Main Hypotheses

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Le financement de projets de charbon pourrait devenir plus coûteux et plus difficile à obtenir.

A coal power plant in Tunisia?

Tunis

19.11.015

Reducing the energy deficit – how to choose the most adequate technology for the Tunisian context.

Uwe Nestle

EnKliP
Energy and Climate Policy | Consulting

Content

Environment and Costs

Economic Riscs

Security of Supply

The Challenge

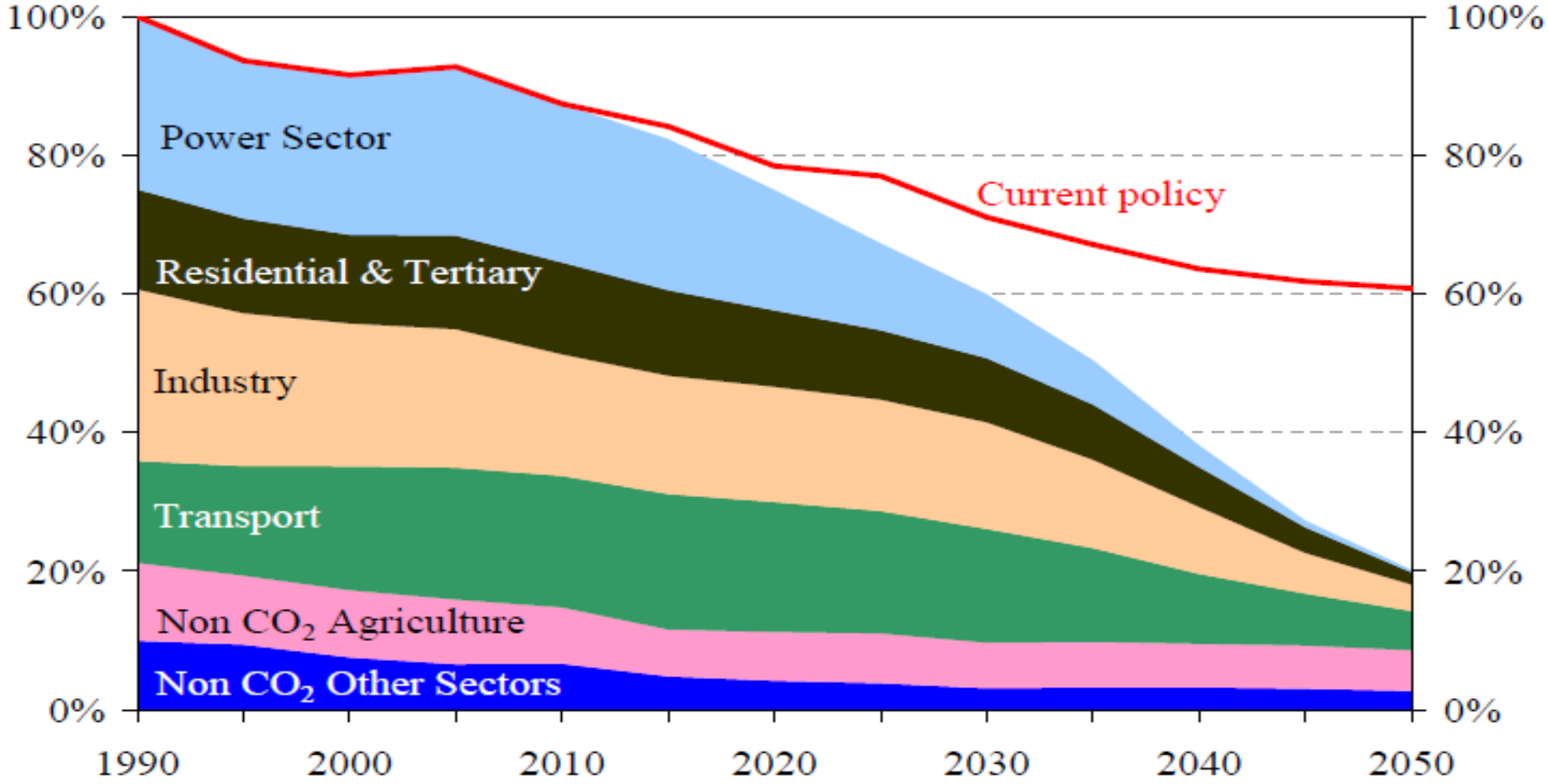
Kofi Annan, 2014

Former Secretary General of the United Nations

"The Climate Crisis threatens the well-being of hundreds of million people. It undermines the human right to food, water, health and security."

"This is not only a worrying future scenario but is already happening today."

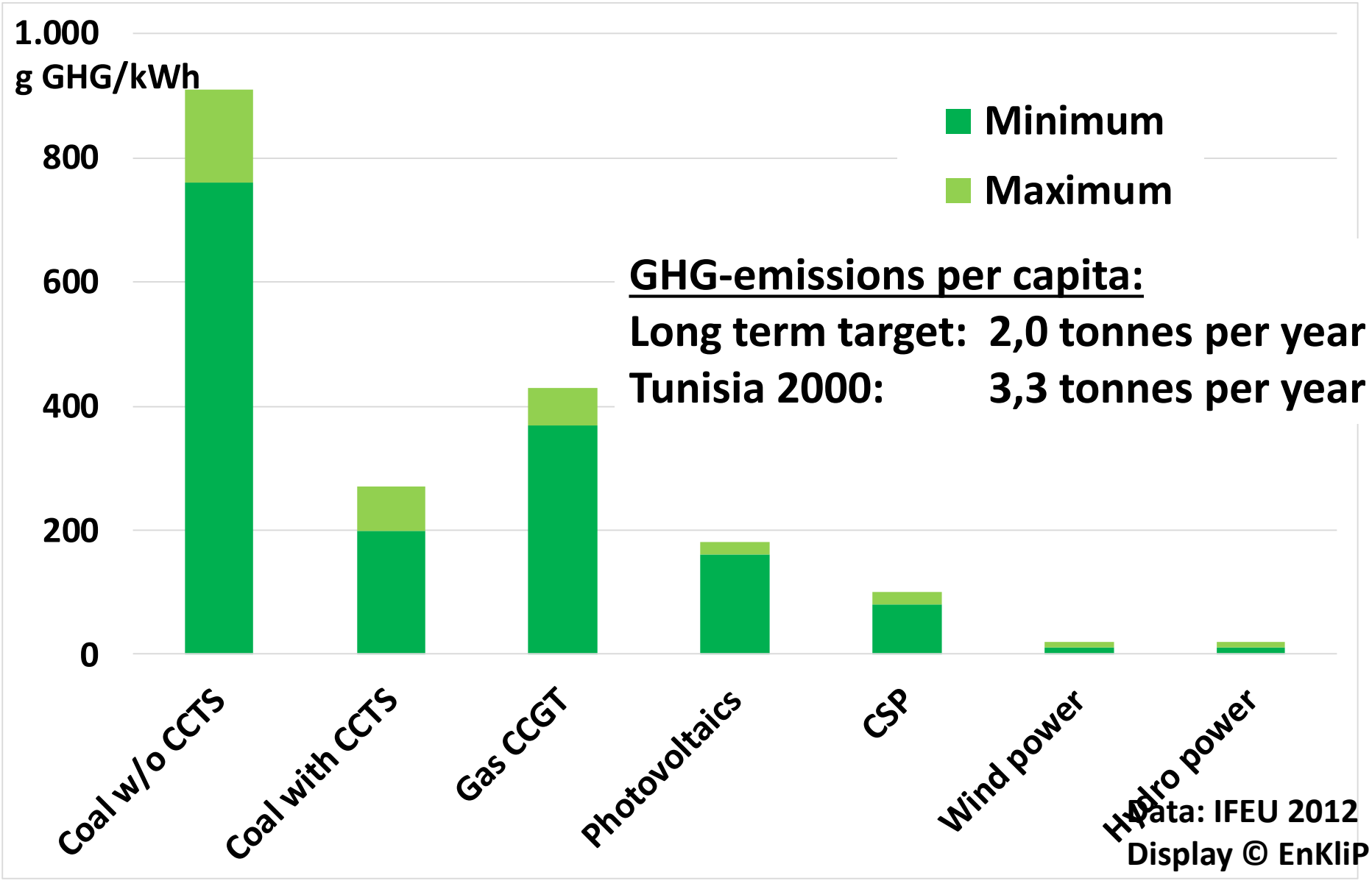
The Challenge



Reductions in EU GHG emissions in order to achieve a domestic reduction of 80% by 2050 (100% = 1990)

(EC 2011, Roadmap for moving to a competitive low carbon economy in 2050)

Greenhouse gas emissions of power plants (g/kWh)



GHG-emissions per capita:

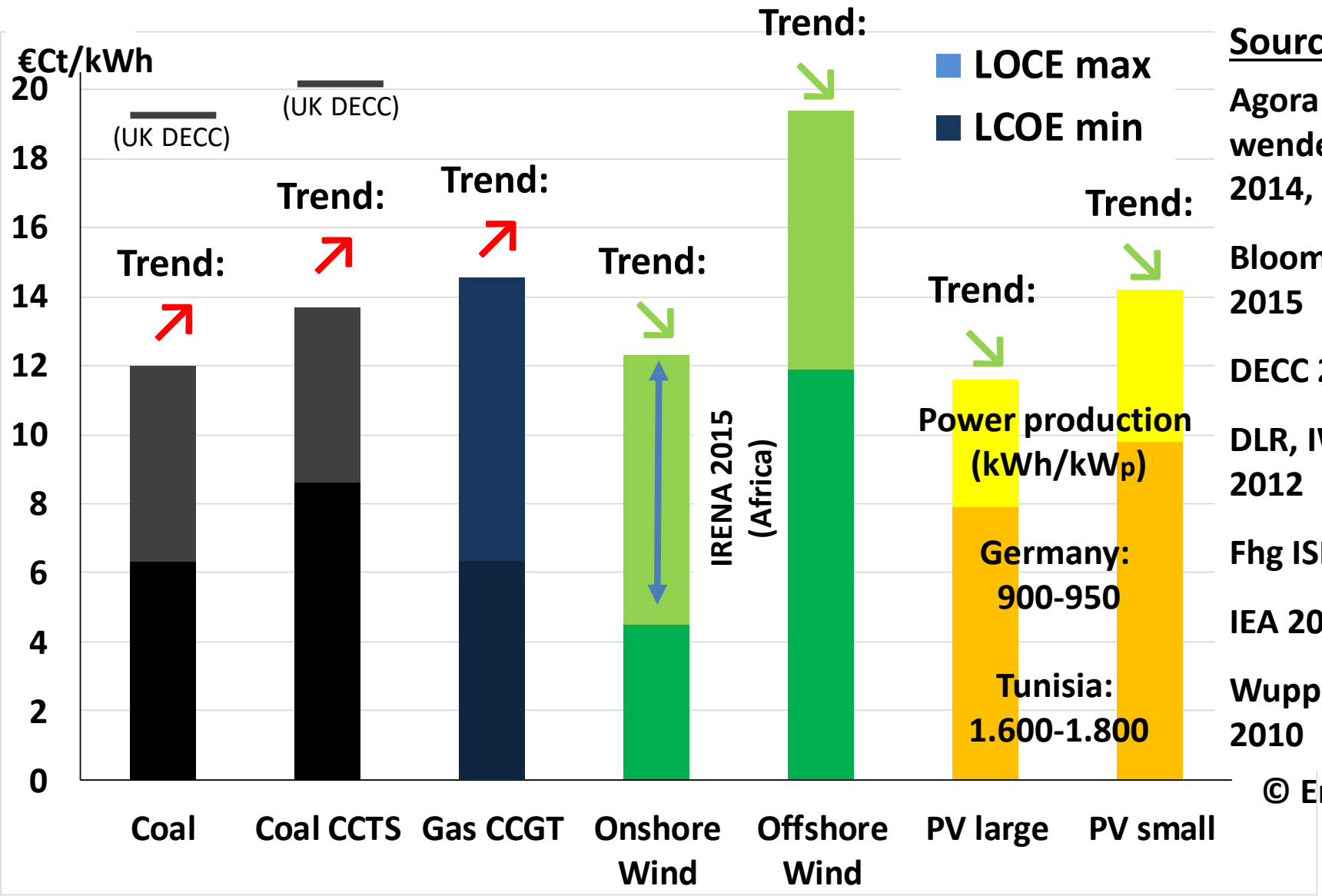
Long term target: 2,0 tonnes per year

Tunisia 2000: 3,3 tonnes per year

Data: IFEU 2012

Display © EnKliP

Production costs for power generation (LCOE)



Sources:

Agora Energie-wende 2013, 2014, 2015

Bloomberg 2015

DECC 2013

DLR, IWES, IfnE 2012

Fhg ISE 2013

IEA 2015

Wuppertal 2010

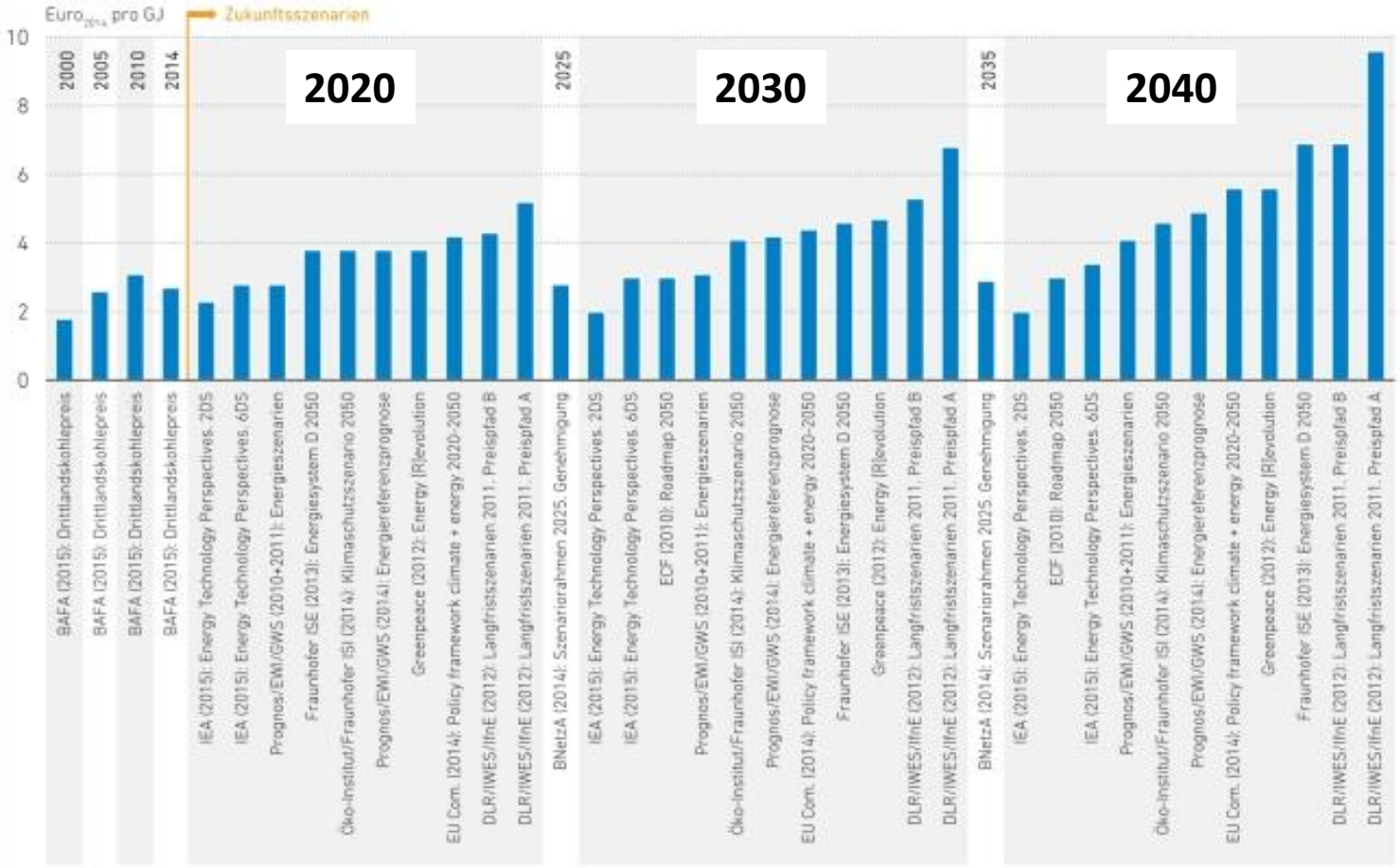
Expectations for the development of the coal price

Forschungsradar Vergleichsgrafik

Metaanalyse: Entwicklung der Preise für fossile Brennstoffe

Entwicklung des Einfuhrpreises für Steinkohle in verschiedenen Szenarien

Aufgrund unterschiedlicher Wechselkurse bei der Währungsumrechnung von US-Dollar in Euro sind die Werte nur eingeschränkt vergleichbar. Für eigene Umrechnungen wurde ein Wechselkurs von 1,33 US-Dollar pro Euro zugrunde gelegt.



www.forschungsradar.de

Sources:

BNetzA 2014

DLR, IWES, IfnE 2012

ECF 2010

Fhg ISE 2013

Greenpeace 2012

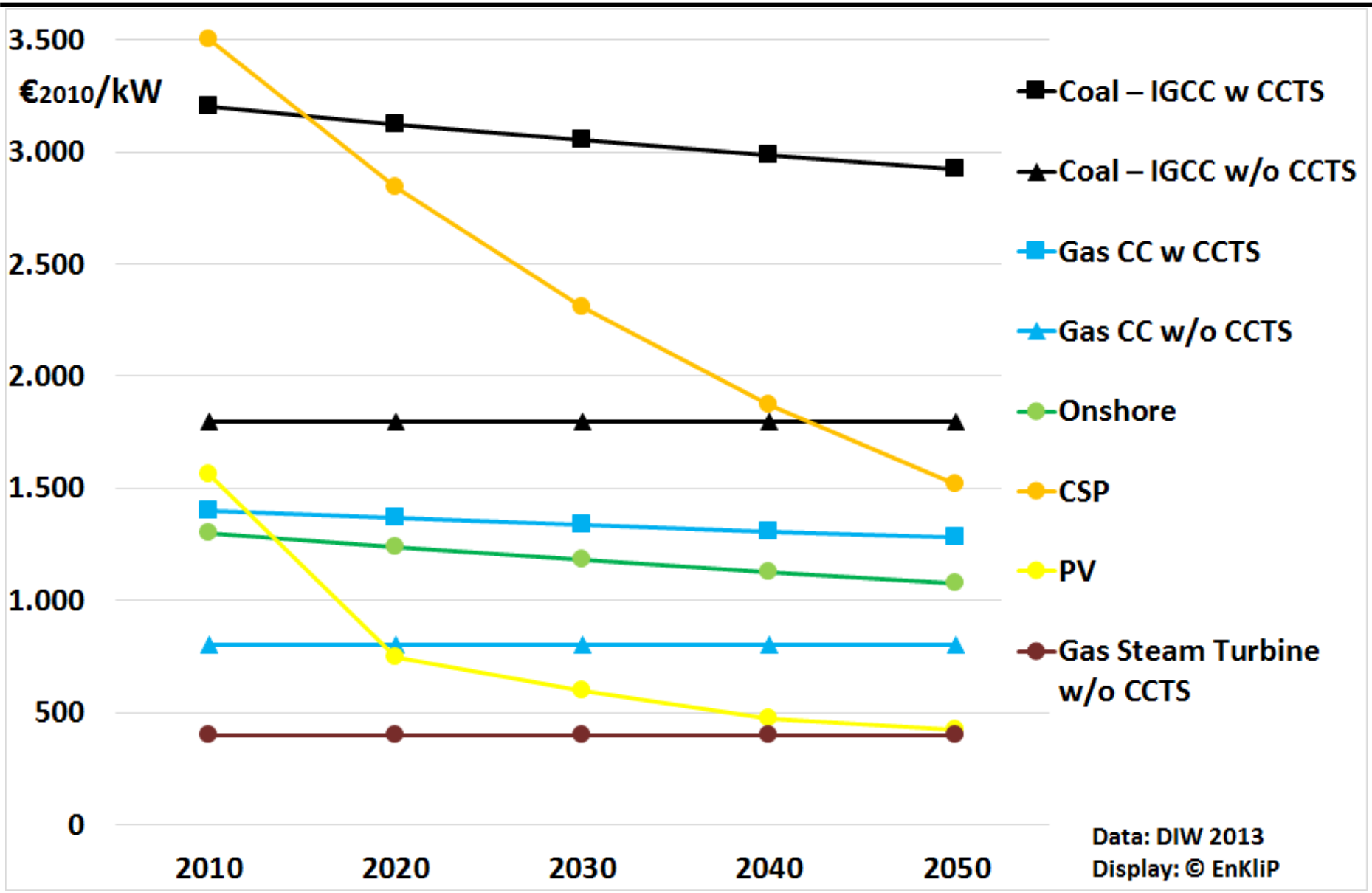
EU COM 2014

Öko-Institut , Fhg ISI 2014

IEA 2015

Prognos/EWI/ GWS 2010, 2011, 2014

Capital costs for power technologies 2010 to 2050



Risk 1: Burdens for coal due to climate protection

- While the climate crisis is becoming more dramatic, political pressure might rise to,
  - raise taxes on green house gas emissions,
  - join an international emission trading system, or
  - enact other measures to reduce GHG-emissions affecting the coal power plants.
- This would make power from existing and new coal power plants more expensive.
- Renewable energy sources would become more competitive.

➔ A mid or long term path using coal power plants might become more expensive than an even stronger renewable path.

Risk 2: Strong renewable increase

- Already today, electricity from private photovoltaic power plants is for some consumer in Germany and many other countries cheaper than the end consumer price of power.
- With wind and solar power steadily becoming cheaper, also utility investments into these technologies might increase.
- The more power produced by fluctuating renewable sources, the less full load hours coal power plants can run.

➔ This makes each kilowatt hour from coal power plants more expensive.

Risk 3: Shrinking availability of money for coal projects

International organisations tend to stop financing coal-based projects.

Fossil fuel divestment:

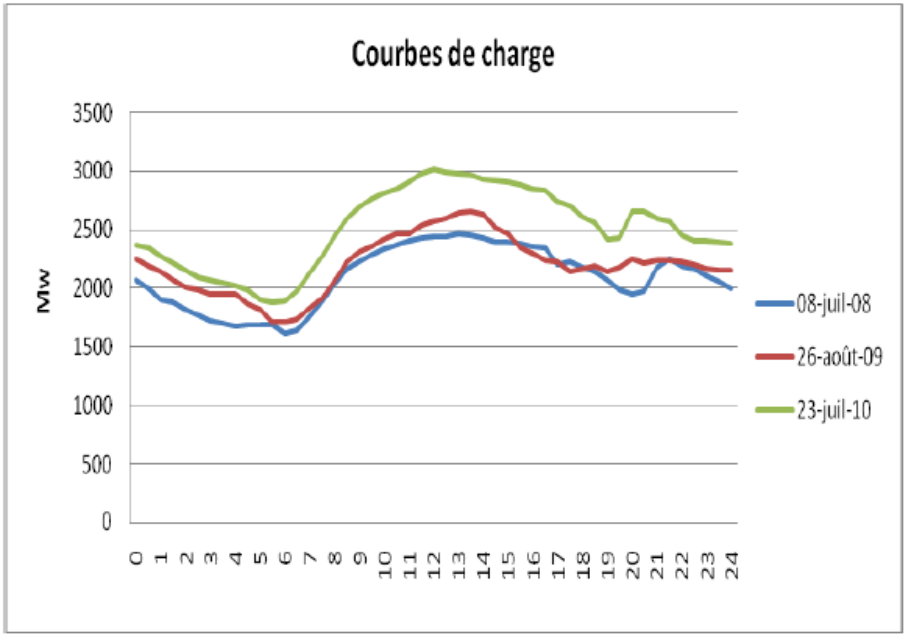
- **Removal of investment assets including stocks, bonds, and investment funds from fossil fuel industry.**
- **About 200 institutions representing over US$ 50 Billion have pledged to divest from fossil fuels (Arabella, USA).**
- **Fastest growing divestment movement in history (The Guardian, GB).**
- **“Coal To Be Hardest Hit By Fossil Fuel Divestment Campaign” (Forbes Magazine).**

➔ **For renewable projects, international money will be available, e.g. Green Climate Fund (2,5 Billion € in 2016)**

Supply security with a high share of renewables

For the coming years, Tunisia needs a higher power production during the day – not at night.

➔ **Solar power plants can offer this with little costs.**



Even with a strong increase of renewable power plants there will be hours in a year with to little capacity to meet the demand.

➔ **This might be only some hours in a year.**

➔ **To produce power in these few hours, power plants with little capital costs are needed.**

Supply security with a high share of renewables

Flexibility options with little capital costs:

- Gas turbines
- Demand side management
- Standby sets (emergency backup generators)

Additionally, there are renewable power plants that are controllable:

- Concentrated solar power combined with heat storage equipment
- Biomass power plants
- Some hydropower plants

Increasing diversity:

➔ Produce gas with renewable electricity

Supply security with a high share of renewables

Interconnector to Italy

Long term economic cooperation with a political stable partner.

➔ Good for the geopolitical stability

More diversification, since EU uses all relevant energy resources existing.

➔ Greater supply security in Tunisia

Possibility to export electricity to Italy

➔ Attractive revenues

An extension and better use of existing interconnectors to Algeria and Libya could also increase supply security for Tunisia.

Thank you for your attention

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Forcasing and reality

Forcasts and reality