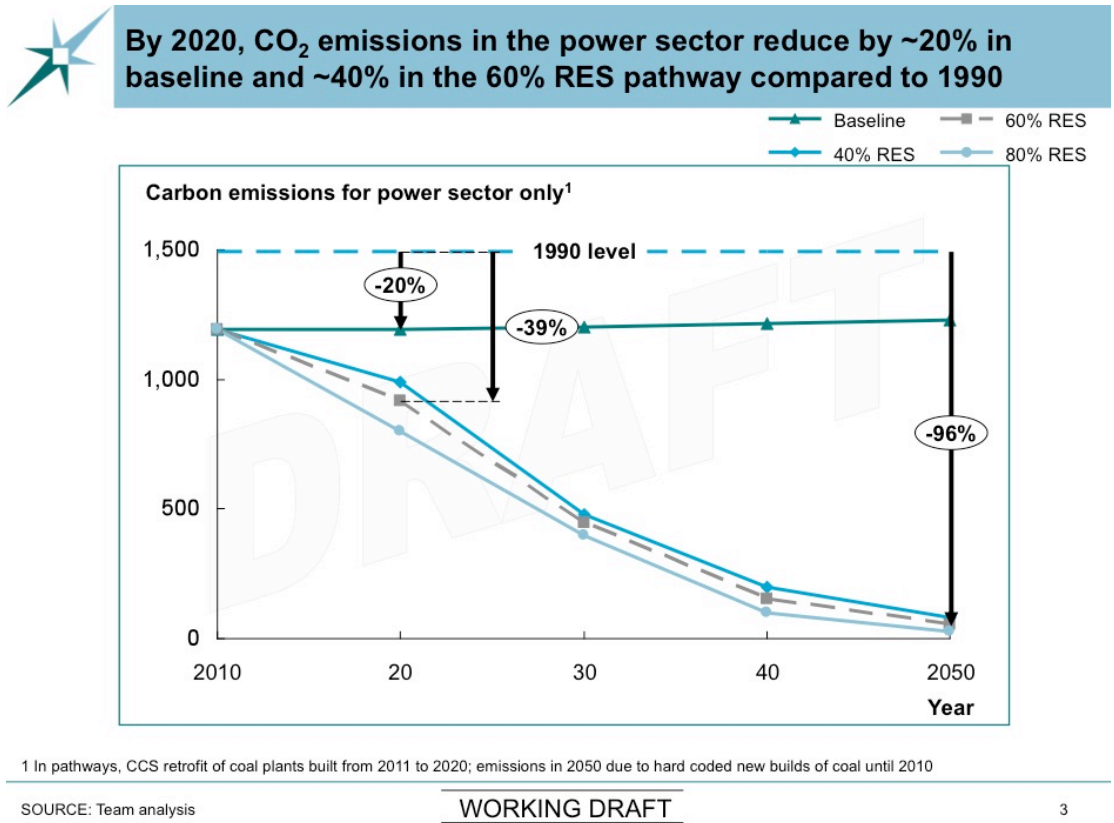


Figure 3



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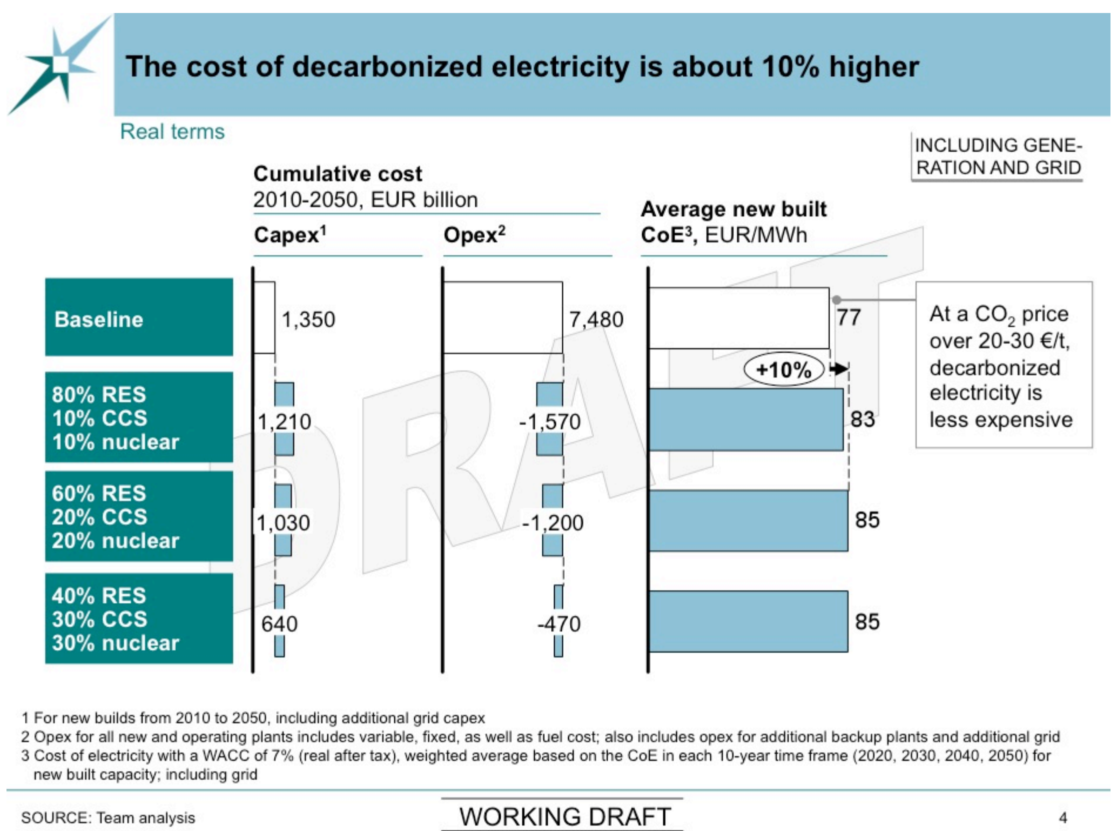

Figure 5

The share of production by technology in 2050 is defined as an "input" (as % of total production)

	Coal	Coal CCS	Coal CCS retro-fit [1]	Gas	Gas CCS	Gas CCS retro-fit	Nu-clear	Wind On-shore	Wind Off-shore	Solar PV	Solar CSP	Bio-mass	Geo-thermal	Large Hydro
Baseline 34% RES 49% coal/gas 17% nuclear	21	0	0	28	0	0	17	9	2	1	1	8	1	12
80% RES 10% CCS 10% nuclear	0	3	2	0	5	0	10	15	15	19	5	12	2	12
60% RES 20% CCS 20% nuclear	0	7	3	0	10	0	20	11	10	12	5	8	2	12
40% RES 30% CCS 30% nuclear	0	10	5	0	15	0	30	9	2	4	3	8	2	12

1 Only on "CCS ready" plants

PRELIMINARY DRAFT

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Figure 6

60% RES: Transmission requirements are significant, even after thorough optimization

60% RES, 20% DSM

● Centre of gravity

Interconnection	Capacity additional (existing) [GW]	Annual utilisation [%]
UK&Ireland-France	8 (2)	75
UK&Ireland-Nordel	0 (0)	0
UK&Ireland-Benelux&Germany	3 (0)	83
France-Iberia	32 (1)	83
France-Benelux&Germany	14 (6)	78
France-Central-Europe	7 (3)	93
France-Italy&Malta	0 (3)	92
Nordel-Benelux&Germany	0 (3)	75
Nordel-Poland&Baltic	4 (1)	60
Benelux&Germany-Central-Europe	0 (4)	74
Benelux&Germany-Poland&Baltic	9 (1)	81
Central-Europe-Poland &Baltic	0 (2)	77
Central-South East EU	1 (2)	80
Central-Europe-Italy	0 (5)	58
South East EU-Italy	9 (1)	79
Total	**87 (34)**	

SOURCE: Imperial College; KEMA

WORKING DRAFT

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Figure 7

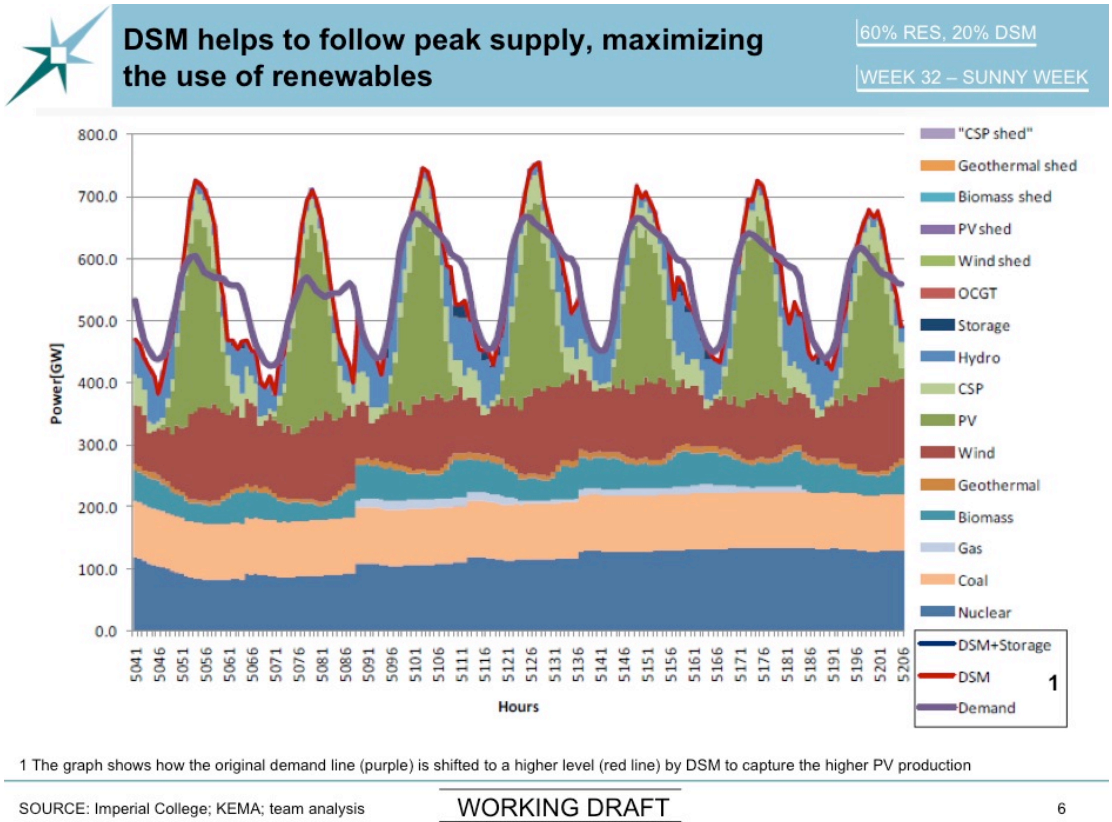

Figure 8

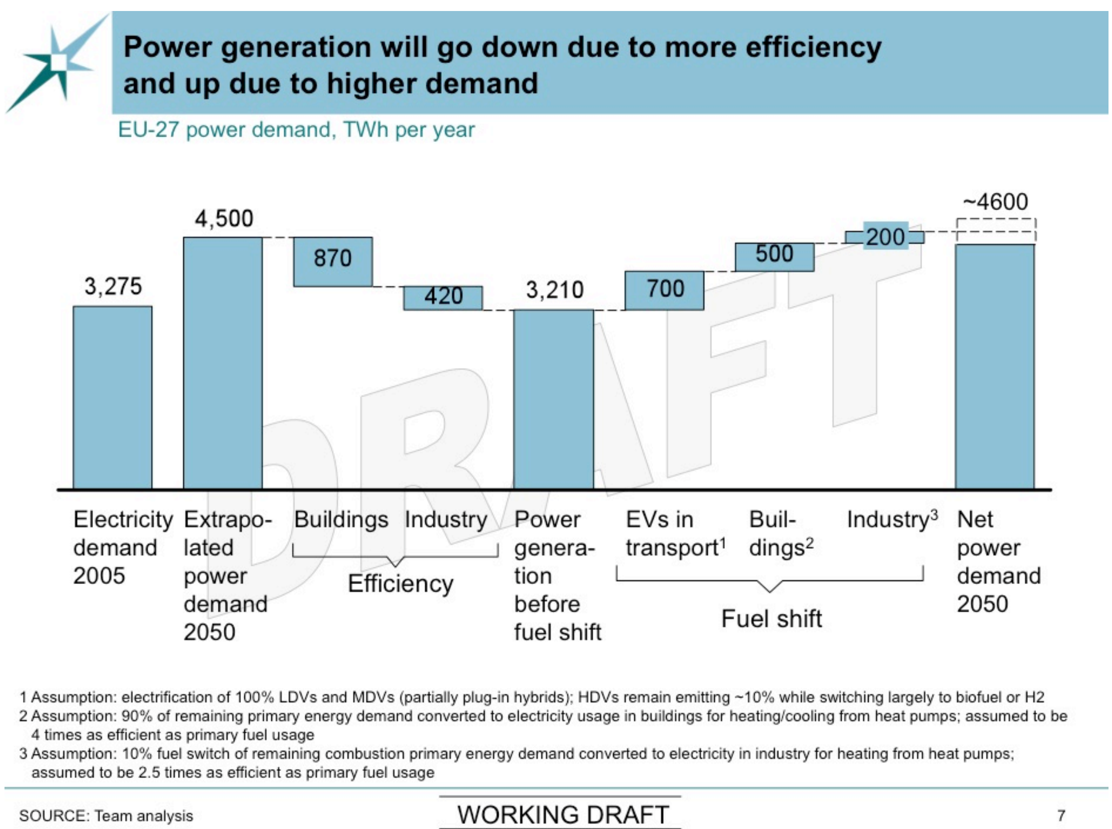

Figure 9