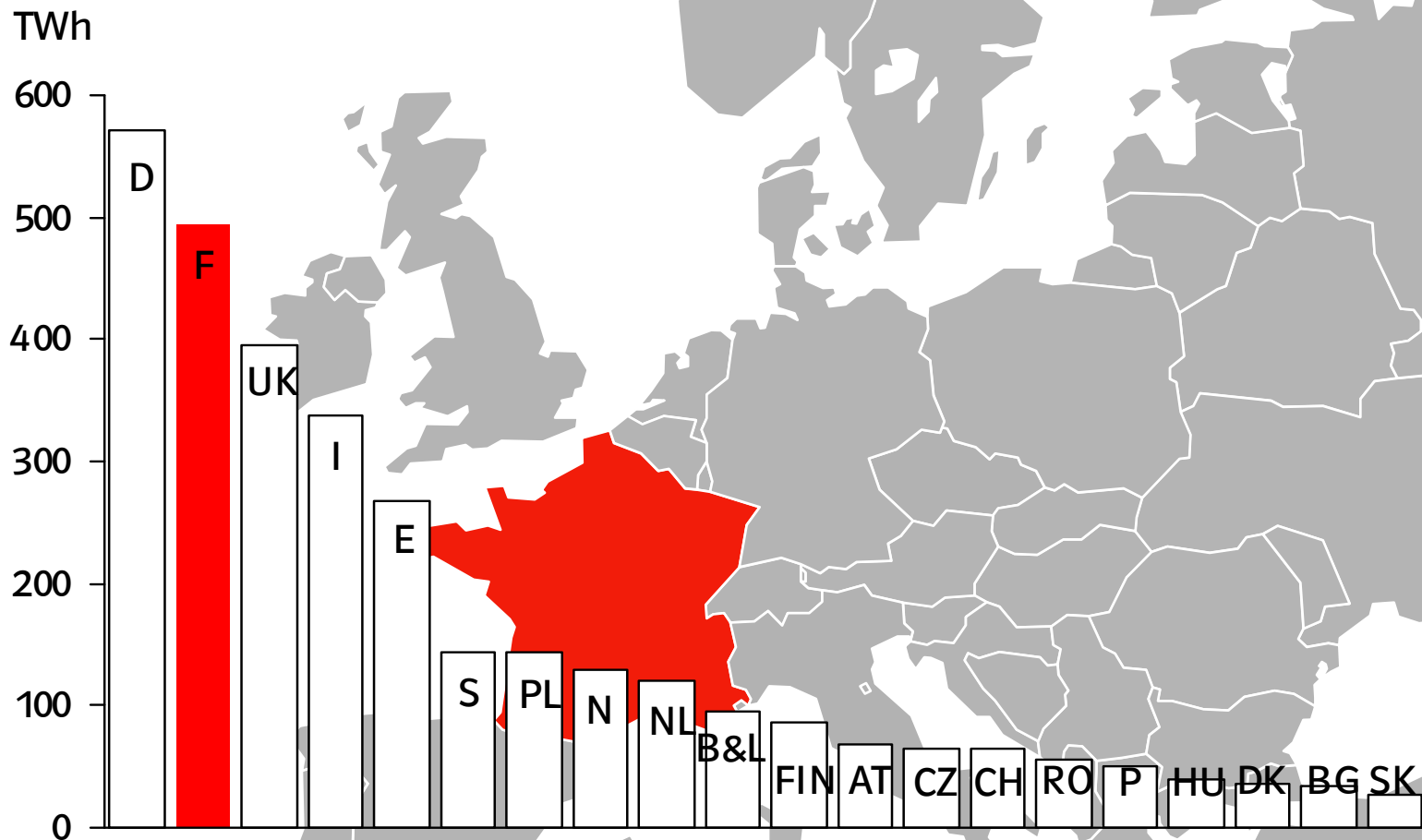




Report on European Electricity-Markets France 2009



(final electricity demand including grid losses)

Market Report France 2009 EEA-EM November 2009 scf



France: Macro Data

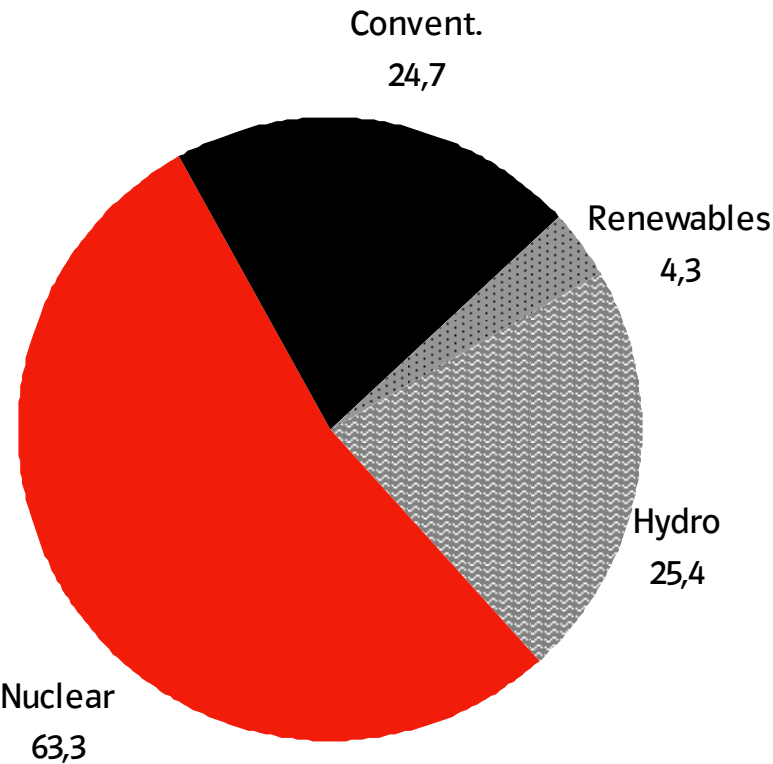
Population	Mio.	64,3 (2009)
Unemployment rate	%	8,4 (12/ 2008)
GDP	Billion €	1950 (2008)
GDP per capita	€	26.900 (2008)
GDP growth	%	0,4 (2008)
Inflation rate	%	3,2 (2008)

Source: Eurostat

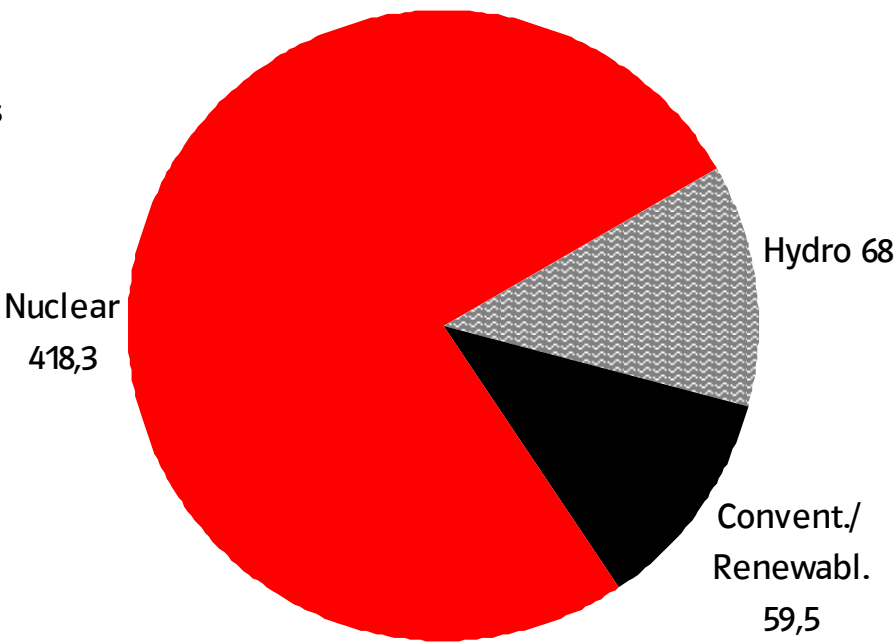


French Power System 2008: Strong Dependency on Nuclear Power

Installed Capacity 118 GW_{net}

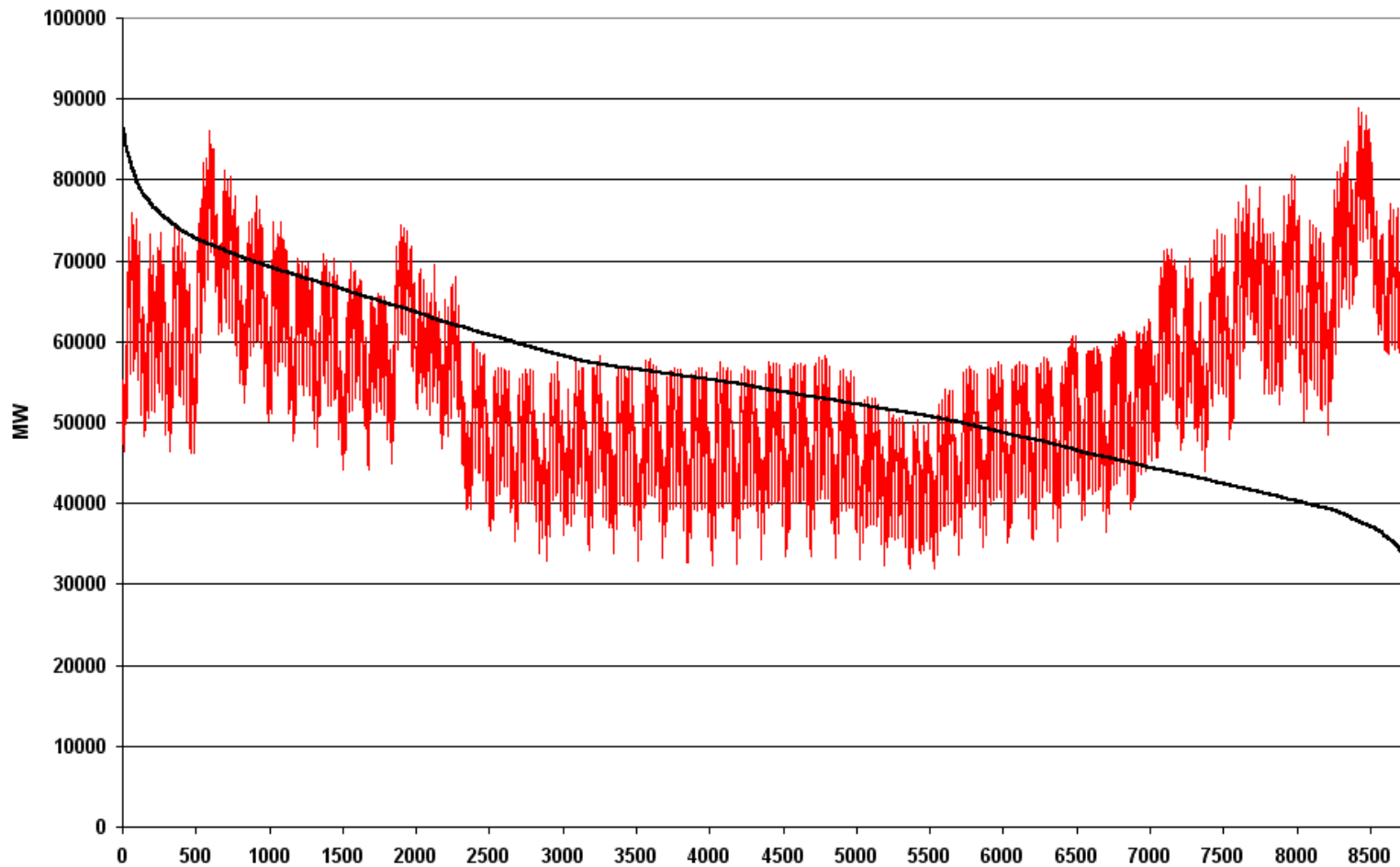


Generation 549 TWh



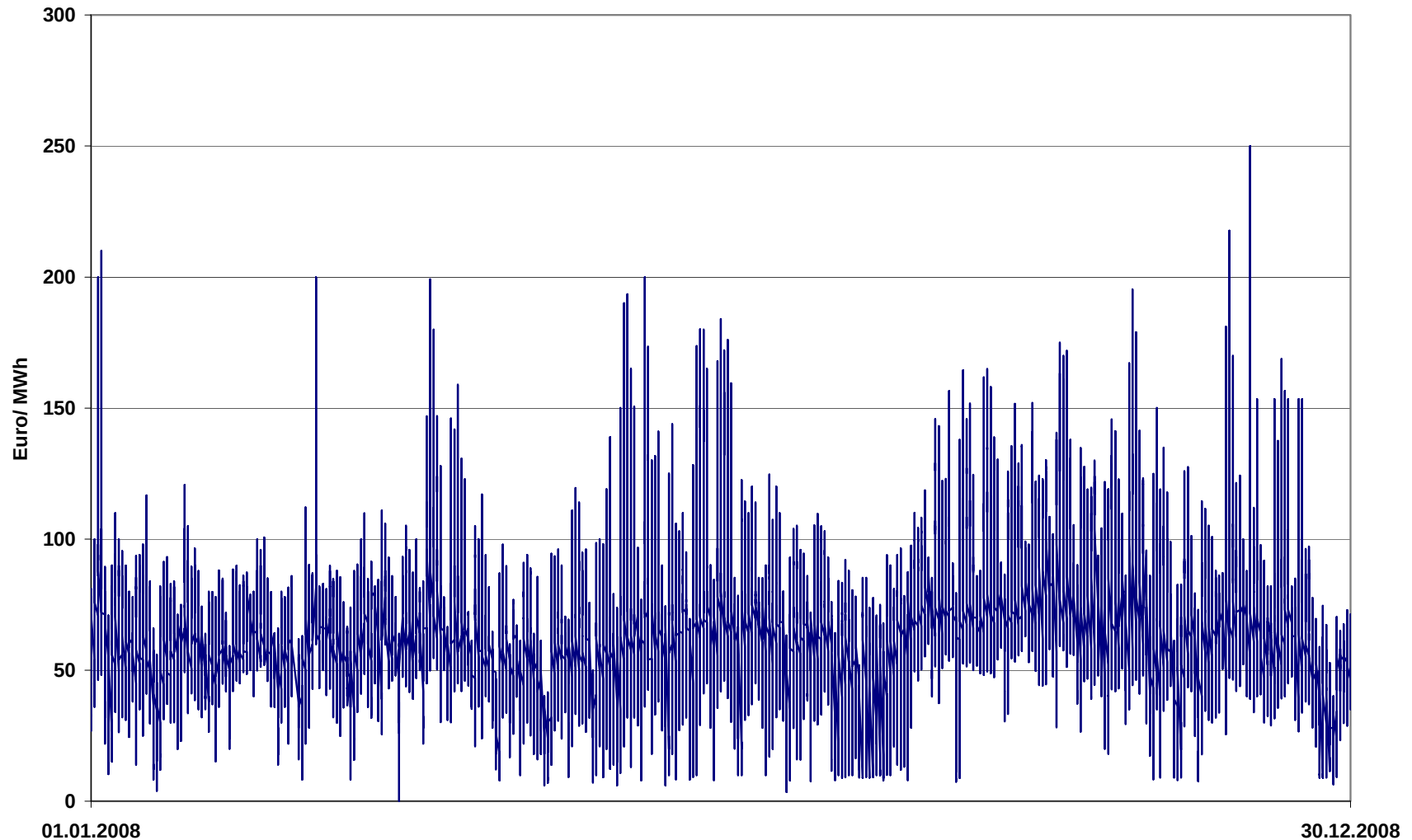


Load curve of France in 2007: Heating Peaks





Spot Prices in France 2008: Volatile but no extreme Peaks

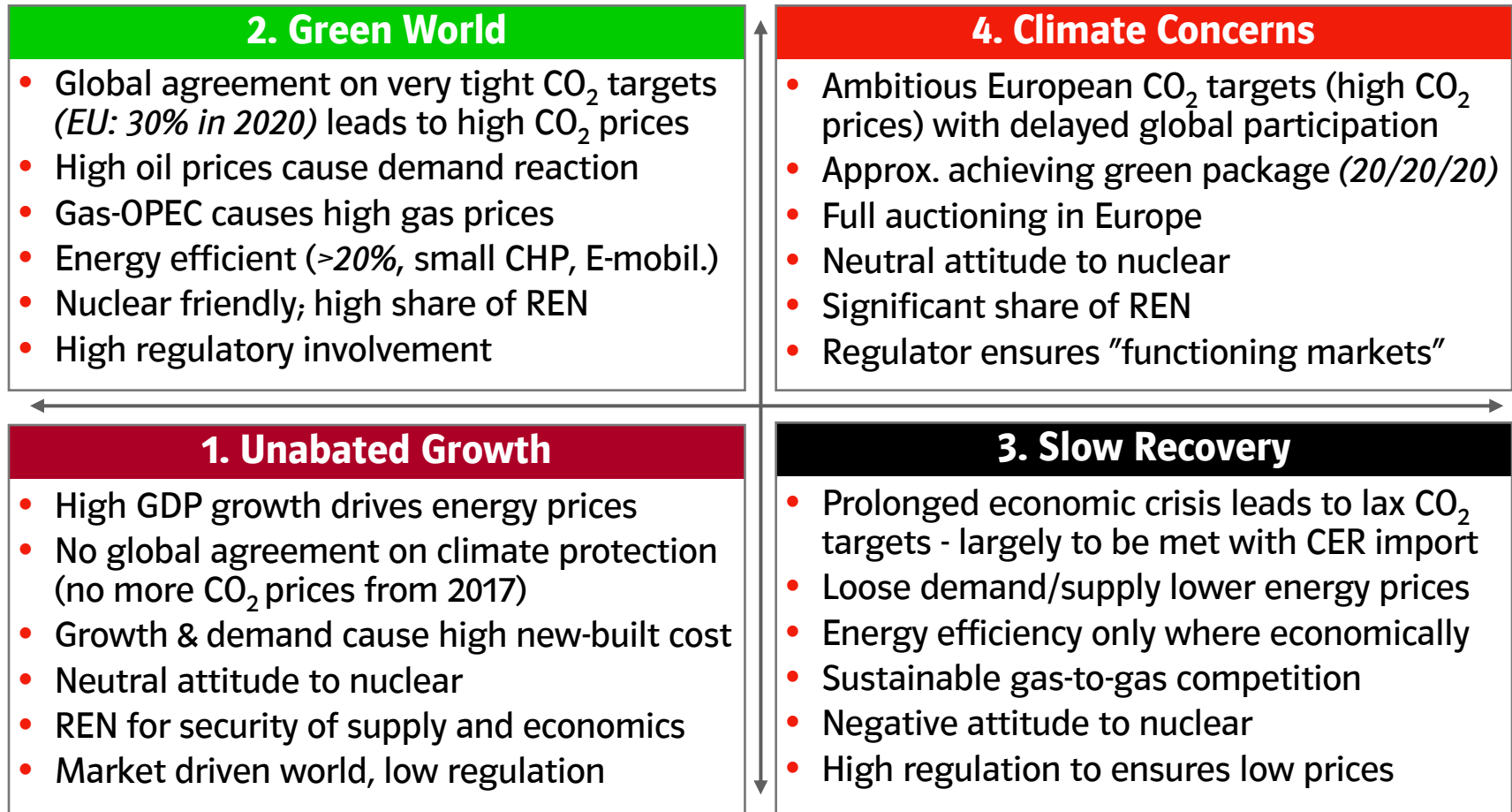




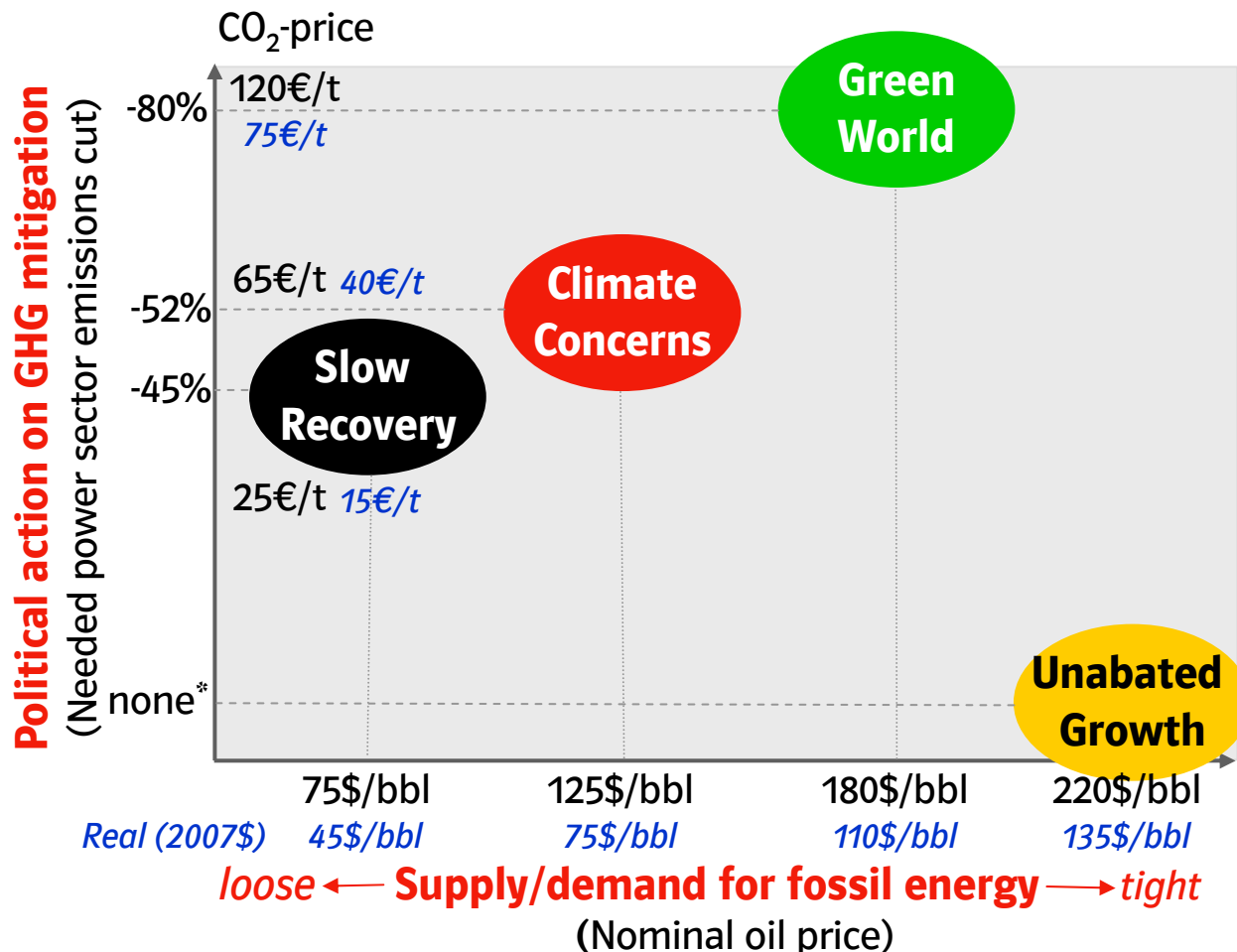
Model Input

Scenarios and Assumptions for the Long-Term Market Model
(LTM)

E.ON Scenarios 2009 – short overview

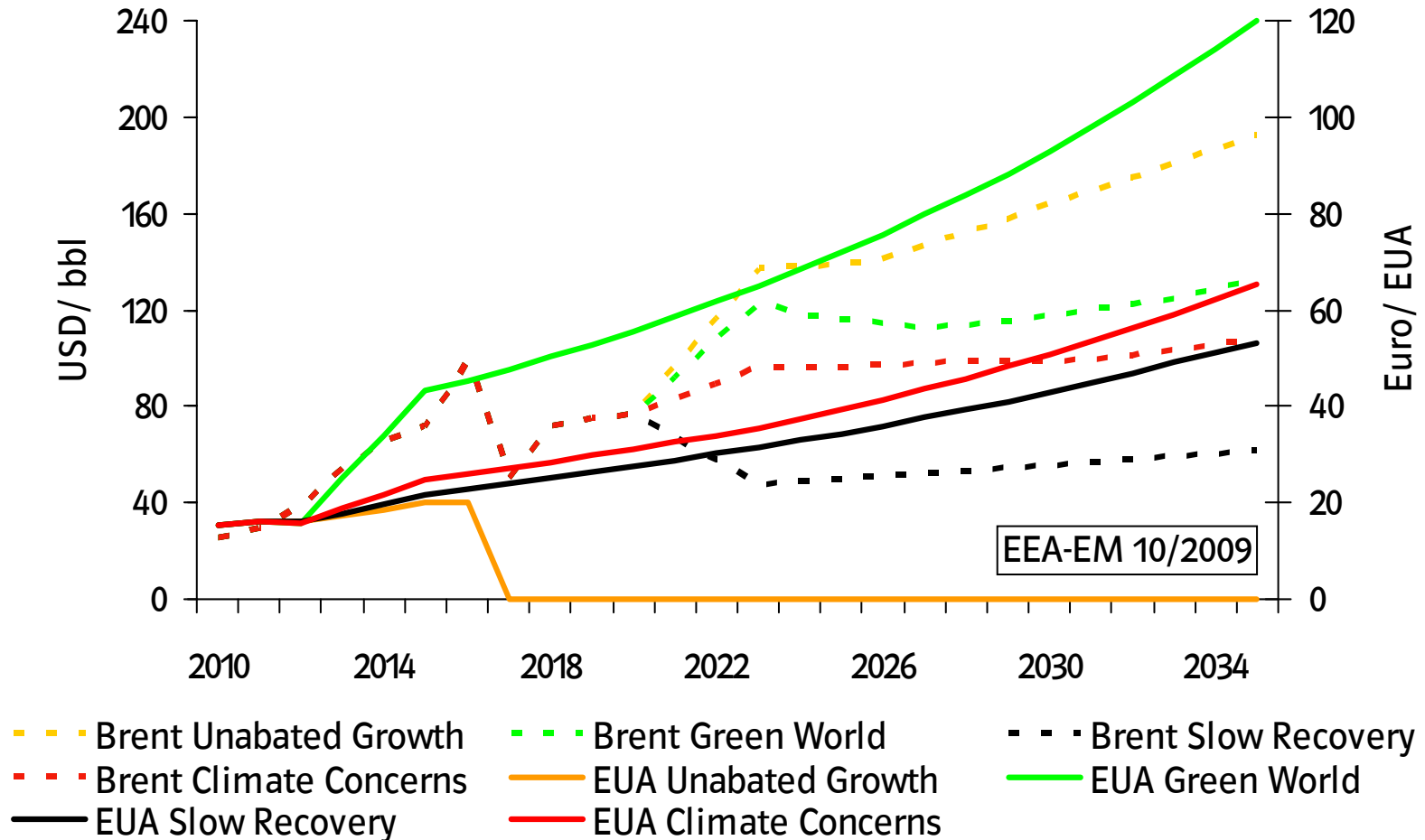


Scenarios for 2035 are based on the 2 major independent drivers with 3 out of 4 scenarios with emission reductions

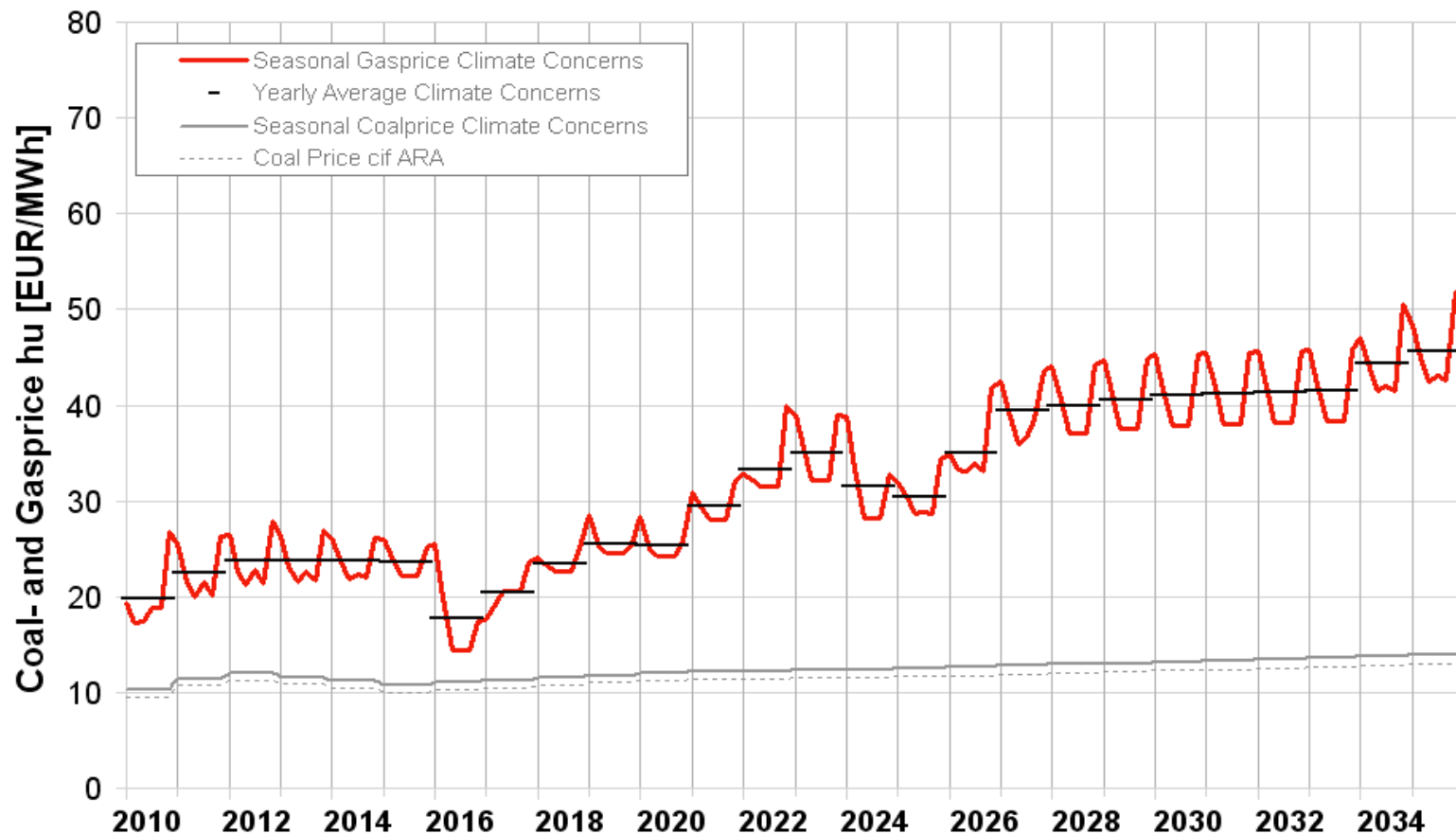


* Resulting in emissions growth

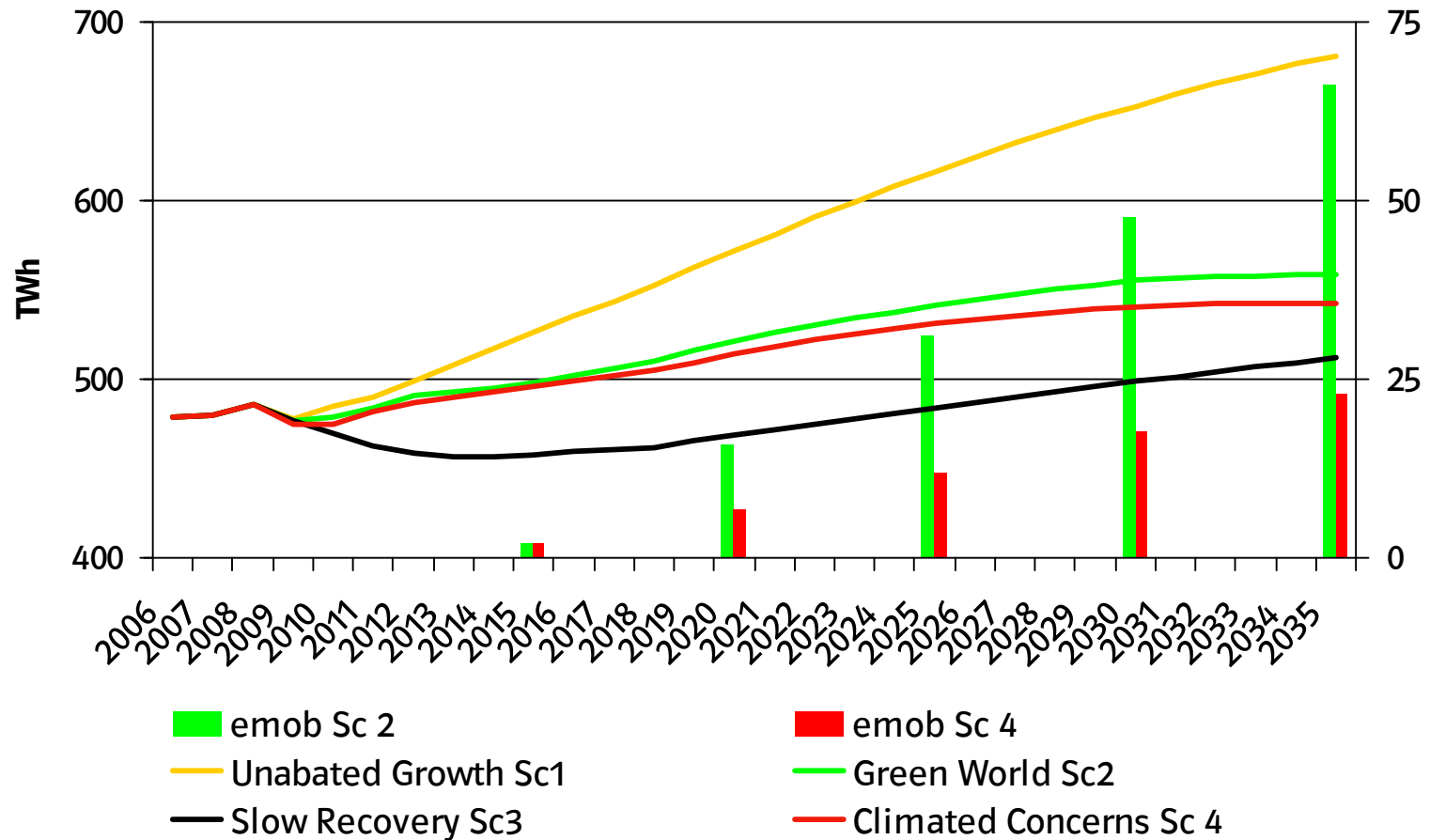
Brent and EUA Prices: Scenarios capture different Futures



Gas price for France (Scenario Climate Concerns): Based on Ruhrgas` Expertise



Demand Development in France: Emobility takes Time





Power Plant Projects in France: Short List

Project	Technology	Capacity (MW)	COM LTM 2009
PONT SUR SAMBRE (Poweo, Verbund)	CCGT	390	2009
MONTOIR (GDF Suez)	CCGT	390	2009
Vaires GT (EDF)	GT	250	2010
EMILE HUCHET (E.ON France)	CCGT	780	2010
FOS SUR MER 1et2 (GDF Suez)	CCGT	780	2010
Vitry GT (EDF)	GT	250	2011
MARTIGUES-PONTEAU (EDF)	CCGT	880	2011
Bayet (Atel)	CCGT	390	2012
Flammanville (EDF)	Nuclear	1550	2012
Penly (EDF)	Nuclear	1550	2022

Renewables in France: High Growth of Wind Generation

(TWh)	Unabated Growth			Green World			Slow Recovery			Climate Concerns		
	2010	2020	2035	2010	2020	2035	2010	2020	2035	2010	2020	2035
Biomass	7	14	16	9	28	43	6	12	17	8	25	29
Hydro	68	69	72	68	71	76	67	68	70	68	70	74
Wind onshore	13	35	41	13	49	76	9	25	36	13	45	52
Wind offshore	2	10	13	2	22	40	1	8	15	2	20	27
PV and other RES	1	2	3	1	5	14	0	1	2	1	4	8
As share of electricity demand	19%	23%	21%	19%	34%	45%	18%	24%	27%	19%	32%	35%

Renewables in France (TWh): High Growth of Wind Generation

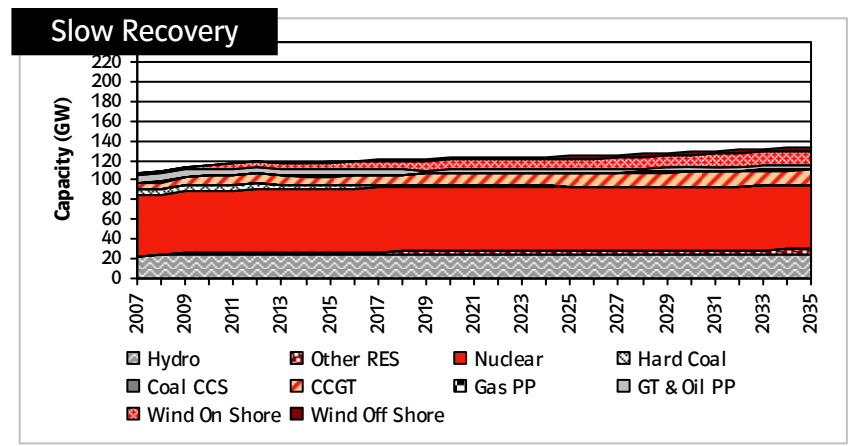
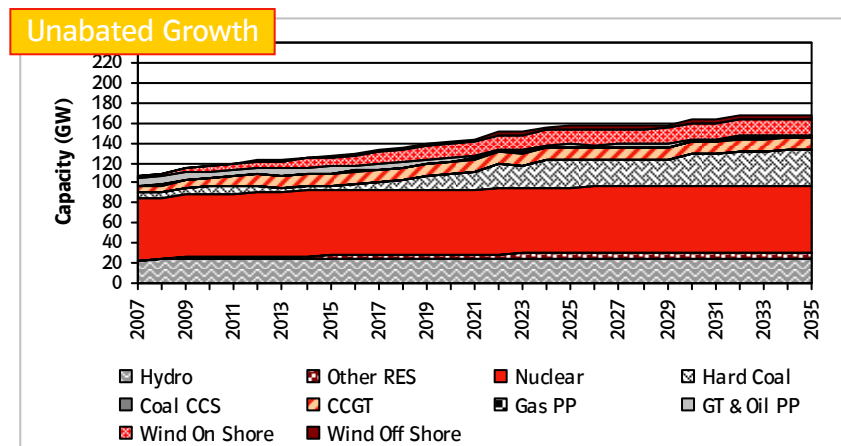
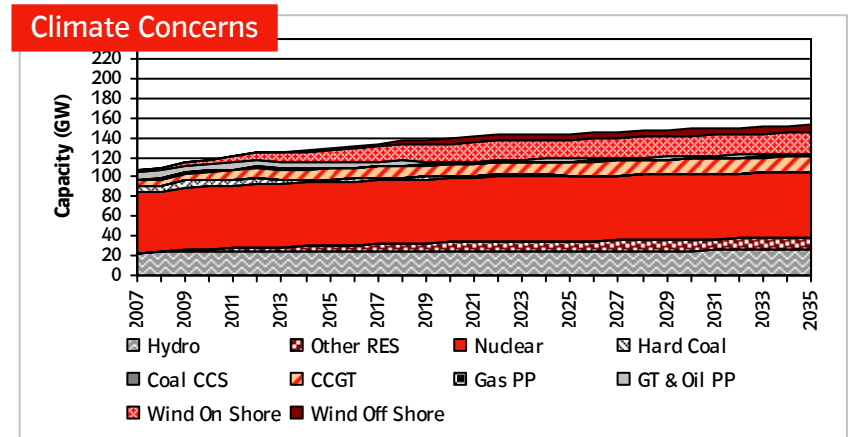
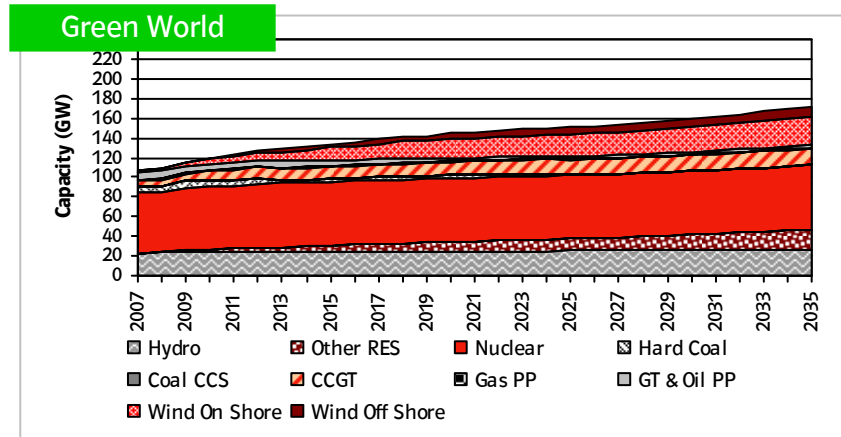
		Unabated Growth			Green World			Slow Recovery			Climate Concerns		
		2010	2020	2035	2010	2020	2035	2010	2020	2035	2010	2020	2035
Biomass		7	14	16	9	28	43	6	12	17	8	25	29
Hydro		68	69	72	68	71	76	67	68	70	68	70	74
Wind onshore		13	35	41	13	49	76	9	25	36	13	45	52
Wind offshore		2	10	13	2	22	40	1	8	15	2	20	27
PV and other RES		1	2	3	1	5	14	0	1	2	1	4	8
Sum		90	130	145	92	174	250	83	114	140	91	164	191
As share of electricity demand		19%	23%	21%	19%	34%	45%	18%	24%	27%	19%	32%	35%



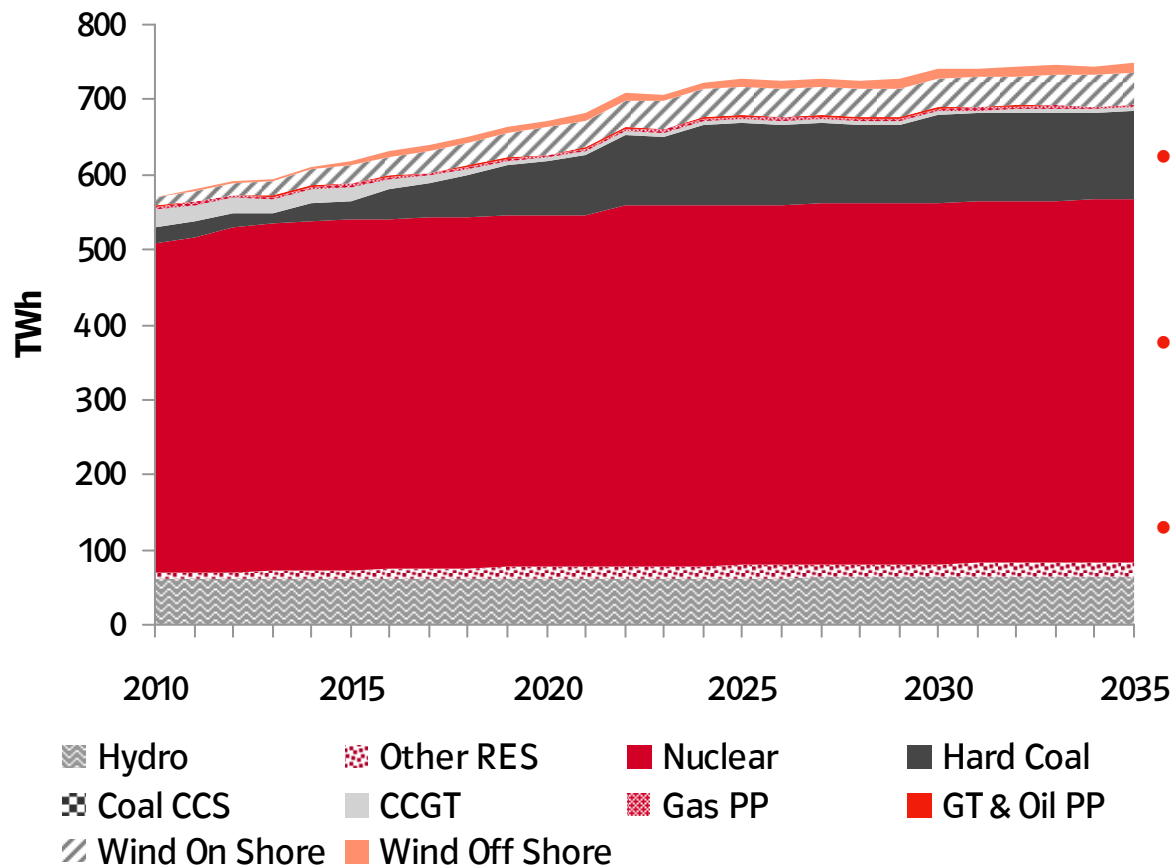
Model Output

Scenario Results of Long-Term Market Model (LTM)

Installed Capacity by Scenario: Nuc constant, RES and Coal differ

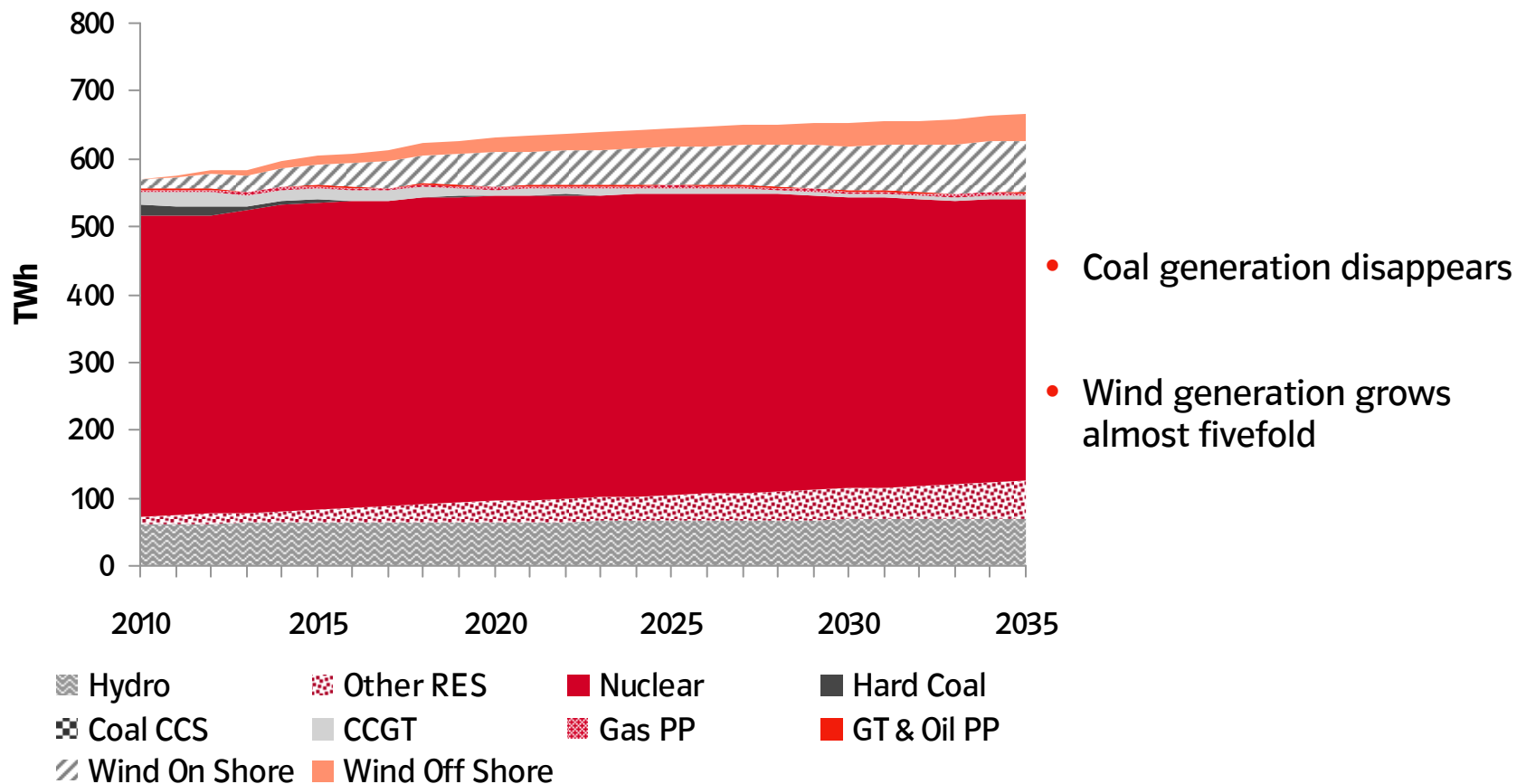


Unabated Growth: Rising Electricity Demand is being met by "dirty" Coal

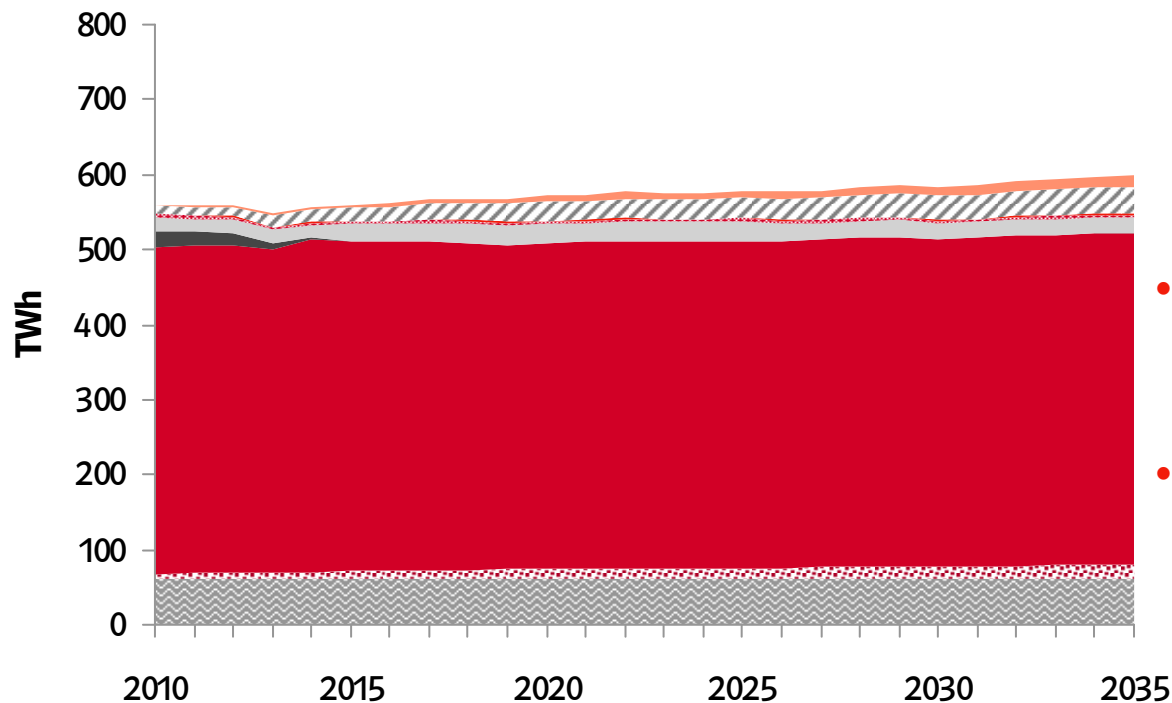


- Nuclear generation can be increased
- After 2020 french coal generation starts to level of
- French exports hence decrease soon after 2020

Green World: RES in France and Europe limit Nuclear Generation



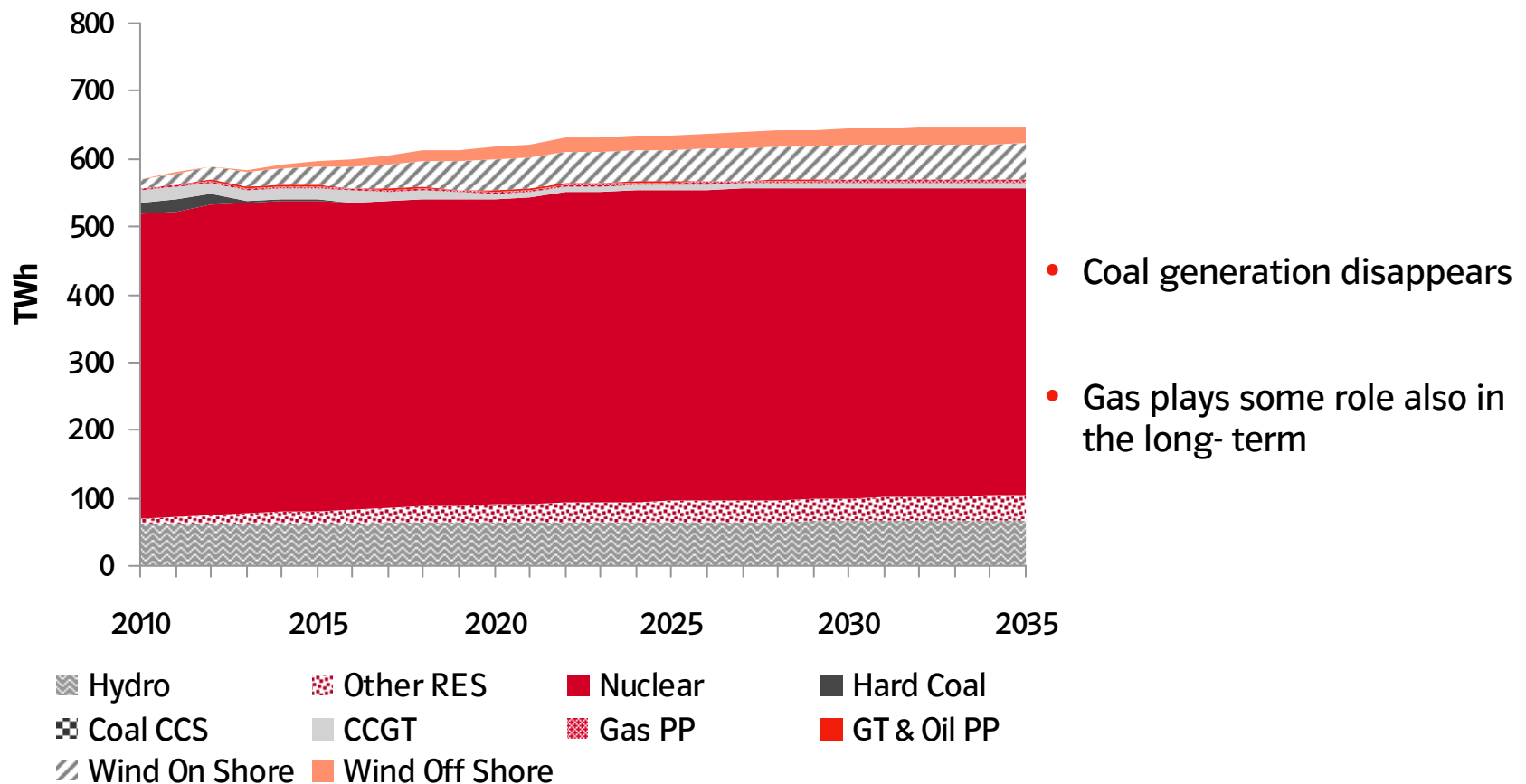
Slow Recovery: Generation stagnates



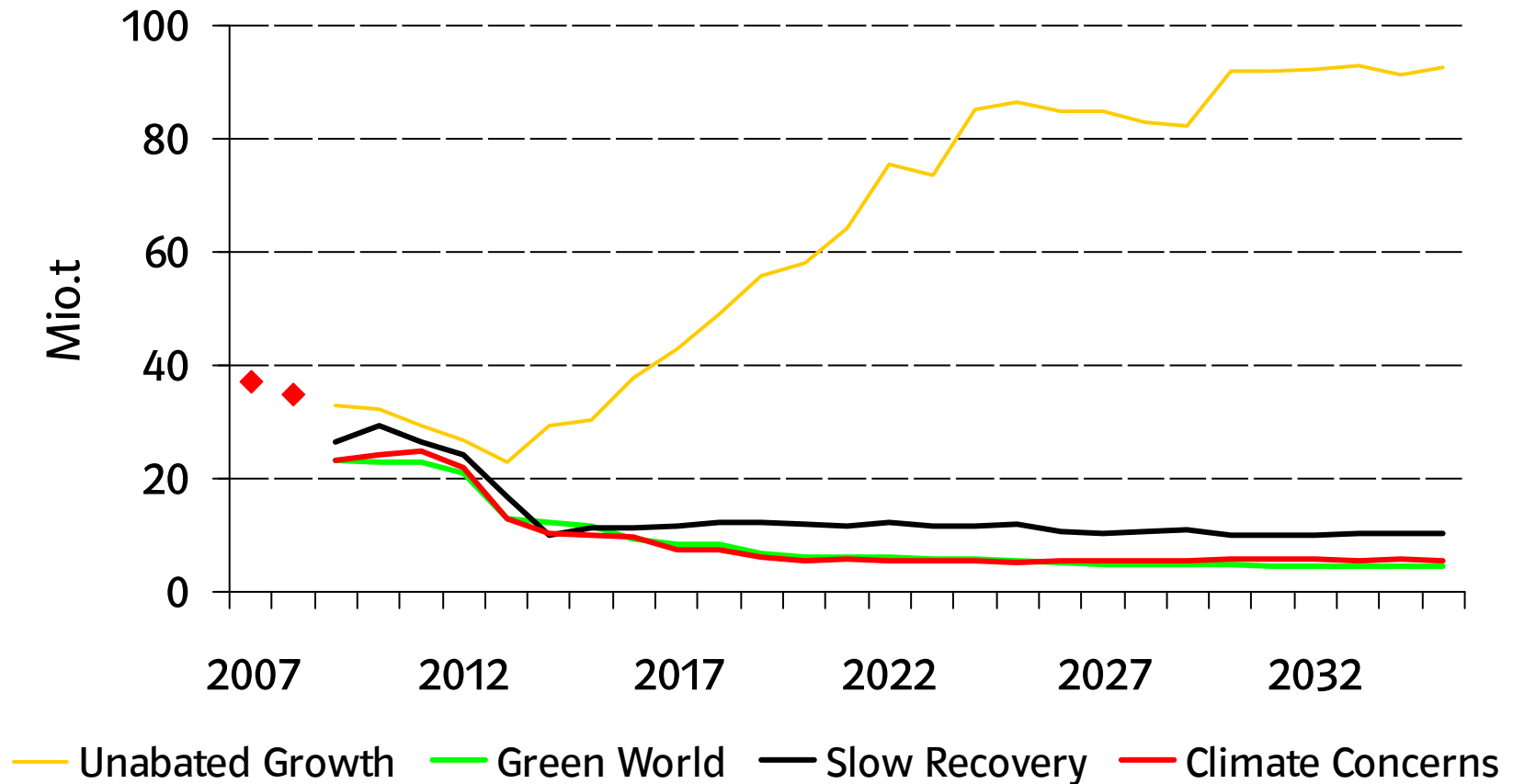
- Nuclear generation remains constant
- Gas generation maintains its share due to low gas prices

Hydro Other RES Nuclear Hard Coal
 Coal CCS CCGT Gas PP GT & Oil PP
 Wind On Shore Wind Off Shore

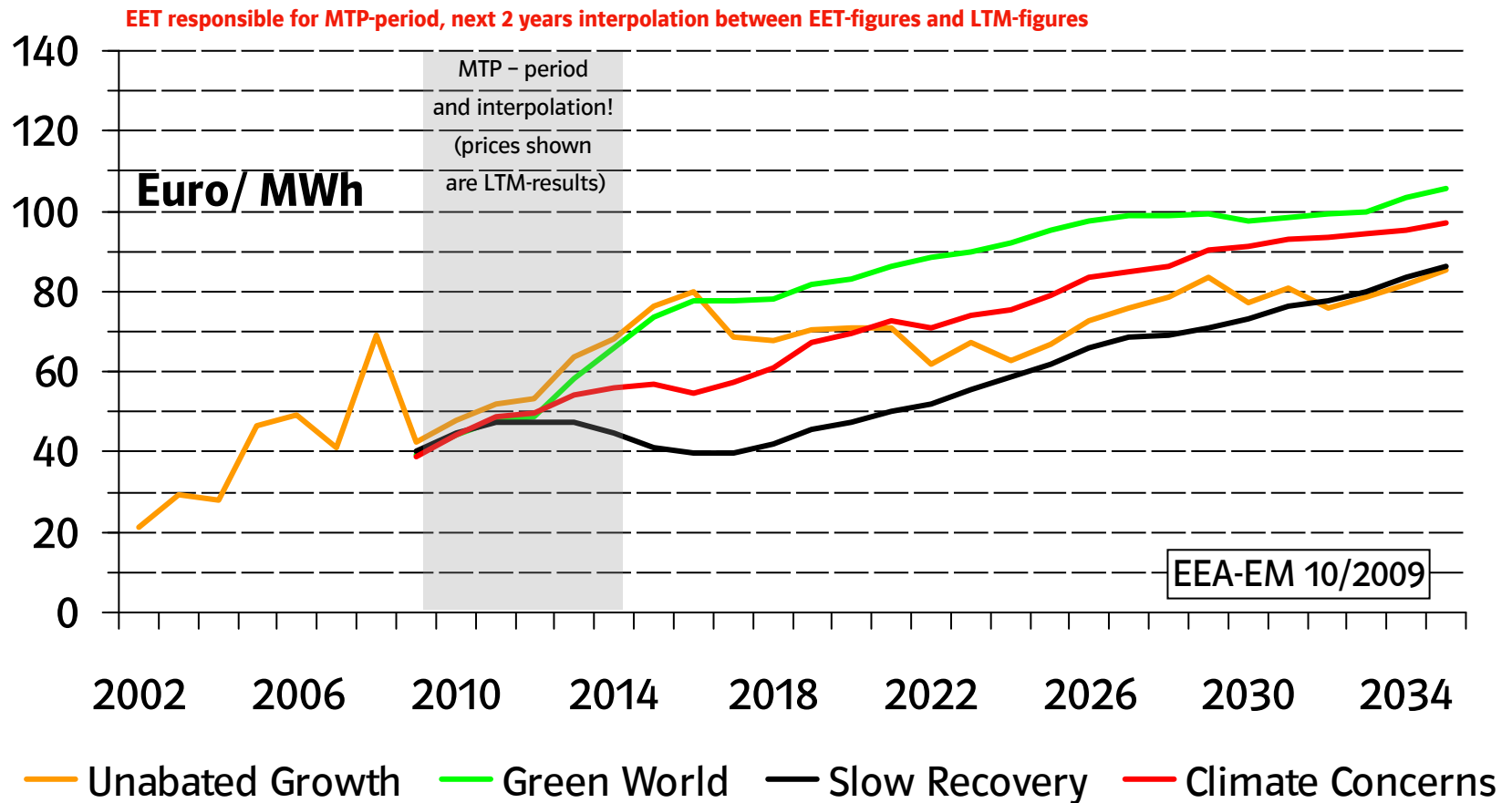
Climate Concerns: Nuclear and RES both contribute to increasing generation



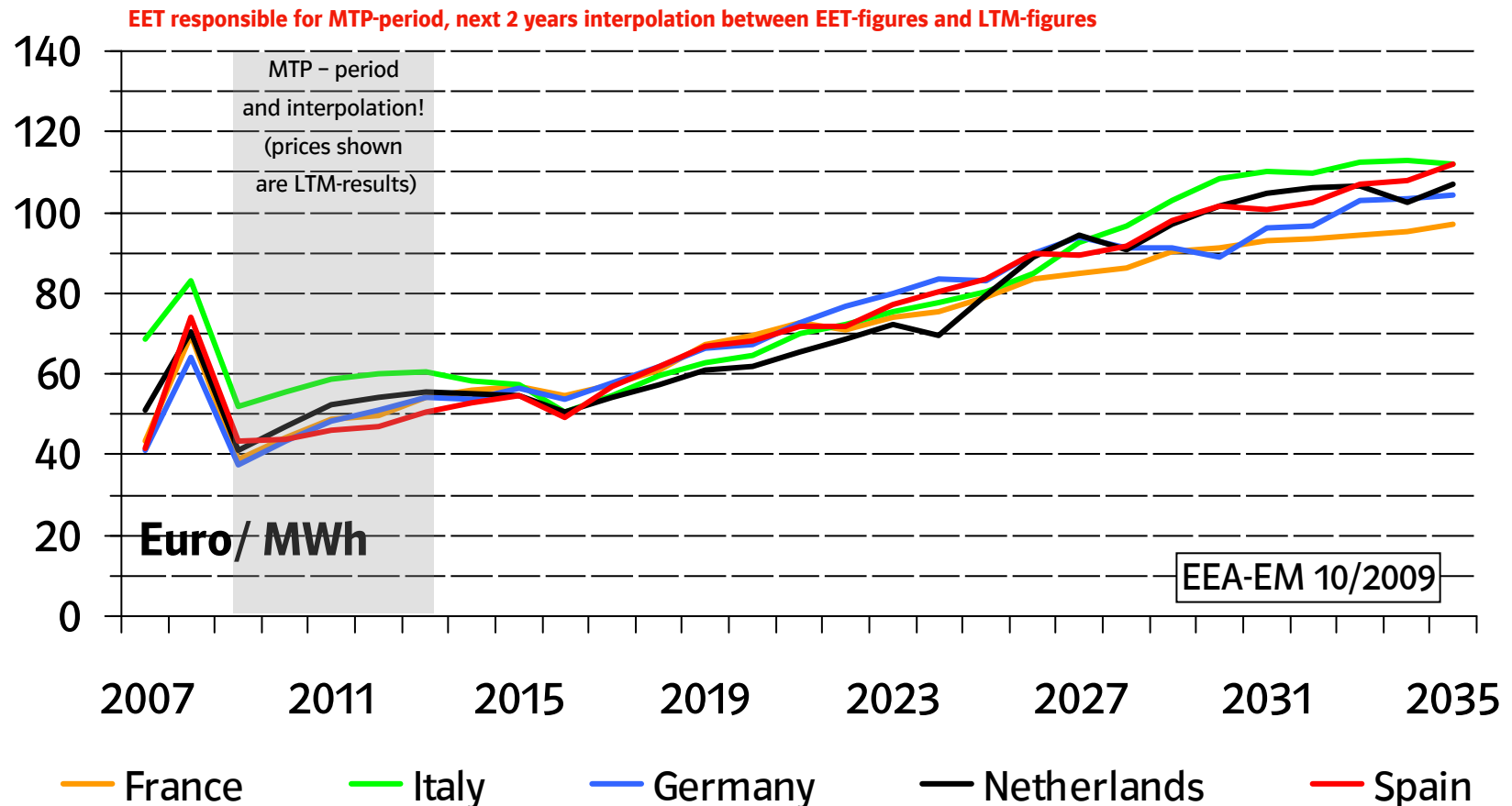
Carbon Emissions by Scenario: Low and going down in 3 Scenarios



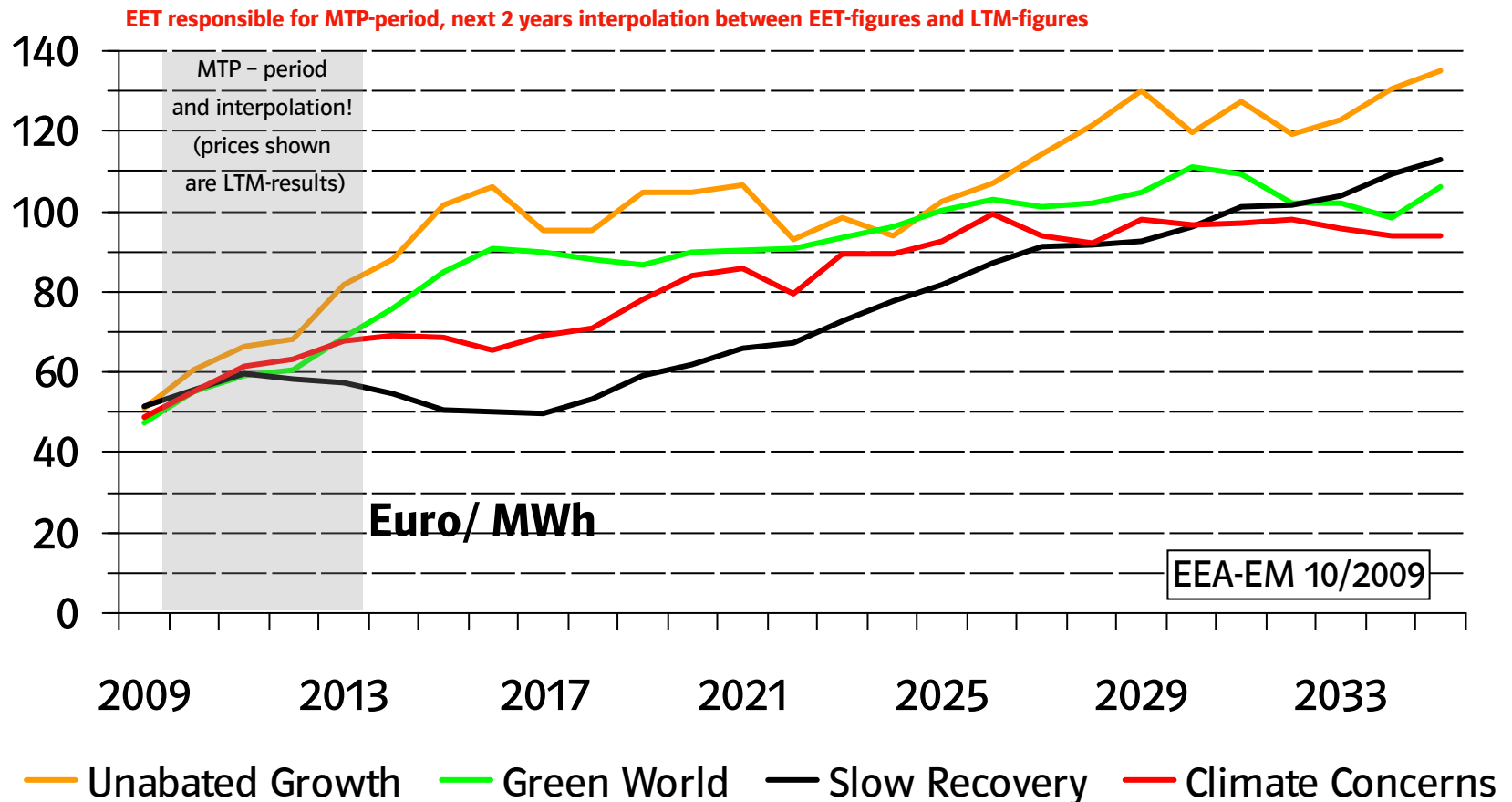
Base Price Development for France: Trending up



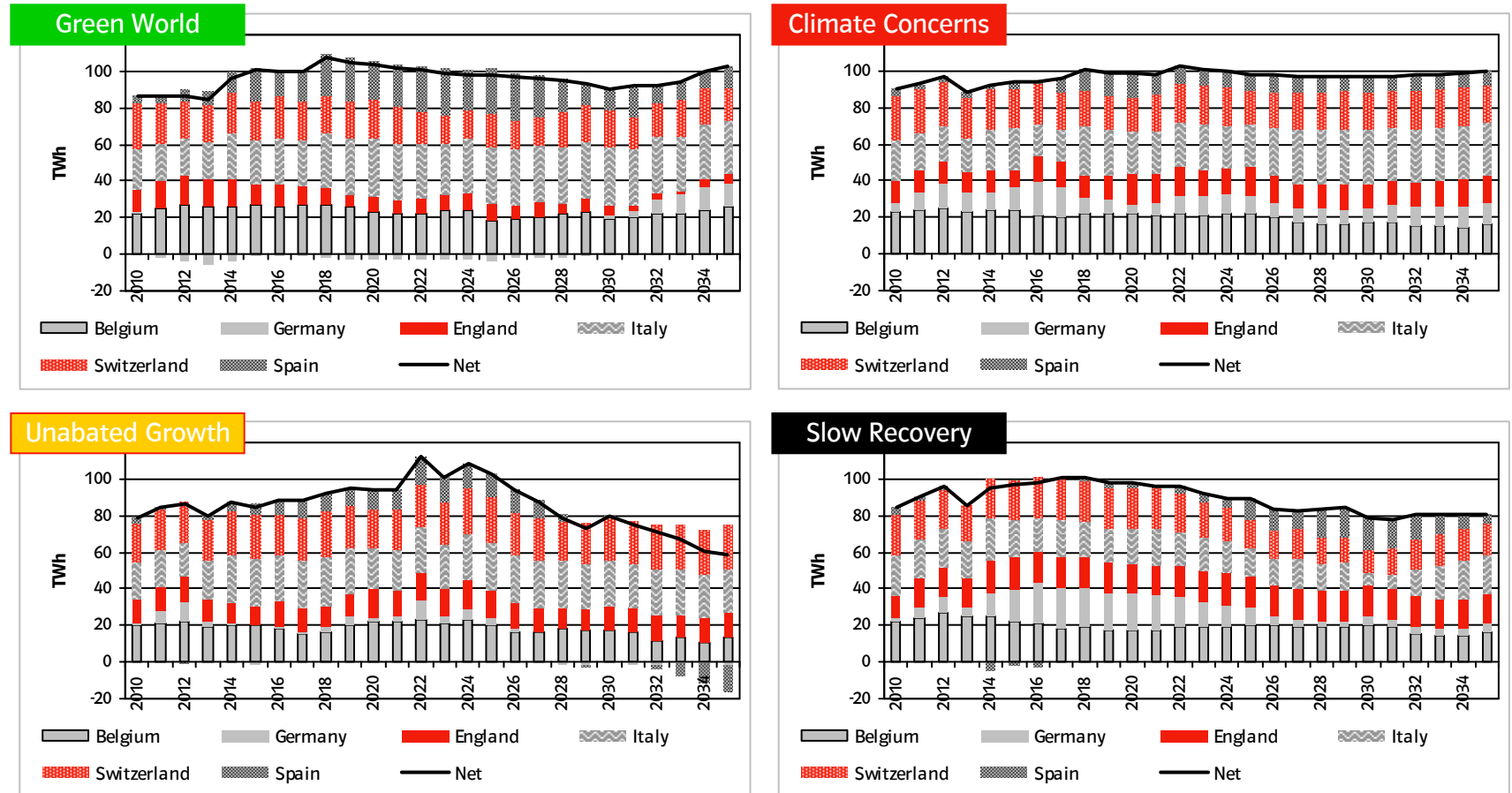
Climate Concerns: Base Price Development for France and Neighbours on same Trajectory



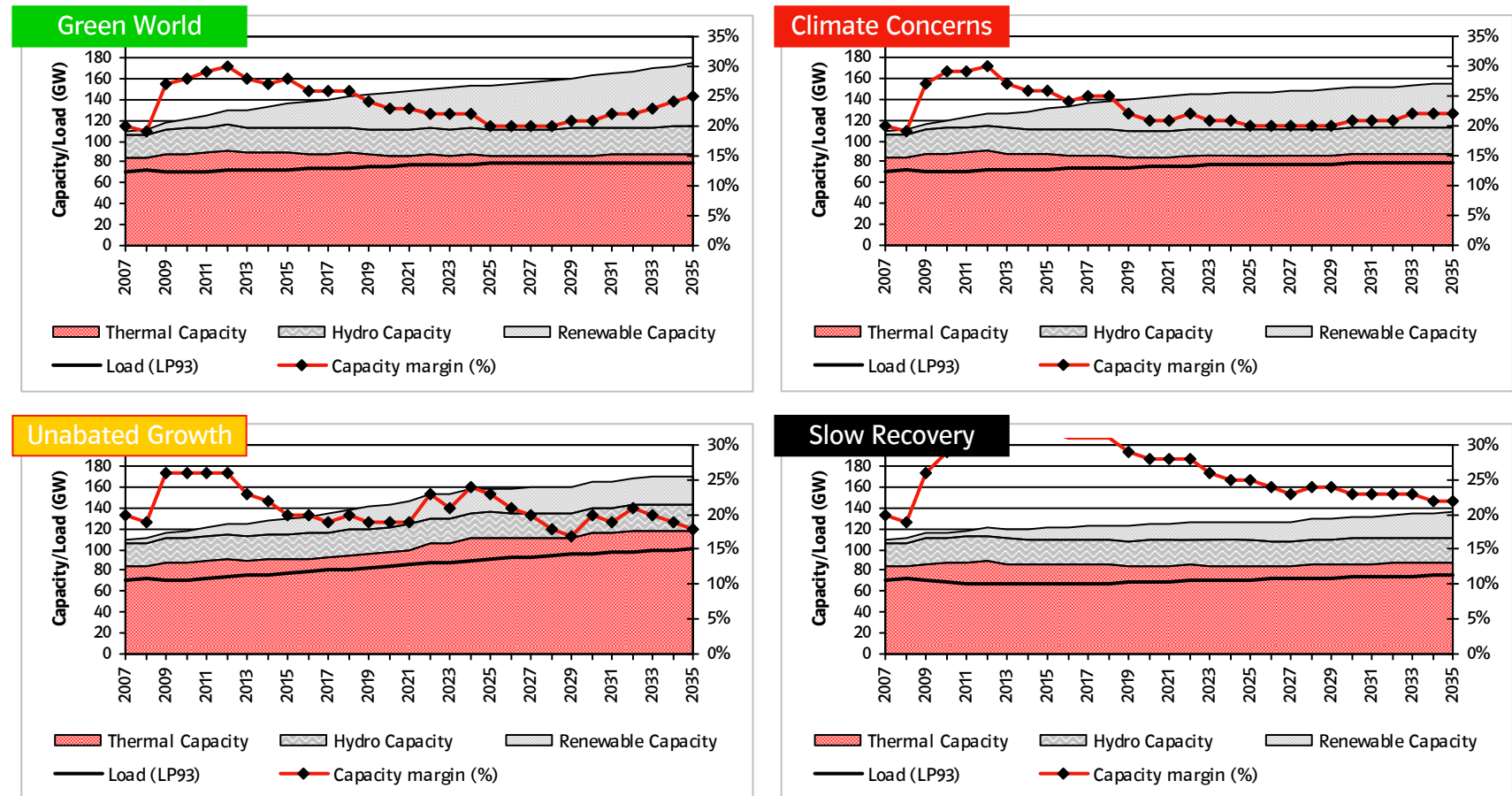
Peak Price Development for France: Trending up



France maintains strong Export Surplus in the Future

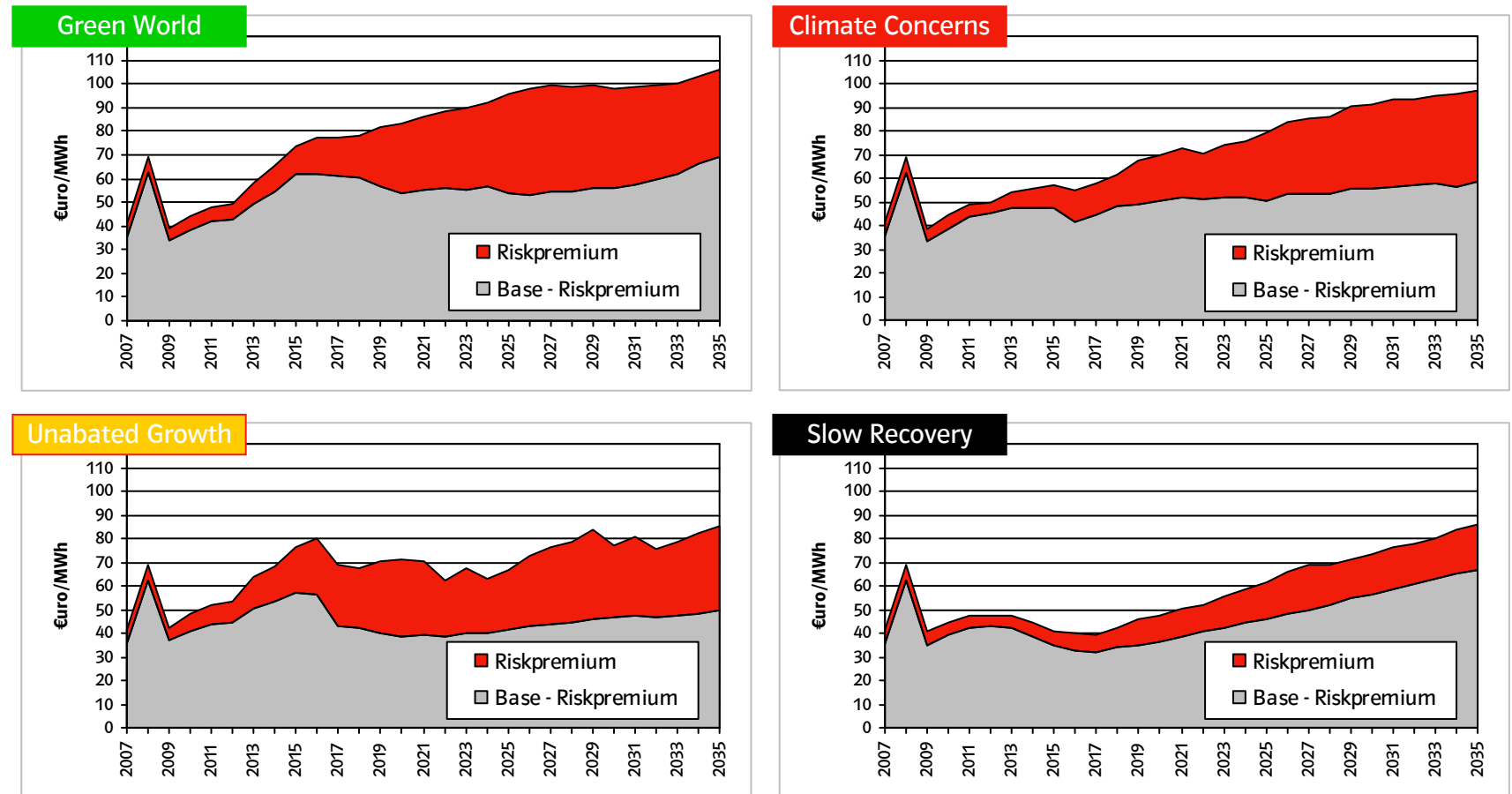


Lower Capacity Margins in the Future: Peak Load close to conventional thermal Capacity

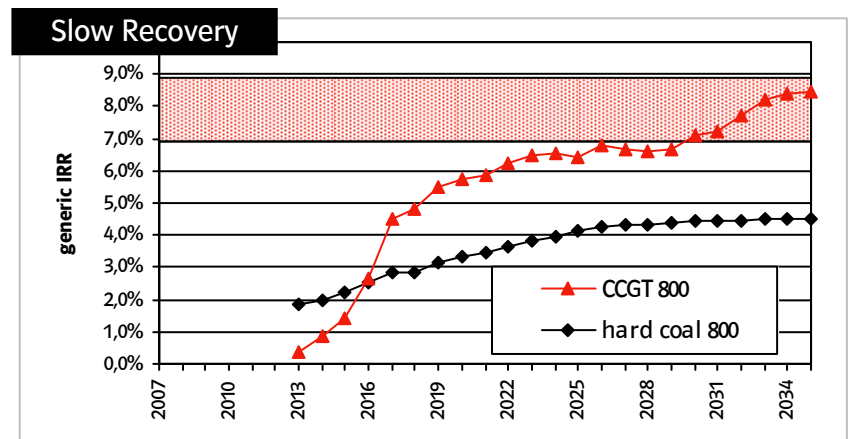
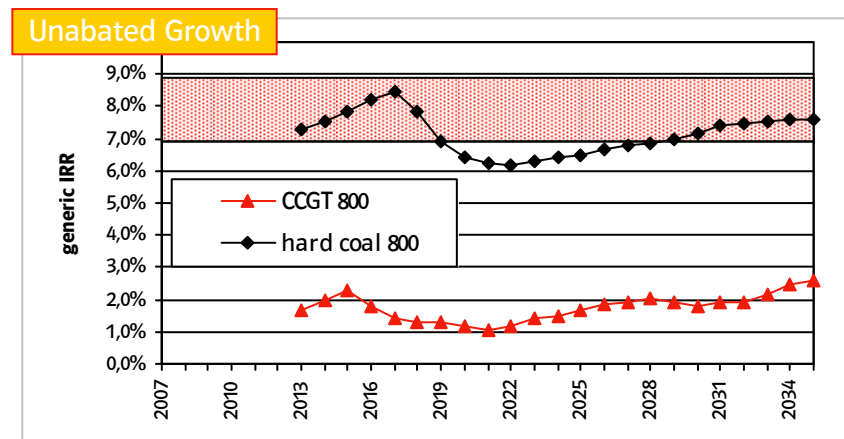
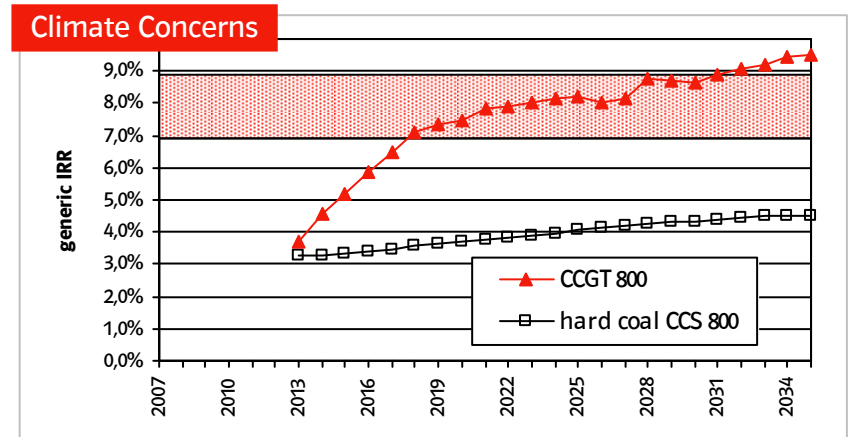
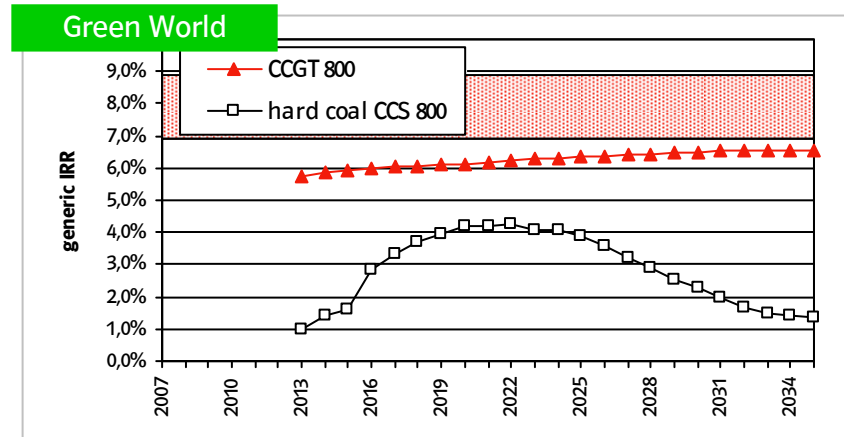


for capacity margin: 82% thermal cap,
70% hydro cap, 15% renewable cap

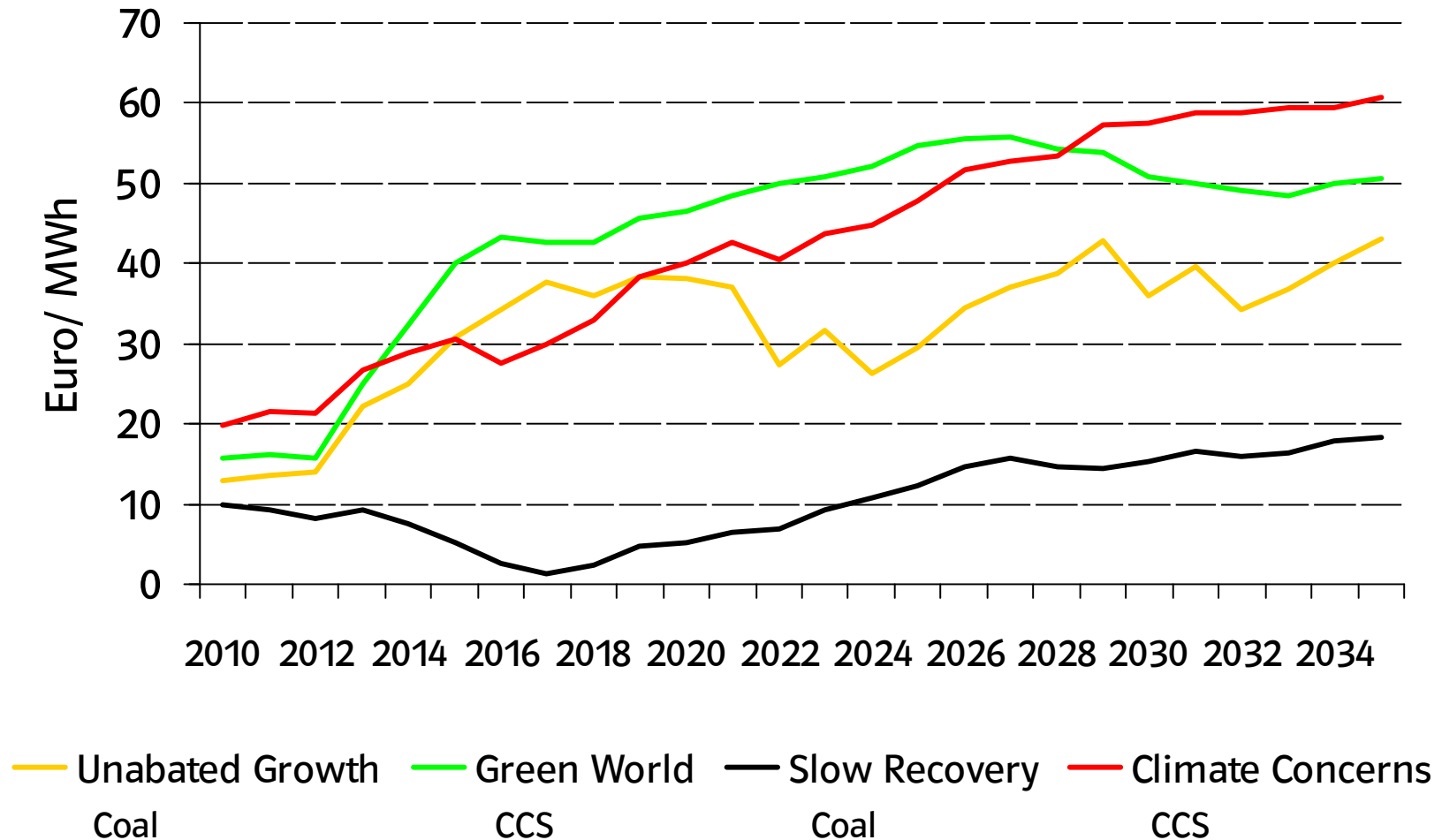
Strong increase of Risk Premium Element in the Market is needed to justify fossil New- built



IRR of generic Power Plants: Hard Times ahead



Clean Dark Spread of France (relative to Base Price)

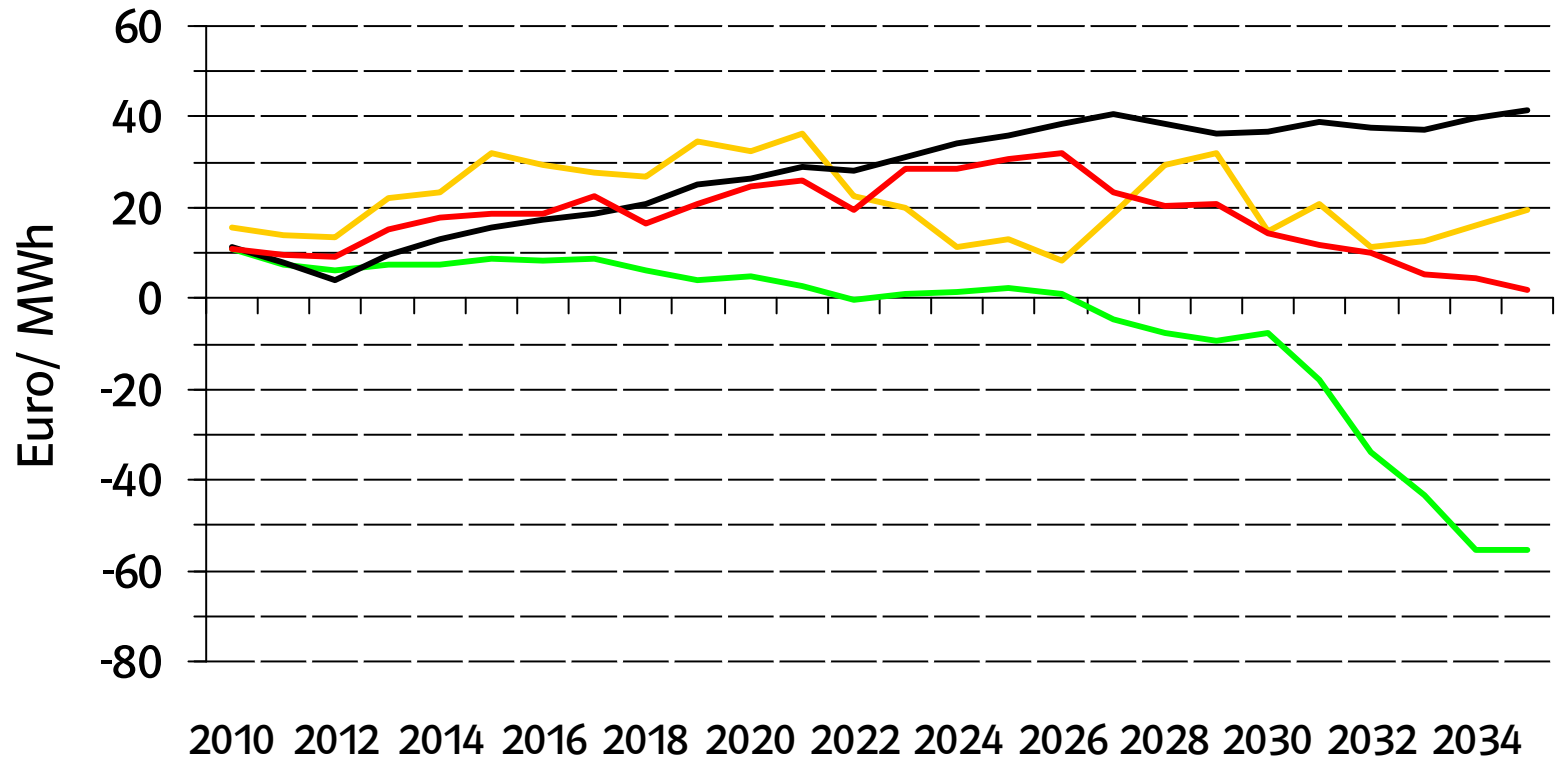


Eta Coal/CCS = 0,45/0,385

No free CO2 certificates considered

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Clean Spark Spread of France (relative to Peak Price)



— Unabated Growth — Green World — Slow Recovery — Climate Concerns

Eta = 0,56

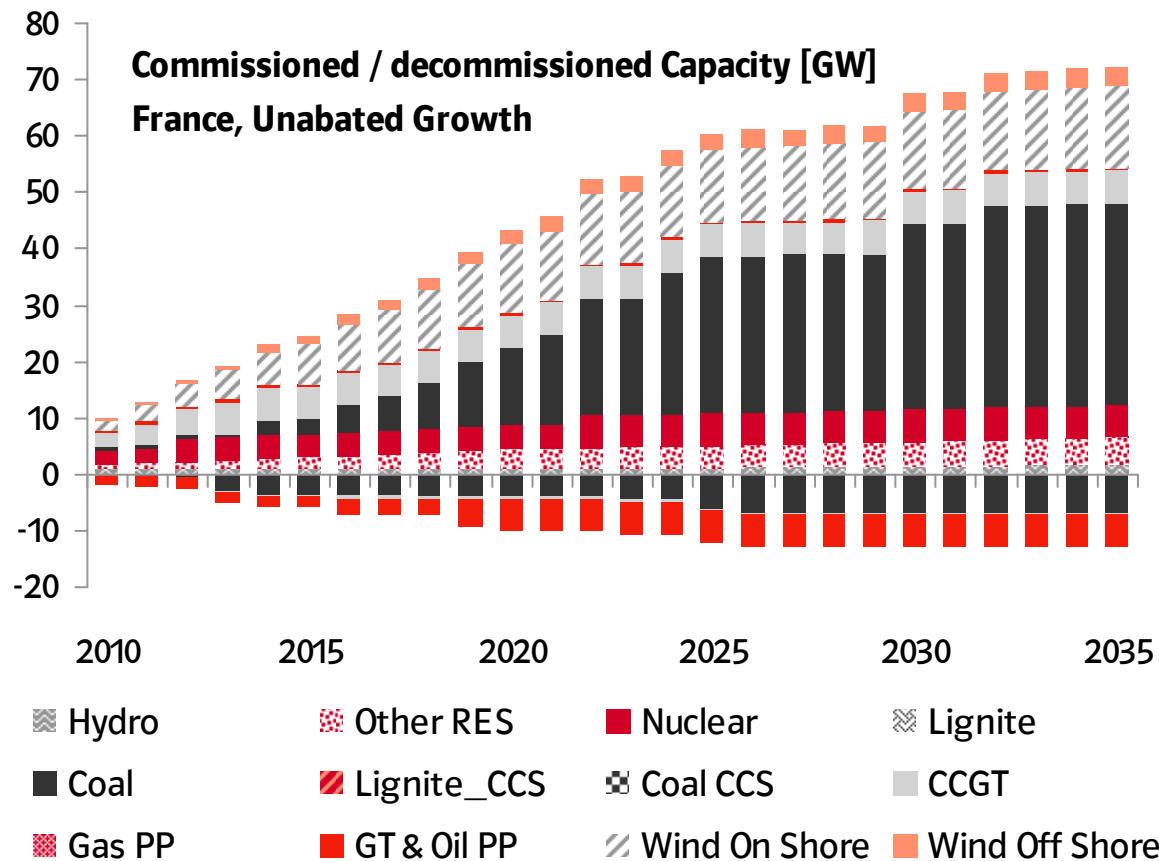
No free CO2 certificates considered

Conclusions

- Nuclear remains dominant.
- Demand still growing except for Slow Recovery.
- Challenging environment for fossil power plants.
- Exports can reach limits, especially in Green World.

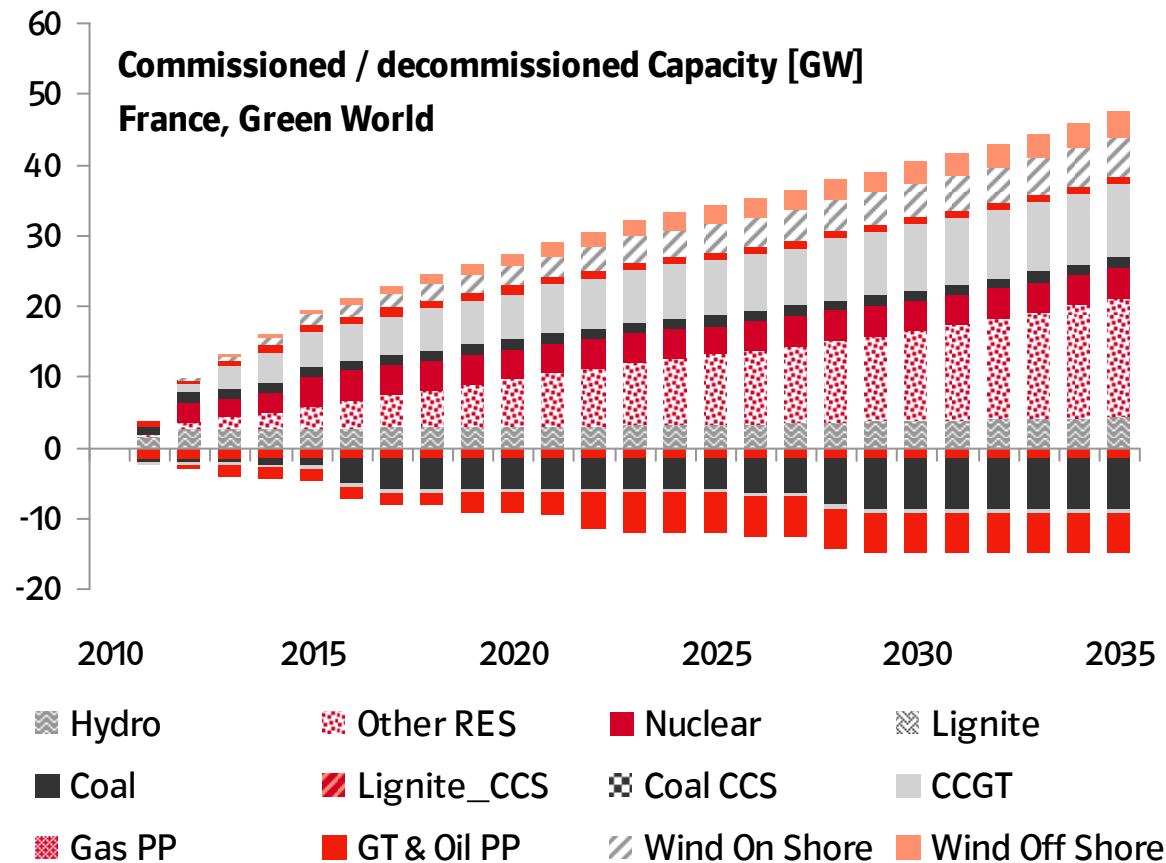
Backup

Unabated Growth: Growth in coal and wind power plants



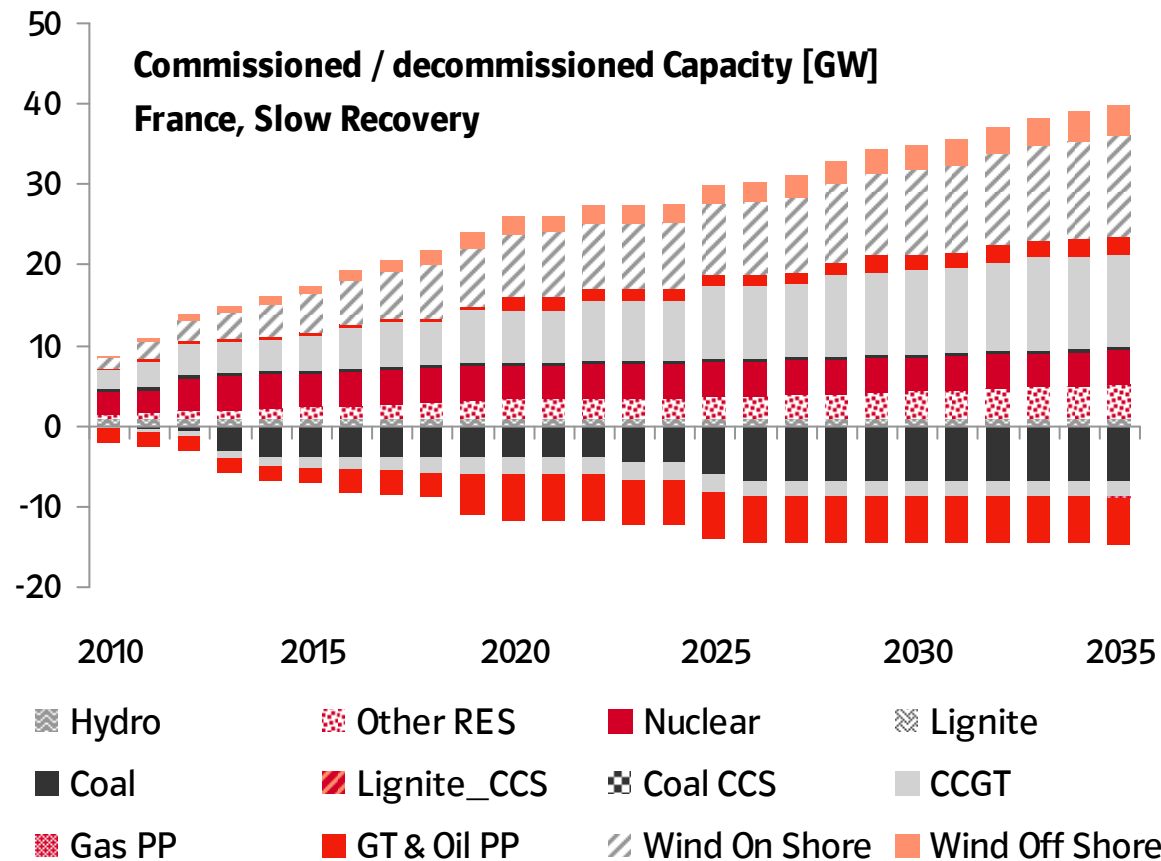
- LCPD leads to some coal decommissioning by 2015
- Other existing coal plants reach end of techlife around 2025
- No more CCGTs are being added after 2015

Green World: Tremendous new- built of RES, especially wind and PV



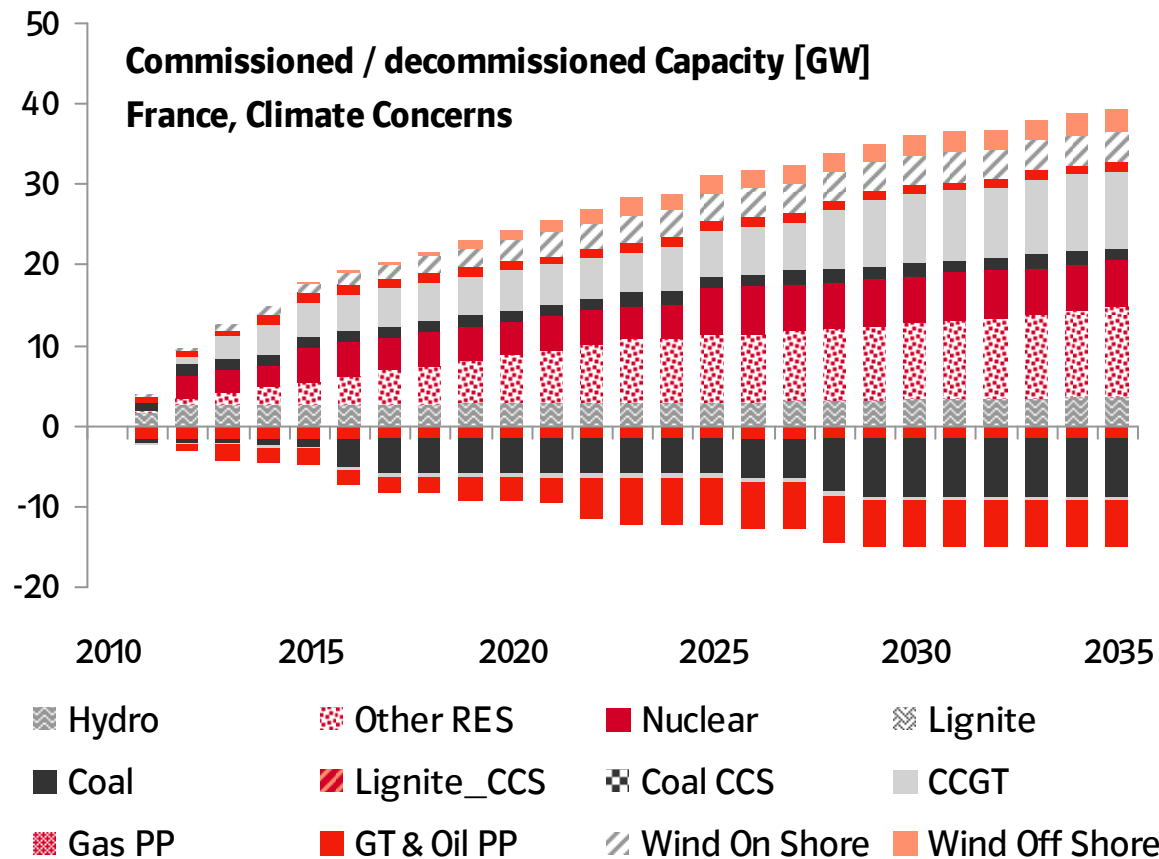
- The growth of wind capacity additions slows post- 2020
- PV growth remains strong until 2035
- LCPD leads to some coal decommissioning by 2015
- Other existing coal plants reach end of techlife around 2025

Slow Recovery: Anemic growth leads to only moderate changes in generation capacity



- Low demand in early years leads to some gas capacity retirement
- CCGTs take biggest share in new- built market
- LCPD leads to some coal decommissioning by 2015
- Other existing coal plants reach end of techlife around 2025

Climate Concerns: RES are the big winners followed by CCGTs



- Wind capacity increases dramatically
- New CCGTs are being build beyond the planned projects
- LCPD leads to some coal decommissioning by 2015
- Other existing coal plants reach end of techlife around 2025