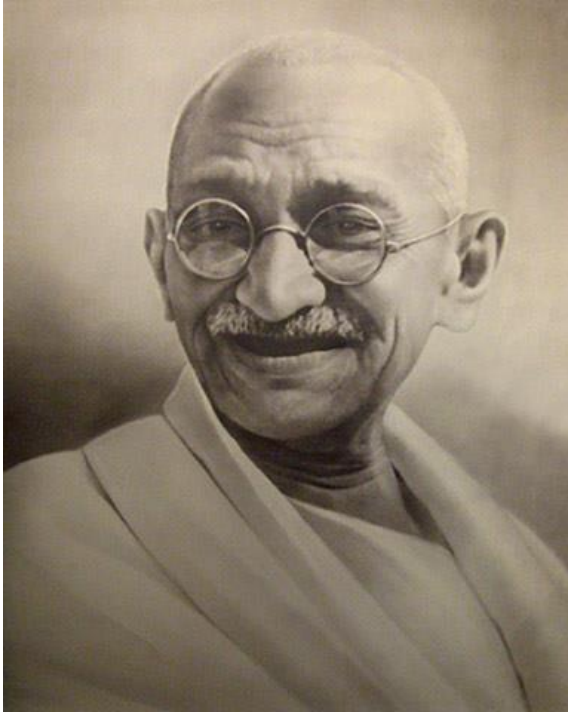


Stages of Change



First they ignore you,
then they laugh at you,
then they fight you

1990ies

until 2010

since 2011

Fear of Change

Ingo Stadler



1. **Fear** of going ahead – Do we need a global solution?
2. **Fear** of losing jobs – Prevent creation of new jobs
3. No **Fear** of lies: the Storage Problem
4. **Fear** to remove man made regulations – Prevent from doing what is agreed to be needed
5. **Fear** of losses in (old) car industry – Prevent developing (new) car industry
6. **Fear** of finishing climate hazardous subsidies – Prevent creation of innovation

Content

- 1.0 **Fear** of going ahead – Do we need a global solution?
- 2.0 **Fear** of losing jobs – Prevent creation of new jobs
- 3.0 No **Fear** of lies: the Storage Problem
- 4.0 **Fear** to remove man made regulations – Prevent from doing what is agreed to be needed
- 5.0 **Fear** of losses in (old) car industry – Prevent developing (new) car industry
- 6.0 **Fear** of finishing climate hazardous subsidies – Prevent creation of innovation
- 7.1 German Taliban



FEAR
OF
Going ahead

Global Problems need Global Solutions

... what a good excuse for not taking national action!

And they are right: Didn't it work already once?



Global Problems need Global Solutions?



- ✓ Enormous resistance from the halocarbon industry
- ✓ At Montreal convention, the participants agreed to freeze production of CFCs at 1986 levels and to phase out CFCs and halons entirely by 2000
- ✓ The major companies claimed that no alternatives to HFC existed
- ✓ An ozone-safe hydrocarbon refrigerant was developed. Greenpeace was given the patent (Greenfreeze) and left the patent as open source
- ✓ By 1995, Germany made CFC refrigerators illegal
- ✓ 2004 Bosch in Brazil began with ozone-safe refrigerator production

Global Problems need Global Solutions?



CFC refrigerators are a fantastic business

Resistance towards Change

Fight, international agreements

All companies produce ozone-friendly fridges

Players remain the same!

Oil, Coal and Gas production are a fantastic business

Resistance towards Change

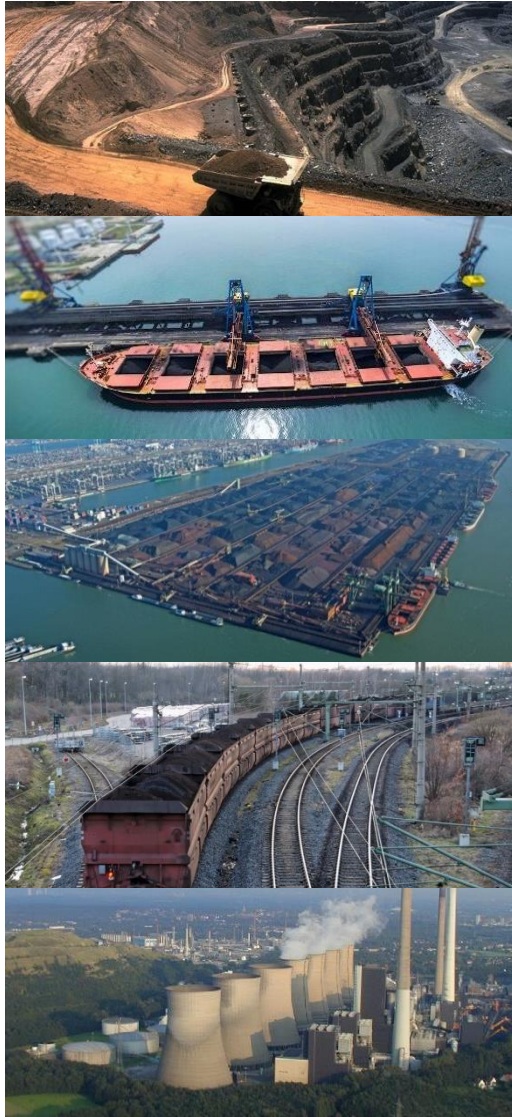
Fight, Battle

Fight, Battle

Players will be exchanged!



Global Problems need Global Solutions?



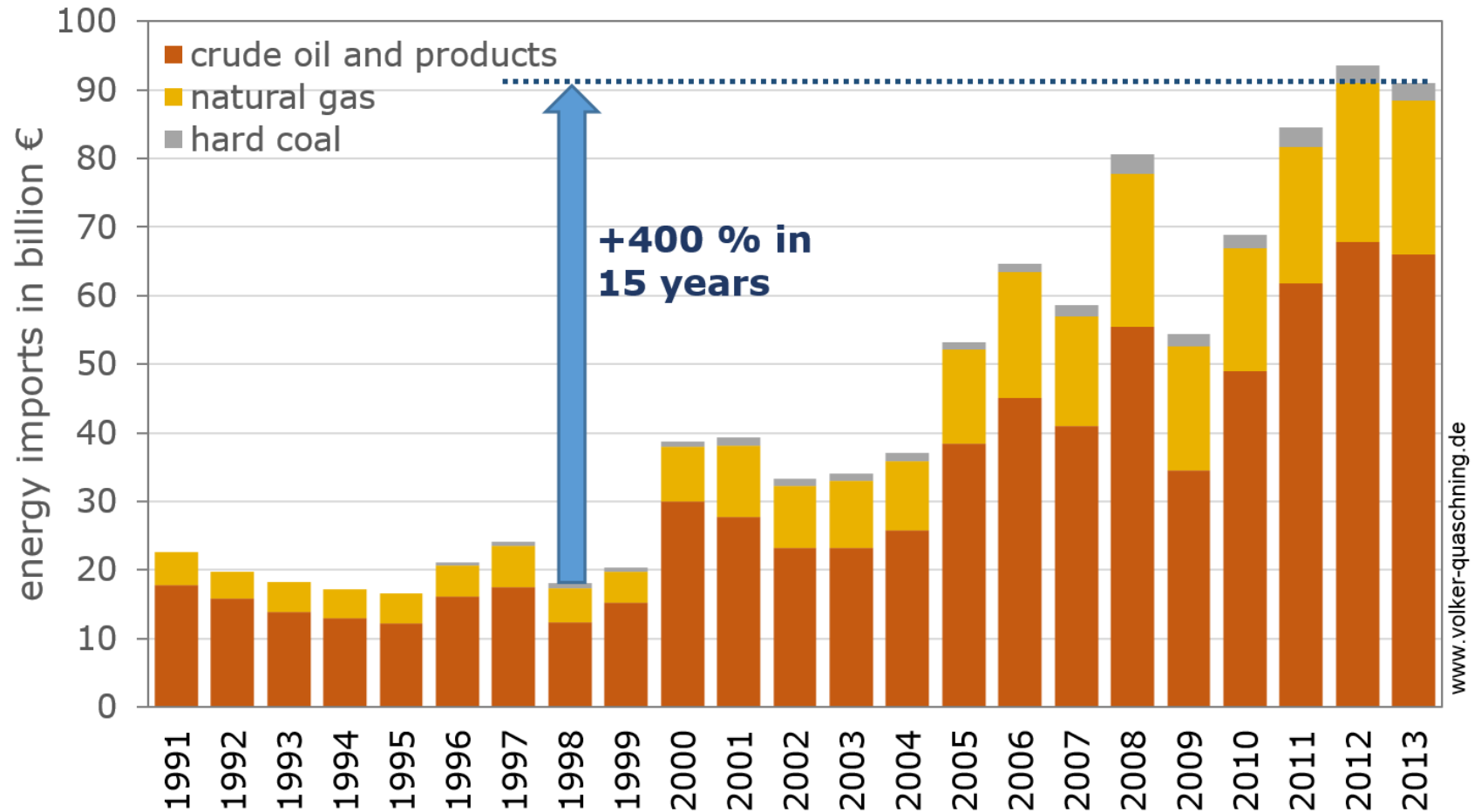
Resource based, centralized



Technology based, decentralized



Costly Energy Imports



Climate Conferences 🤔



Rio de Janeiro



Johannesburg



Kyoto



Bali

Where can you
have nice
conferences,
too?

...Kopenhagen



Doha



Paris

Exuberant Reactions

- ✓ François Hollande:
 - ✓ „Today we achieved the most beautiful and most peaceful revolution“
- ✓ John Kerry:
 - ✓ “That is a victory for everybody on the planet and for future generations,,

Climate Conferences – what has been decided in Paris 2015?



- ✓ Global warming should be kept „**well below**“ 2 degrees
- ✓ Rich countries must provide 100 Billion Dollar ... **starting from 2020**
- ✓ Developed countries „**must continue to take the lead**“ with reduction of greenhouse gases
- ✓ Developing countries are encouraged „**to enhance their efforts**“
- ✓ Greenhouse gas emissions should reach its “**maximum as soon as possible**“
- ✓ With **2050** the balance of emitted and captured greenhouse gases should be neutral



- ✓ ~~Global Warming / Climate Change~~
- ✓ Increasing Energy Autarky
- ✓ Job creation by
 - ✓ change from resource based to technology based Energy Systems
 - ✓ decentralization of Energy Systems

FEAR
OF
JOBS

Jobs: Science used for Disinformation

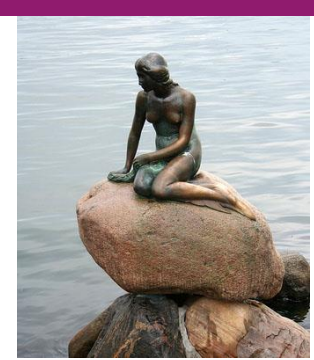
Prognos-Study:

„Consequences of increased climate protection targets on economy and job situation in Germany and EU“

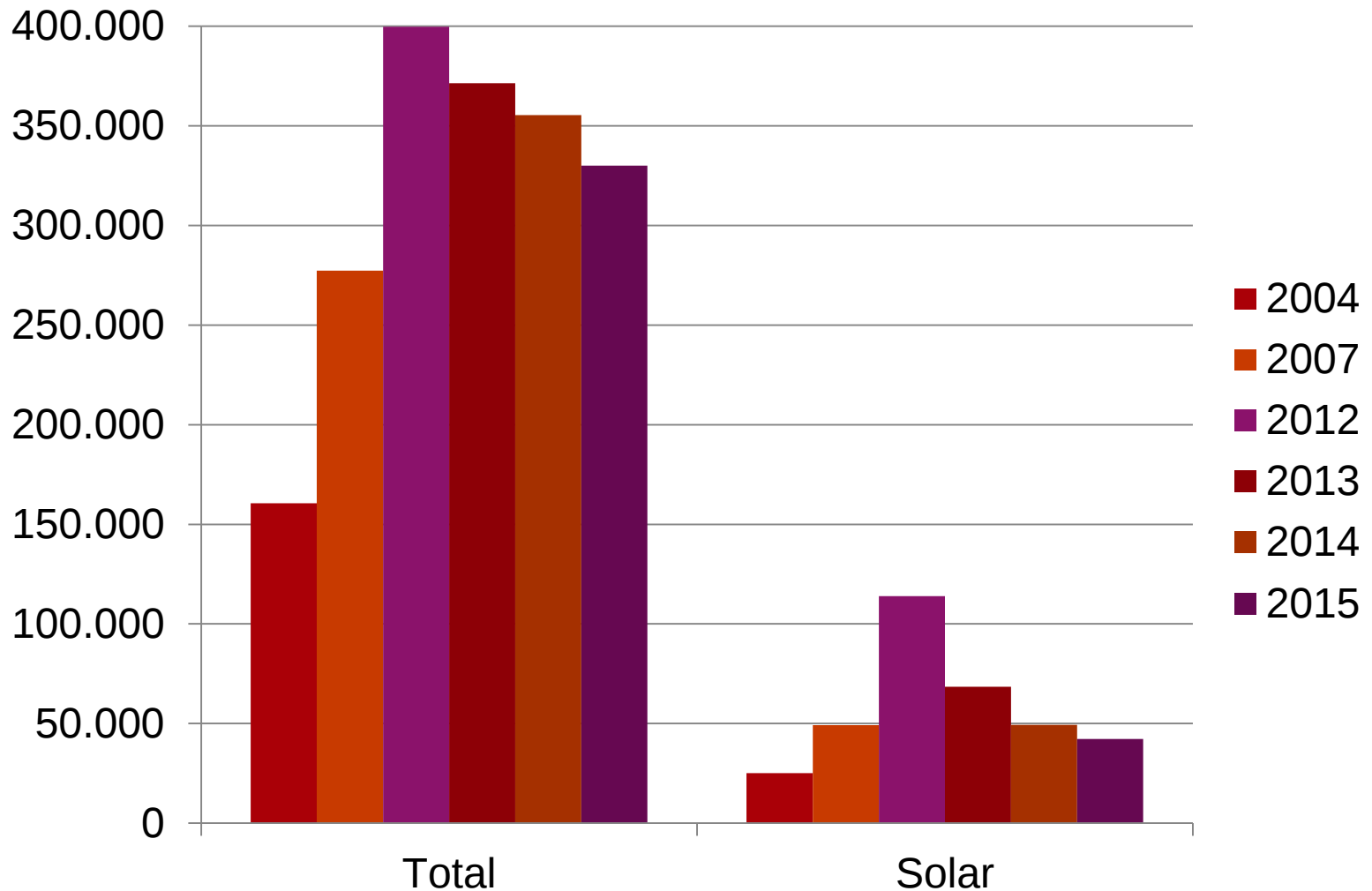
In all news during Copenhagen Climate Conference:

- ✓ Loss of 55.000 jobs
- ✓ decrease of cross domestic product by 17 Billion €

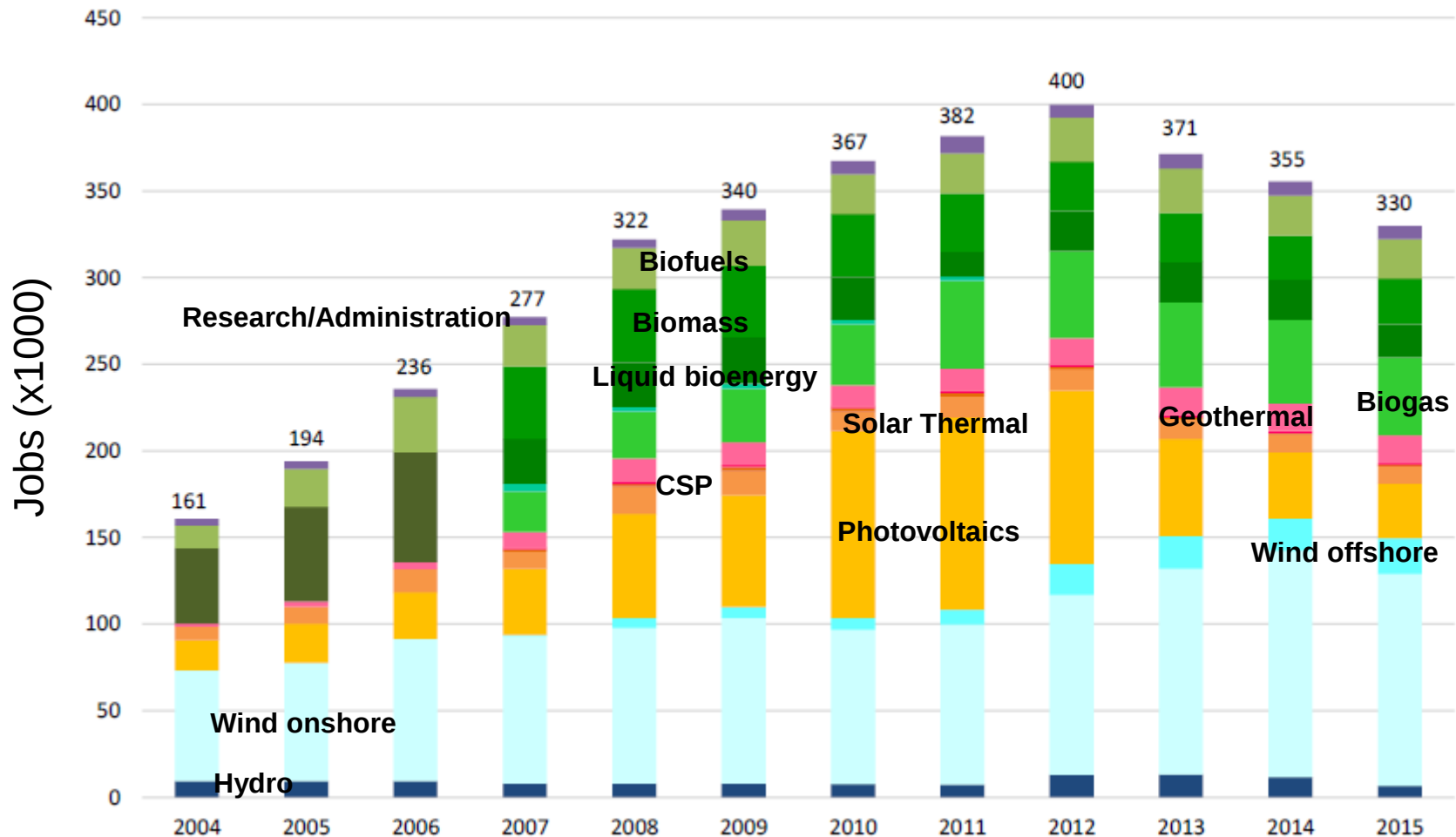
Page 39: “Job creation in environmental and renewable sector are not taken into account”



Jobs in German Renewable Energy Sector



Jobs in German Renewable Energy Sector



Jobs in German Lignite Sector

WDR Wetter Ve



Studie: Braunkohle bietet nur knapp 20.000 direkte Arbeitsplätze

[f](#) [t](#) [g](#) [e](#) [p](#)

- Laut Grünen-Studie noch 9.000 Jobs im Rheinischen Revier.
- Bundesweit insgesamt nur noch 20.000 direkt Beschäftigte.
- Grüne fordern Fonds für Strukturwandel.

In der deutschen Braunkohleindustrie sind nur noch rund 20.000 Menschen direkt beschäftigt. Dies bringt eine am Mittwoch (05.07.2017) veröffentlichte Studie der Grünen zu Arbeitsplätzen in den Braunkohleregionen zutage.

9.000 Arbeiter im Rheinischen Revier

Demnach arbeiten noch ca. 9.000 Menschen im Rheinischen Revier, 2.600 im Mitteldeutschen Revier und 7.900 in

SPIEGEL ONLINE DER SPIEGEL SPIEGEL TV [Anmelden](#)

Menü | Politik Meinung Wirtschaft Panorama Sport Kultur Netzwelt Wissenschaft mehr ▼

WIRTSCHAFT Schlagzeilen | Wetter | DAX 13.245,03 | TV-Programm | Abo

Nachrichten > Wirtschaft > Unternehmen & Märkte > Braunkohle > Braunkohlewirtschaft: Strukturwandel - nur noch 20.000 Arbeitsplätze übrig

Strukturwandel

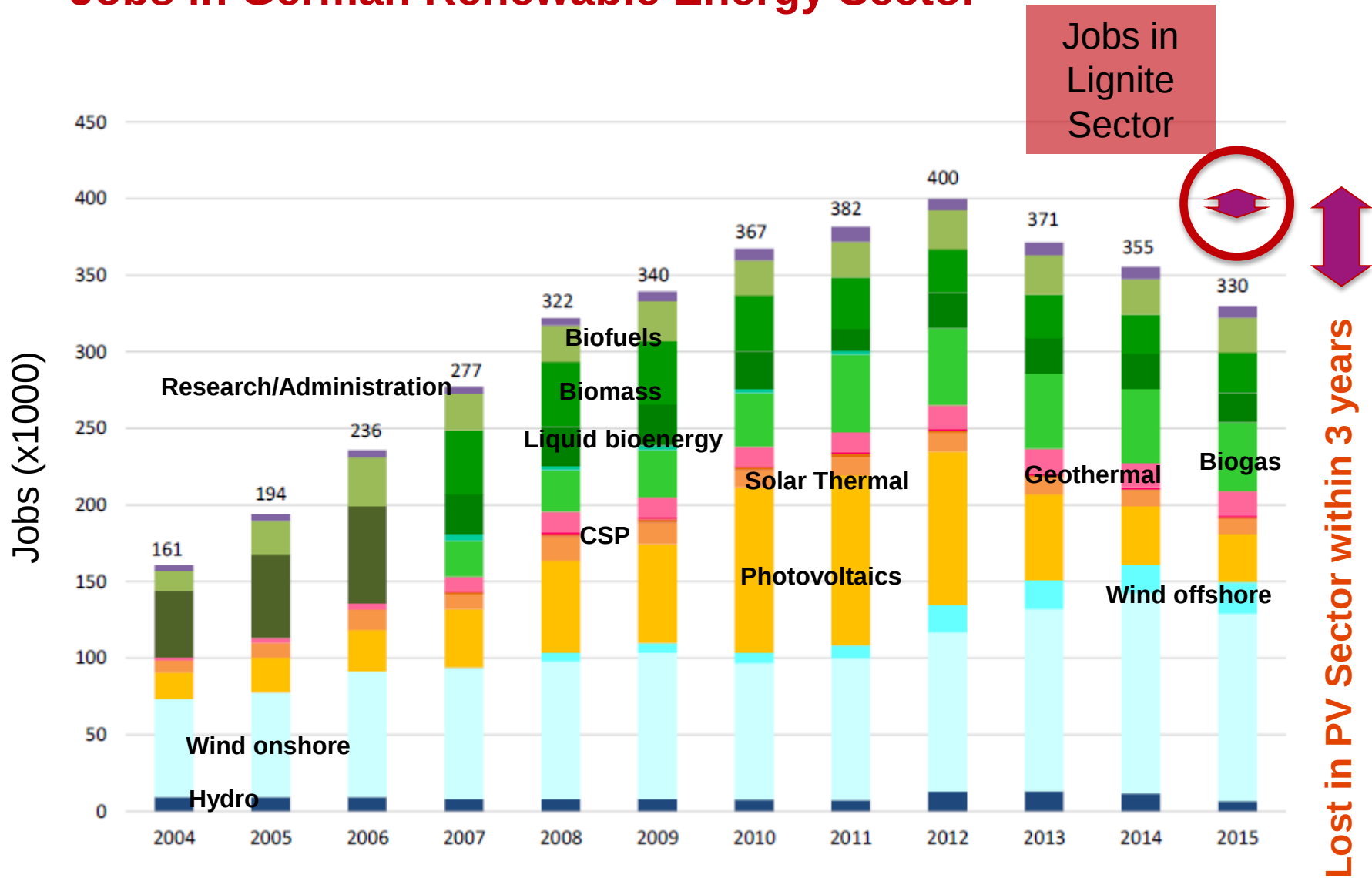
Deutschland hat nur noch 20.000 Braunkohle-Jobs

Lange war die Braunkohle ein wichtiger Wirtschaftsfaktor in Deutschland. Doch mittlerweile arbeiten in der Branche laut einer neuen Studie nur noch wenige Menschen. Doch die mächtige Lobby kämpft weiter um ihre Pfründe.

Von [Claus Hecking](#) und [Stefan Schultz](#)



Jobs in German Renewable Energy Sector



Jobs: Mathematics is only valid for scientists – not for politicians

- ✓ Commutative law is always valid in science and technology:

$$a \cdot b = b \cdot a$$

- ✓ In politics not:

$$10.000 \frac{\text{Jobs}}{\text{Enterprise}} \cdot 10 \text{ Enterprises}$$

$\neq$

$$10 \frac{\text{Jobs}}{\text{Enterprise}} \cdot 10.000 \text{ Enterprises}$$

Centralized Energy System – Centrally organized Trade Unions



NO FEAR
OF
Lies

The Storage Problem

From dangerous embrace ...



Prof. Dr. habil. Ingo Stadler

The unsolved storage problem ...



... chasing another pig through the village?

The unsolved storage problem ...



We miss appropriate storage systems...

or

The role of men giving birth to a child



- ✓ No safety belts
- ✓ No head cushions
- ✓ No Airbags
- ✓ Is motor power sufficient to reach hospital?

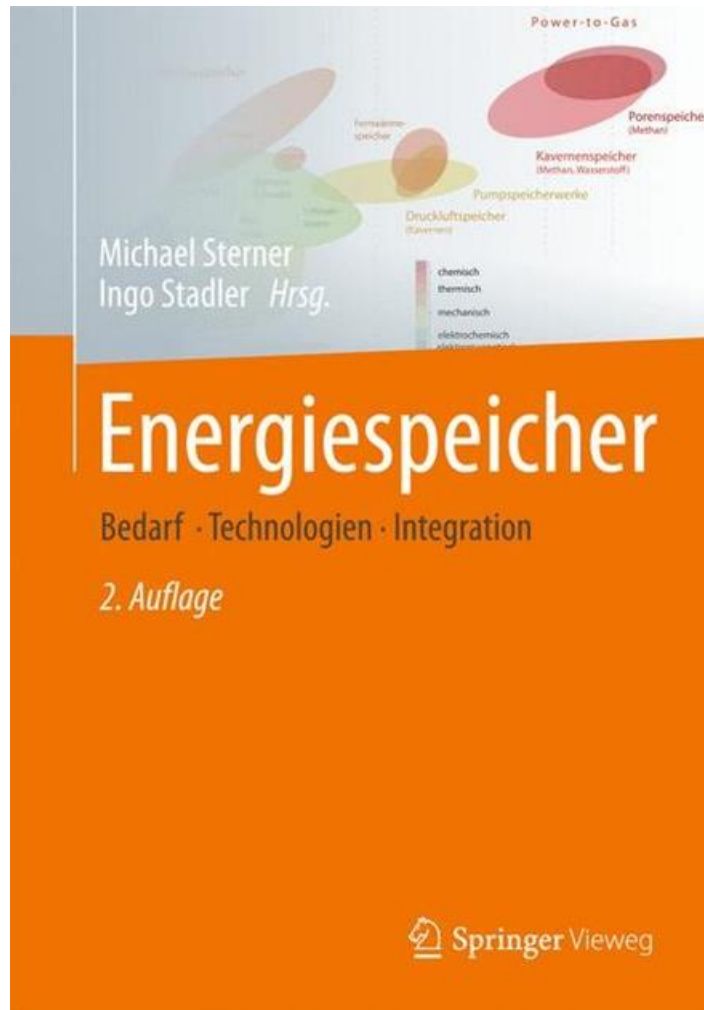
Conservative Energy “expert”:

- ✓ In the 1970ies bearing children was impossible
- ✓ We should wait getting children until 2018ies car generation will have been developed



The Storage Problem is solved!





Looking for Brazilian Publisher

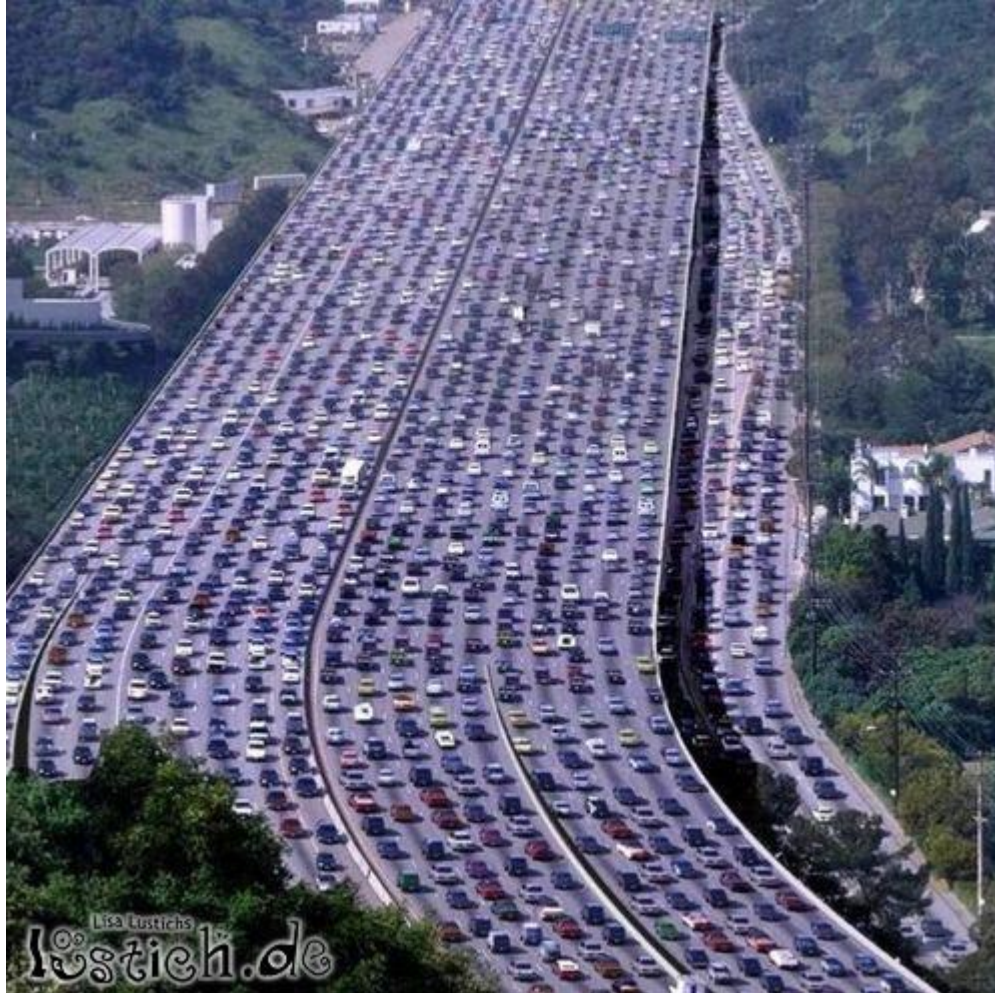
Energy Transition: good but much to



Coupling of Energy Sectors

Energy Storage in Mobility Sector

- ✓ Energy Storage in mobility is a very normal thing – or could you imagine cars coupled to a grid?

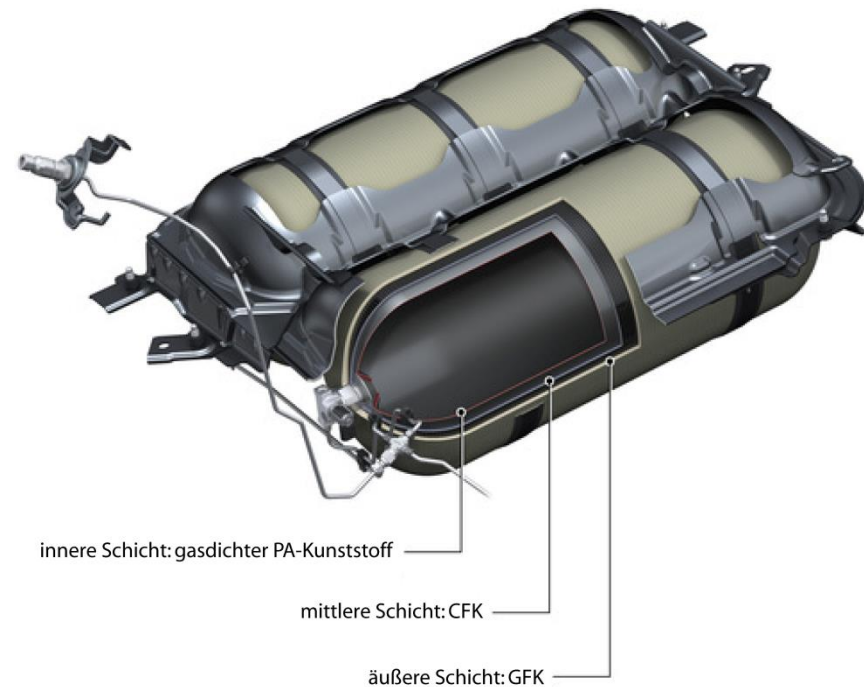


Energy Storage in Mobility Sector

- ✓ Energy Storage in mobility is a very normal thing – or could you imagine cars coupled to a grid?



Quelle: oettle-tuning.de



Energy Storage in Heating Sector

- ✓ Energy Storage in heating is a very normal thing – even when coupled to a district heating grid



- Typical Boiler Room
 - Solar Heating
 - House coupled to a district heating grid



Energy Storage in Heating Sector

- ✓ Energy Storage in gas supply is a very normal thing

Quelle: Nabucco Gas Pipeline International GmbH

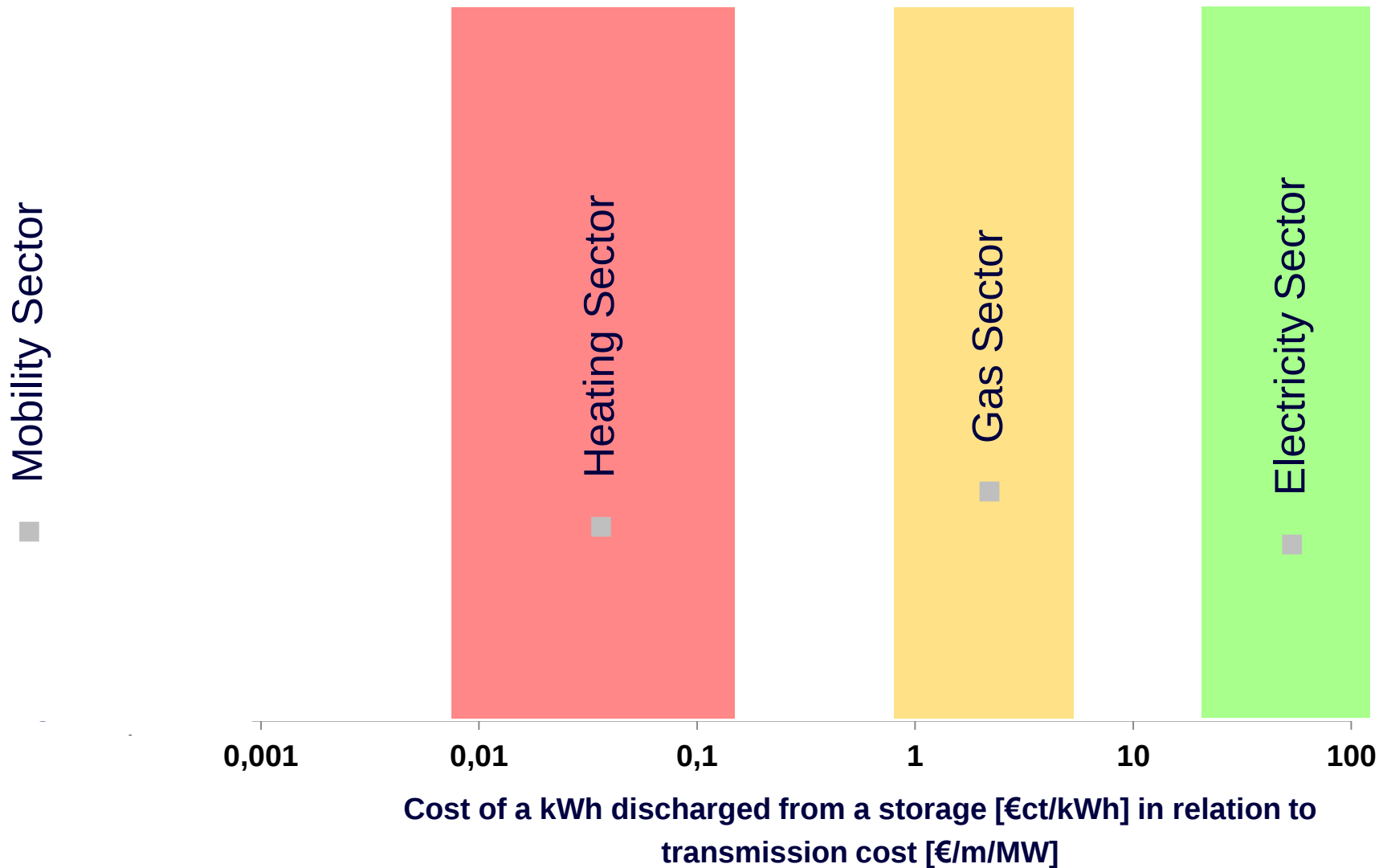


Image courtesy of Nabucco Gas Pipeline International

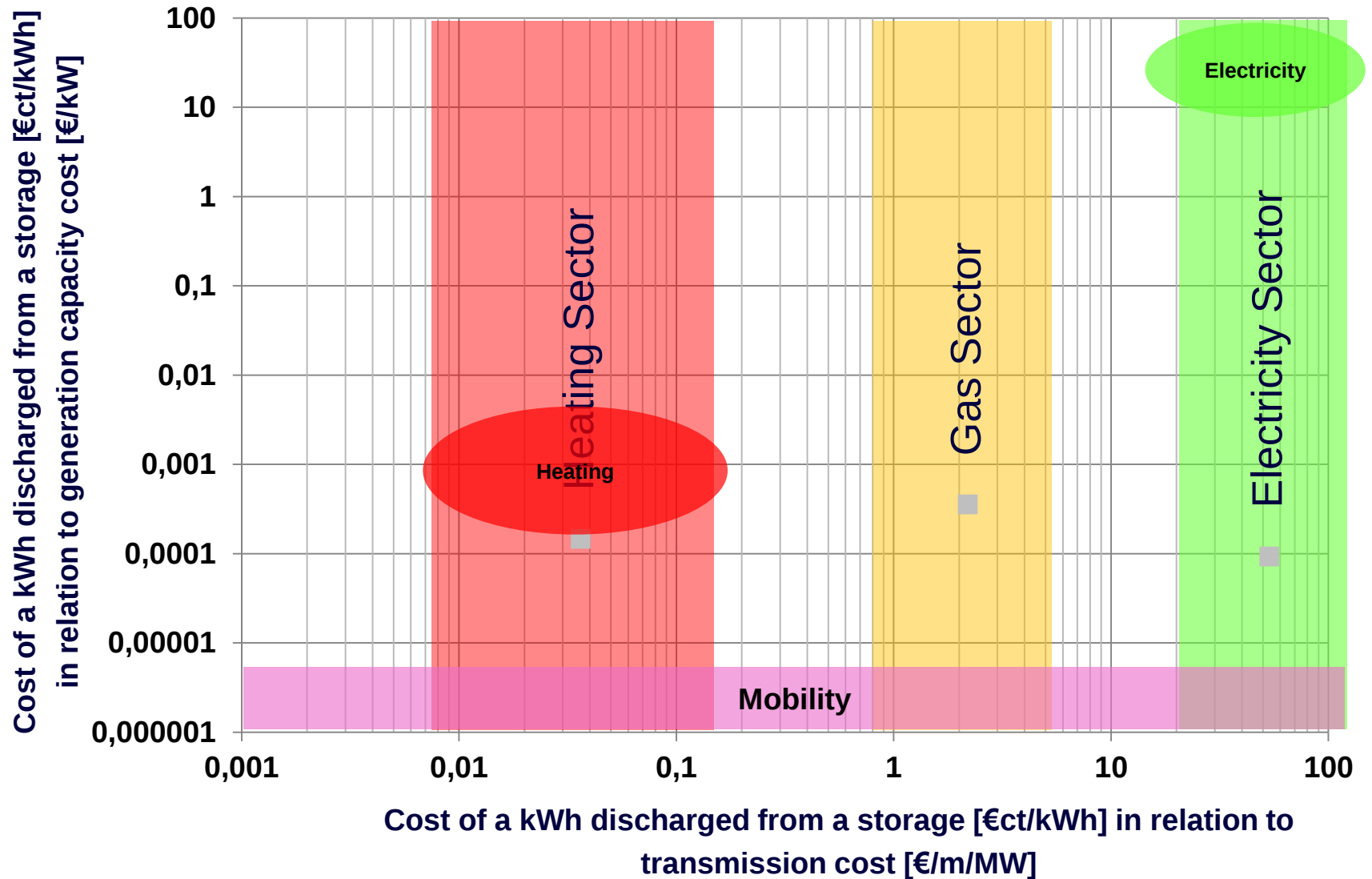


Source: KBB UT

Storage in different Energy Sectors

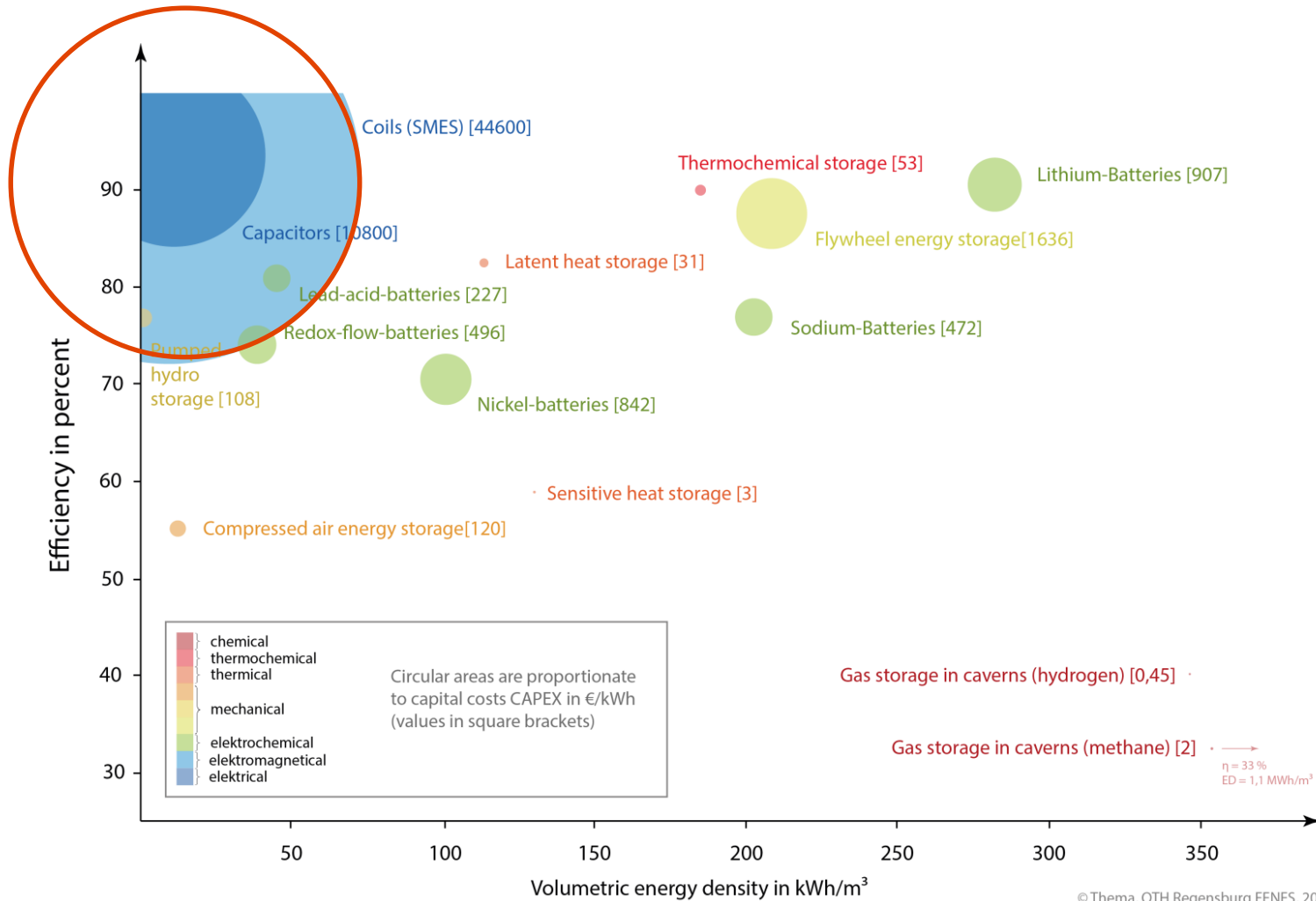


Storage in different Energy Sectors



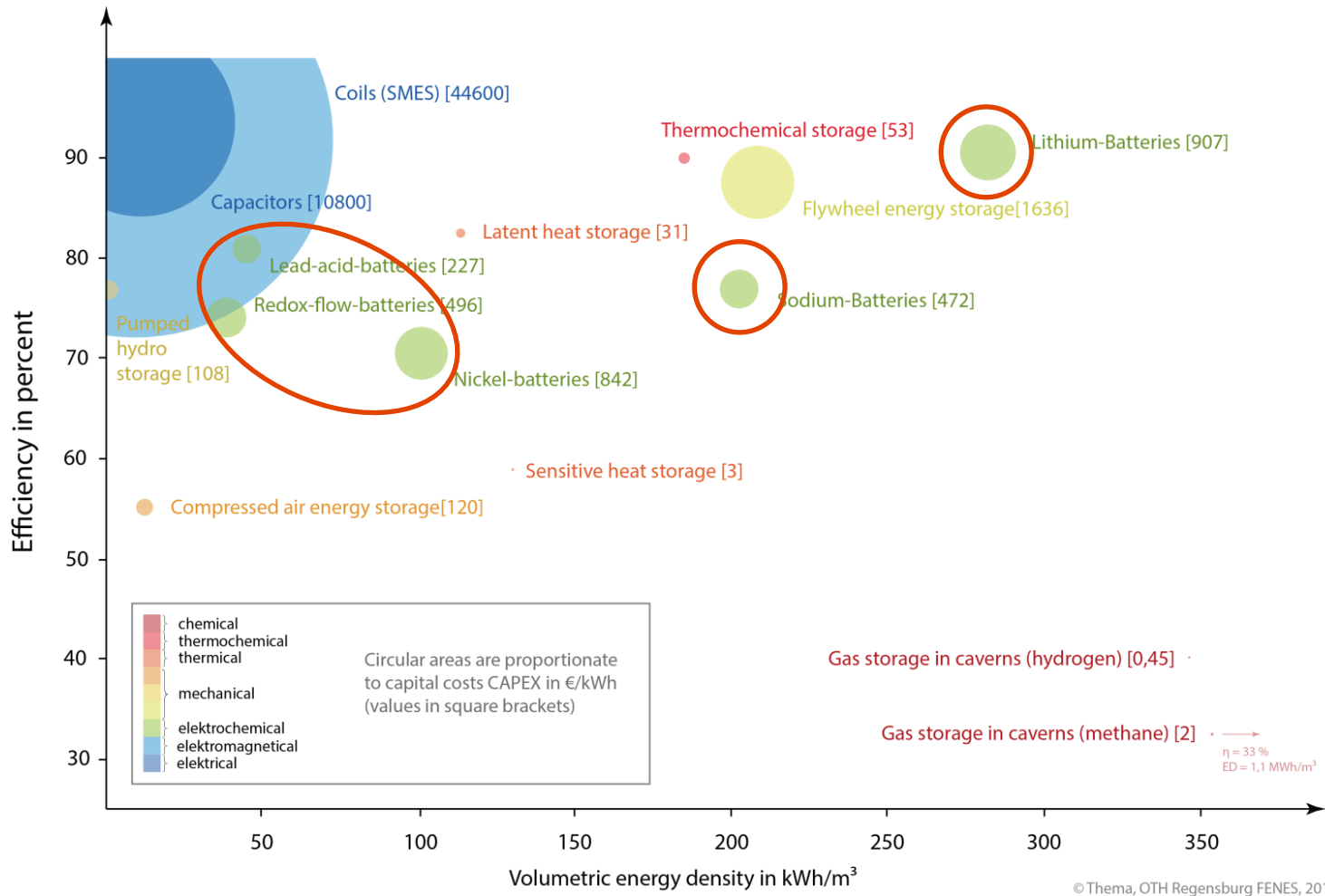
Energy Storage – cost, efficiency, energy density

✓ Electricity Storage



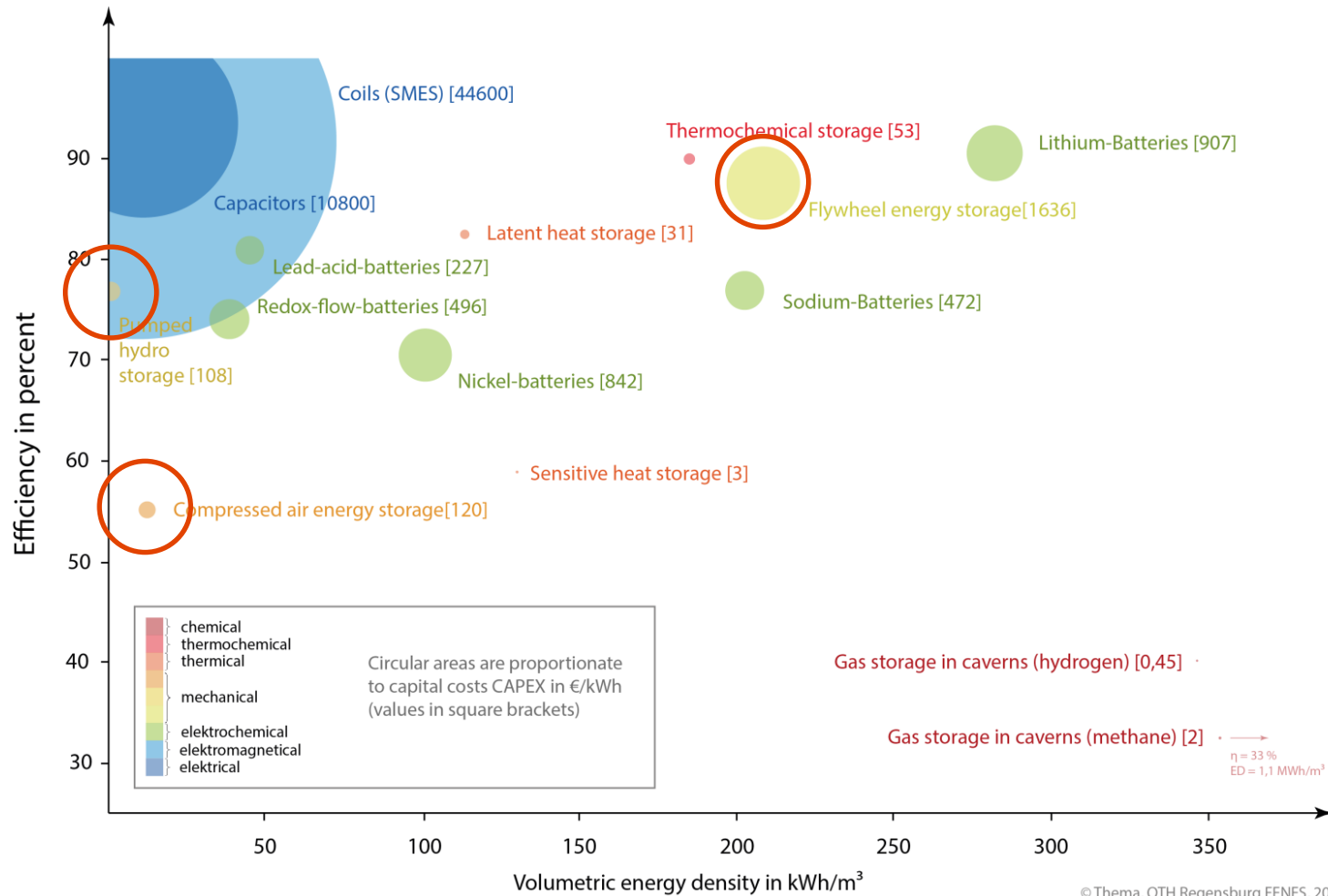
Energy Storage – cost, efficiency, energy density

✓ Electrochemical Energy Storage



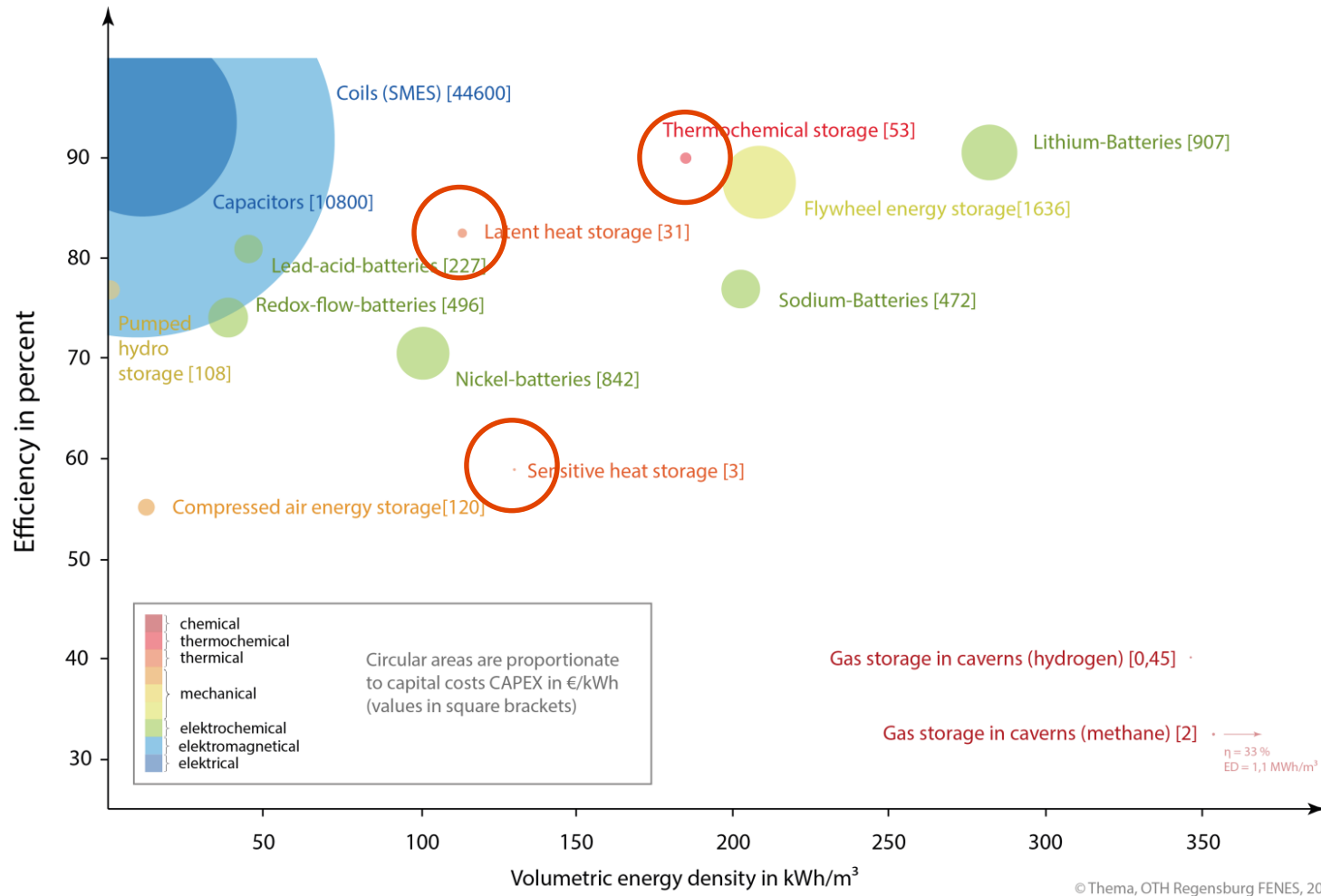
Energy Storage – cost, efficiency, energy density

✓ Mechanical Energy Storage



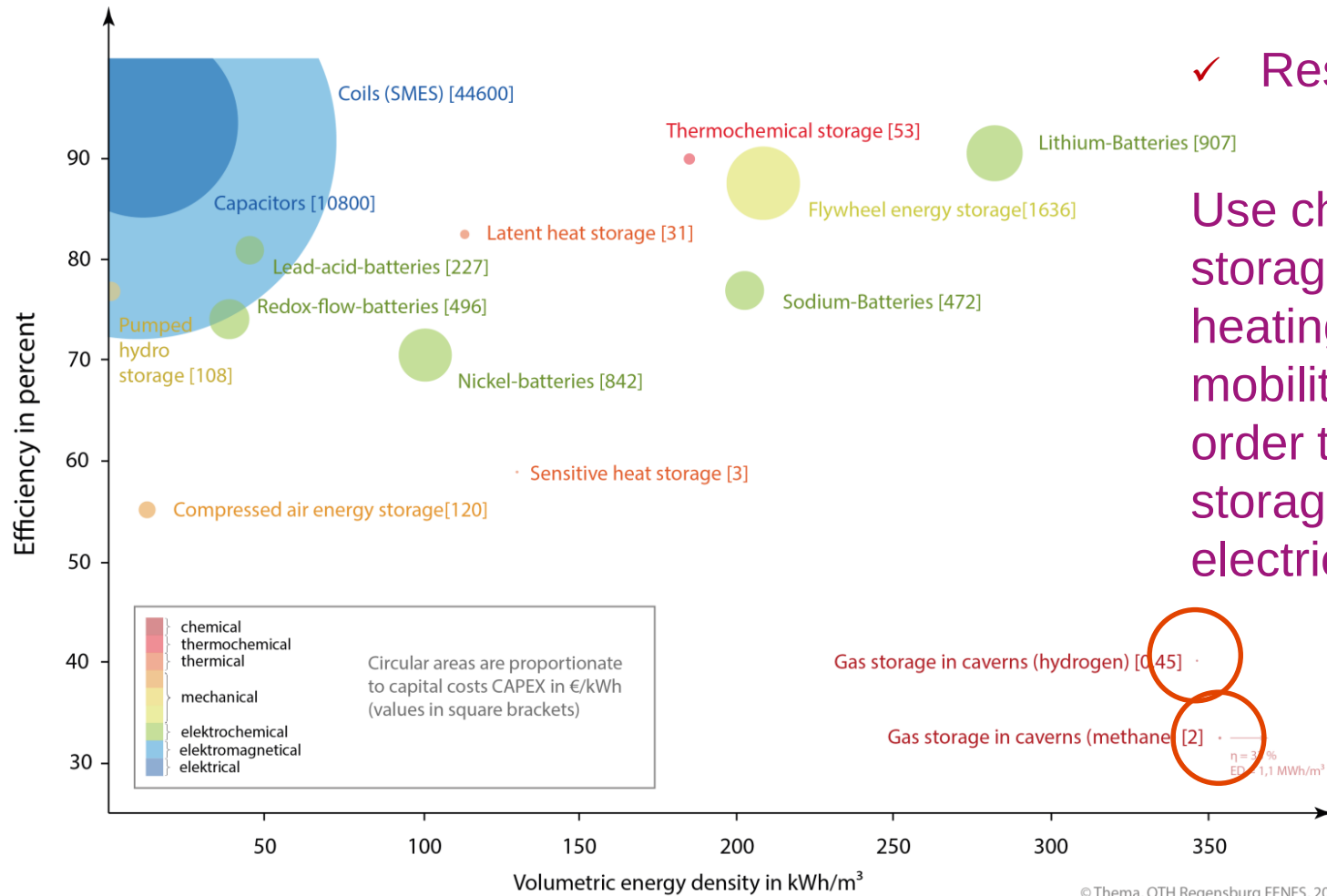
Energy Storage – cost, efficiency, energy density

✓ Thermal Energy Storage



Energy Storage – cost, efficiency, energy density

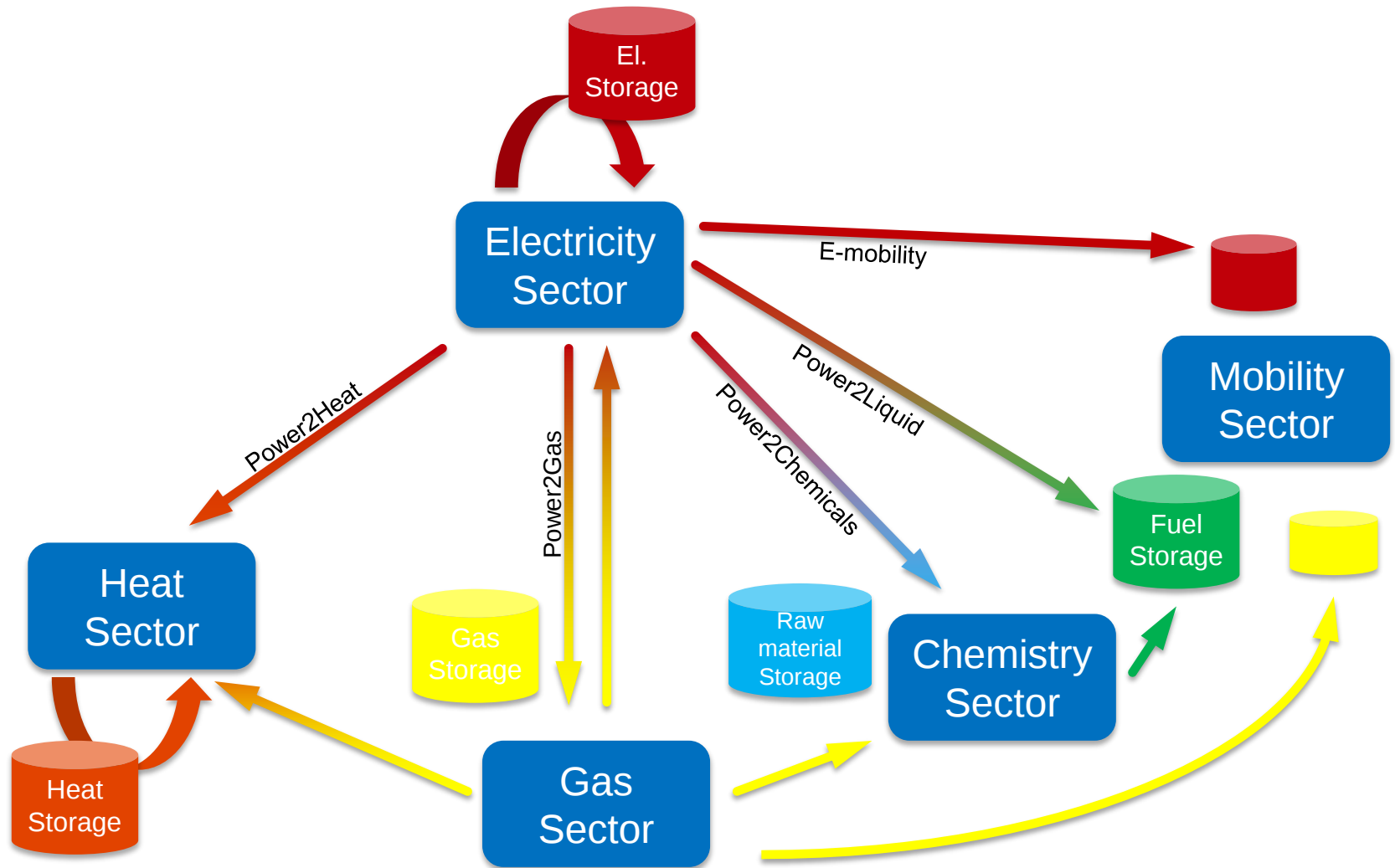
✓ Gas Storage



✓ Resume:

Use cheap storages of heating, gas and mobility sector in order to solve storage tasks in electricity sector

Energy Sector Coupling



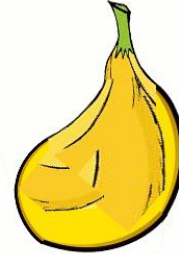
FEAR

to remove man
and woman made
regulation

European Unbundling Regulation



Banapple



Pearana

Generation

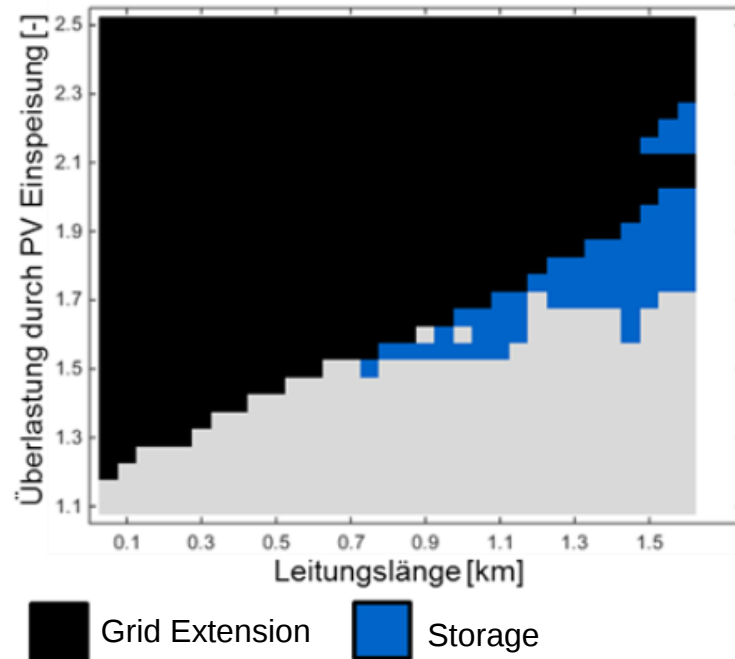
Apples

Pears

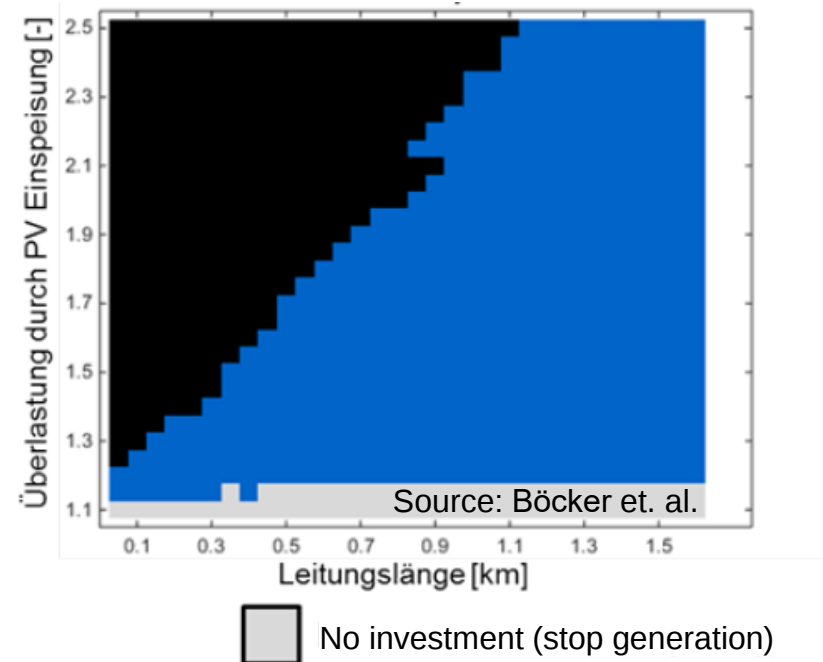
Transmission, Distribution

European Unbundling Regulation

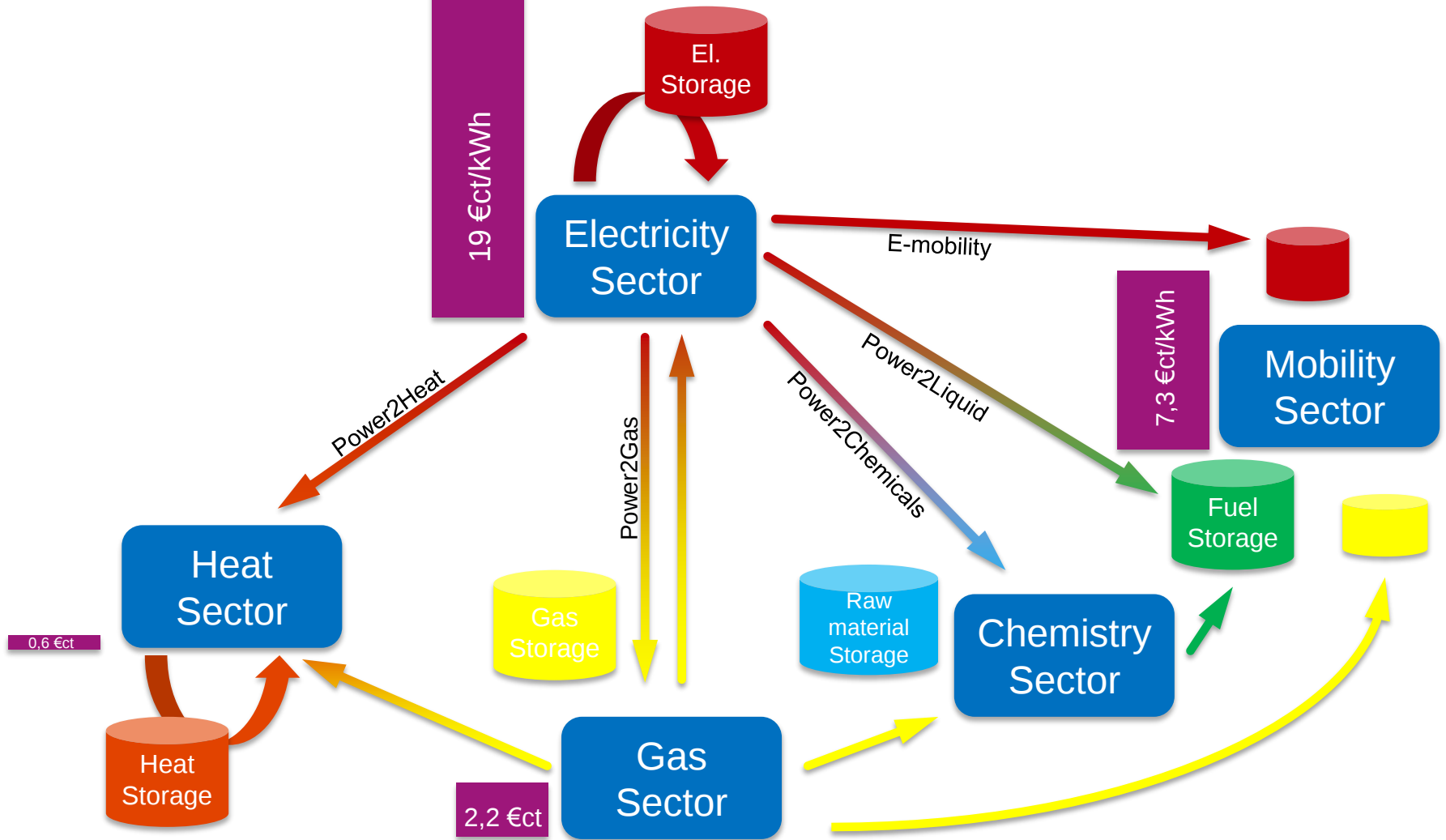
Storage only removing grid bottlenecks



Storage with multi-use



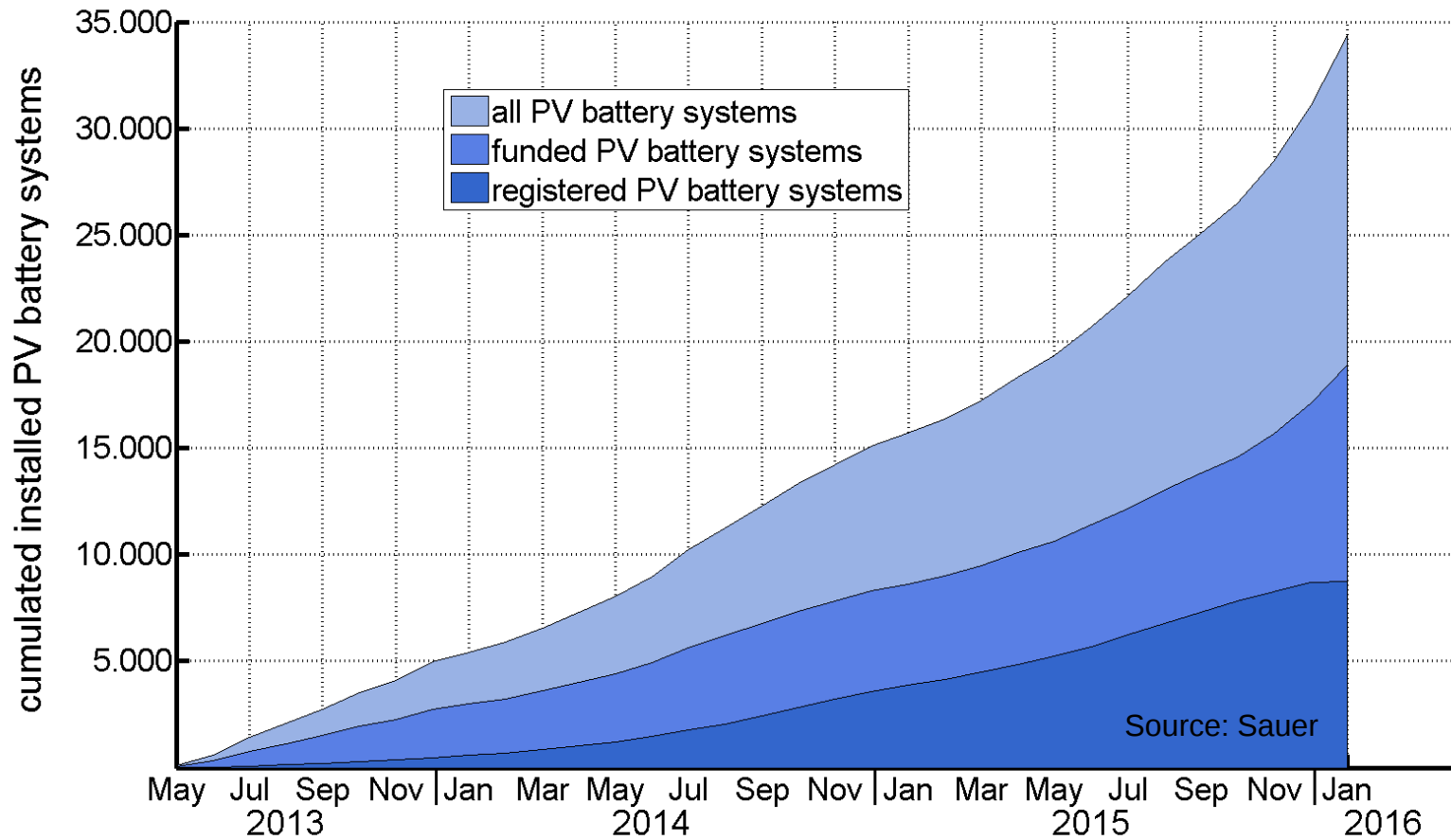
Energy Sector Coupling



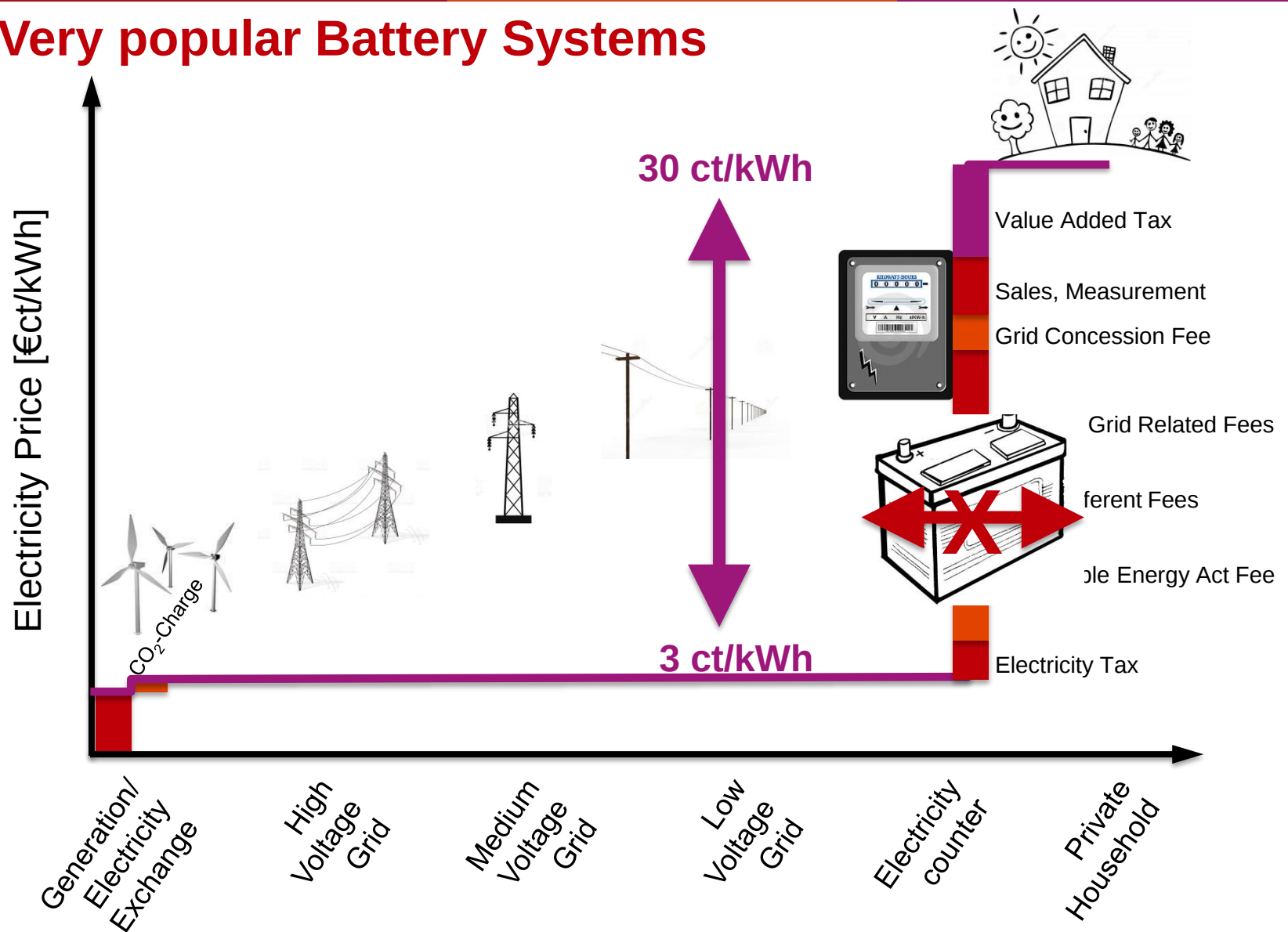


Do you pay VAT on
tomatoes that you
grow on your balcony
before you eat them?

Very popular Battery Systems



Very popular Battery Systems



FEAR

of losses in old

car industry

E-Mobility: Good or Bad?

Energy



$25 \frac{kWh}{100km}$



$70 \frac{kWh}{100km}$

E-Mobility: Good or Bad?

Energy



39,000 kWh in life



109,824 kWh in life

E-Mobility: Good or Bad?

CO₂-Emissions



while driving
19,110 kg CO₂



while driving
29,453 kg CO₂

E-Mobility: Good or Bad?

CO₂-Emissions

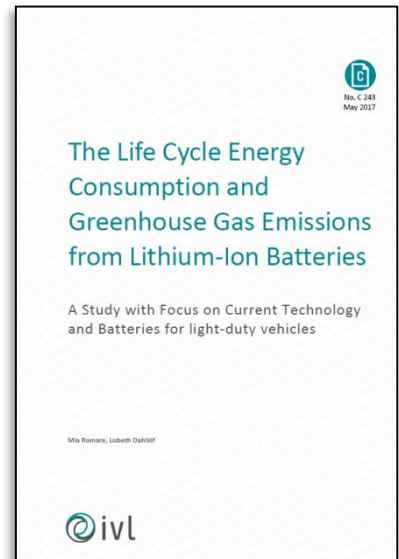


battery man.
17,000 kg CO₂

while driving
19,110 kg CO₂



while driving
29,453 kg CO₂



E-Mobility: Good or Bad?

DEUTSCHLAND & WELT 10. Januar 2018 | 10:36 Uhr

ZUKUNFTSMOBILITÄT

Schwedische Untersuchung: Akkus in Elektroautos belasten das Klima

vom 13. Juni 2017 Aus der Onlineredaktion **shz.de**

Die Schwachstelle von Elektroautos sind die Akkus. Das gilt nun auch in der Klima-Perspektive.

Teilen 3.6k Twittern G+ Teilen 19



Das Klimaschutz-Argument ist auch bei E-Autos unangebracht.

Foto: imago/Felix Jason 1 von 1

wirkaufendeinauto.de

- 9.980€
- 6.852€
- 5.589€
- 8.765€

ONLINE FOCUS ABO

Politik Finanzen Wissen Gesundheit Kultur Panorama Sport Digital Reisen

Special E-Mobility

Nachrichten > Auto > Elektroauto > Elektroauto und CO2: Wirklich umweltfreundlich?

E-Auto-Batterie

Schwedische Studie rechnet vor: CO2-Bilanz eines Elektroautos ist ein Desaster

Gefällt mir Teilen 38

Anzeige **DAZN Live-Streaming**
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[DAZN](#)



Startseite

Teilen

Kommentare

E-Mail

Mehr

E-Mobility: Good or Bad?

CO₂-Emissions



7,000 kg CO ₂	<i>battery man.</i>	<i>while driving</i>
	17,000 kg CO ₂	19,110 kg CO ₂



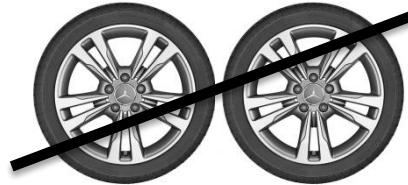
7,000 kg CO ₂	<i>while driving</i>
	29,453 kg CO ₂

Some doubts...

E-Mobility: so much we do not need anymore!



E-Mobility: so much we do not need anymore!



Prof. Dr. habil. Ingo Stadler

Seite: 61

BMW member of board Manfred Schoch: „combustion engine with 8 cylinders is composed of 1200 pieces, an electric motor only of 17 pieces [Source: focus.de]

Technology
Arts Sciences
TH Köln

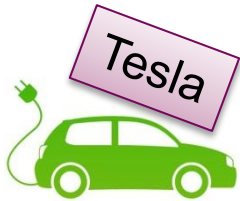
E-Mobility: Car industry fights for employees. Really?



Car industry uses every possibility for rationalization!

E-Mobility: Good or Bad?

CO₂-Emissions



7,000 kg CO ₂	battery man. 17,000 kg CO ₂	while driving 19,110 kg CO ₂
-----------------------------	---	--



7,000 kg CO ₂	while driving 29,453 kg CO ₂	Refinery 9,784 kg CO ₂
-----------------------------	--	---

“You have enough electricity to power all e-cars in the country if you stop refining gasoline”
(Elon Musk)



7,000 kg CO ₂	battery 8,000 kg CO ₂	while driving 23,814 kg CO ₂
-----------------------------	--	--

Most studies calculate with an 50% to 70% fossil share in electricity generation. With renewable electricity everything is not worth a discussion anymore!



7,000 kg CO ₂	while driving 50,976 CO ₂	Refinery 16,934 kg CO ₂
-----------------------------	---	--

E-Mobility: Good or Bad?

We already had this question a while ago...



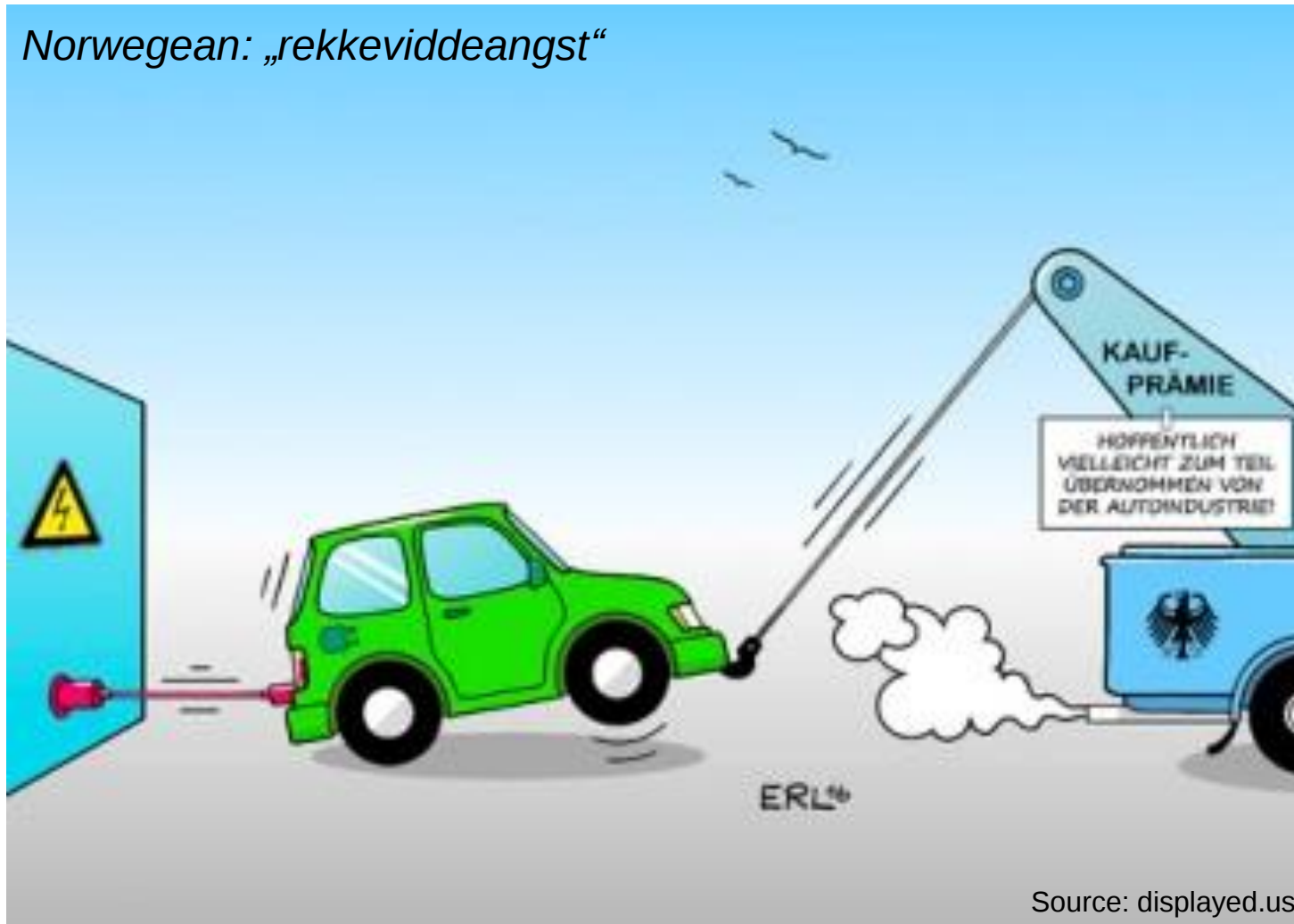
I believe in horses.
The car is only a
temporary
phenomenon

(Kaiser Wilhelm II)



We created a new fear: Reichweiten-Angst

Norwegian: „rekkeviddeangst“



FEAR
of removing old
and climate
hazardous subsidies

Climate hazardous subsidies

✓ 57 Billion €

Lignite: only energy source without subsidies!???



Source: Forum Ökologisch-Soziale Marktwirtschaft (FÖS)





Quelle: Bored-Bug

German

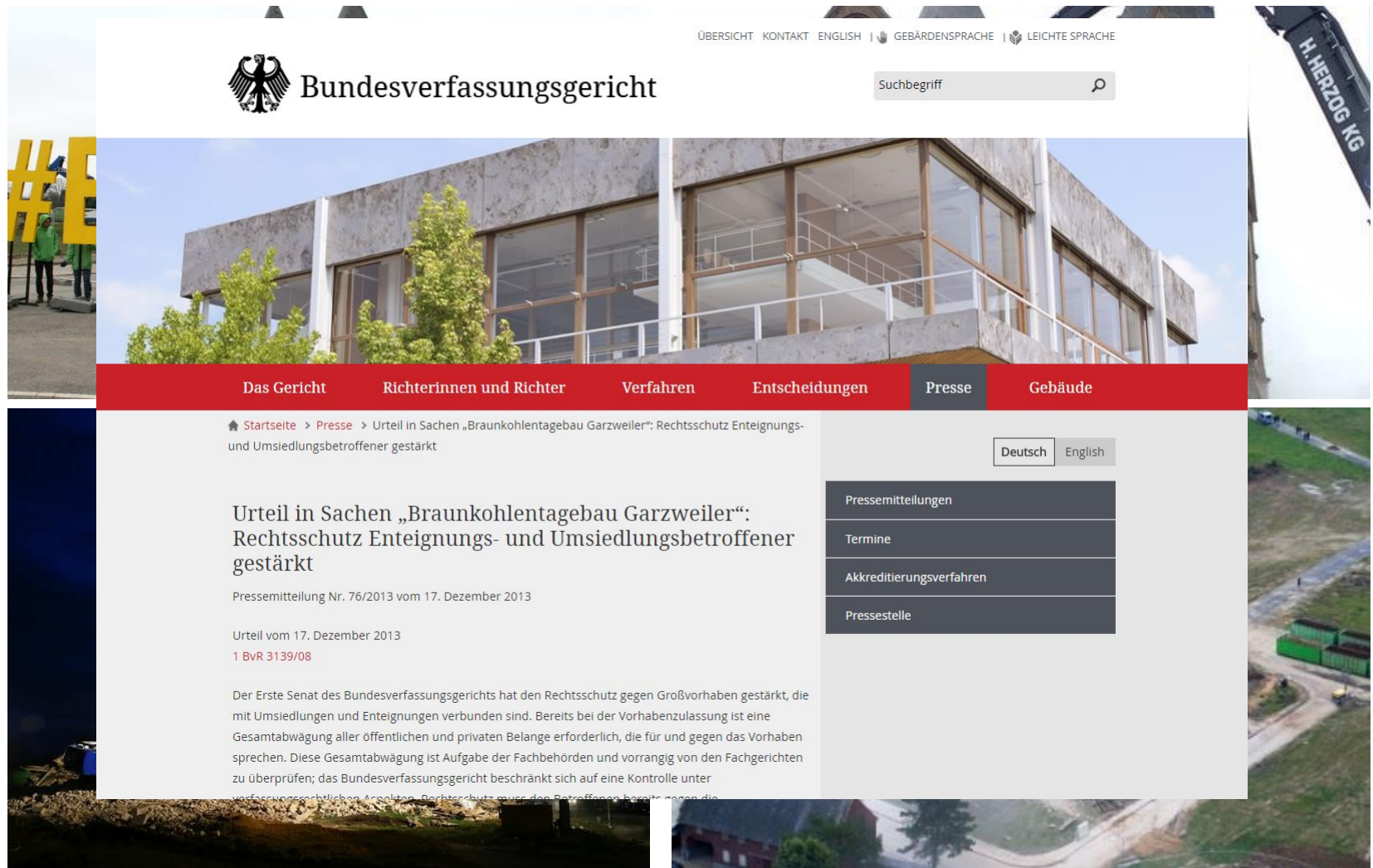
Taliban

Taliban in Afghanistan, Bamiyan



Prof. Dr. habil. Ingo Stadler

Coal Industry in Germany, Dome of Immerath



The screenshot shows the official website of the Bundesverfassungsgericht (German Federal Constitutional Court). The header includes the court's logo and name, navigation links (ÜBERSICHT, KONTAKT, ENGLISH, GEBÄRDENSPRACHE, LEICHTE SPRACHE), and a search bar. A red navigation bar contains links to 'Das Gericht', 'Richterinnen und Richter', 'Verfahren', 'Entscheidungen', 'Presse', and 'Gebäude'. The 'Presse' section is active, displaying a press release titled 'Urteil in Sachen „Braunkohlentagebau Garzweiler“: Rechtsschutz Enteignungs- und Umsiedlungsbetroffener gestärkt'. The release date is 17. Dezember 2013. A sidebar on the right offers language options (Deutsch, English) and links to 'Pressemitteilungen', 'Termine', 'Akkreditierungsverfahren', and 'Pressestelle'. The background of the page features a large image of the court's modern building with a glass facade and concrete structure.

ÜBERSICHT KONTAKT ENGLISH GEBÄRDENSPRACHE LEICHTE SPRACHE

Suchbegriff

Das Gericht Richterinnen und Richter Verfahren Entscheidungen **Presse** Gebäude

Startseite > Presse > Urteil in Sachen „Braunkohlentagebau Garzweiler“: Rechtsschutz Enteignungs- und Umsiedlungsbetroffener gestärkt

Deutsch English

Pressemitteilungen

Termine

Akkreditierungsverfahren

Pressestelle

Urteil in Sachen „Braunkohlentagebau Garzweiler“: Rechtsschutz Enteignungs- und Umsiedlungsbetroffener gestärkt

Pressemitteilung Nr. 76/2013 vom 17. Dezember 2013

Urteil vom 17. Dezember 2013

1 BvR 3139/08

Der Erste Senat des Bundesverfassungsgerichts hat den Rechtsschutz gegen Großvorhaben gestärkt, die mit Umsiedlungen und Enteignungen verbunden sind. Bereits bei der Vorhabenzulassung ist eine Gesamtabwägung aller öffentlichen und privaten Belange erforderlich, die für und gegen das Vorhaben sprechen. Diese Gesamtabwägung ist Aufgabe der Fachbehörden und vorrangig von den Fachgerichten zu überprüfen; das Bundesverfassungsgericht beschränkt sich auf eine Kontrolle unter verfassungsgesetzlichen Ansätzen. Rechtsschutz muss den Betroffenen bereits gegen die

Researchers need to stop walking at the leash of industry and policy



Prof. Dr. habil. Ingo Stadler

Seite: 72



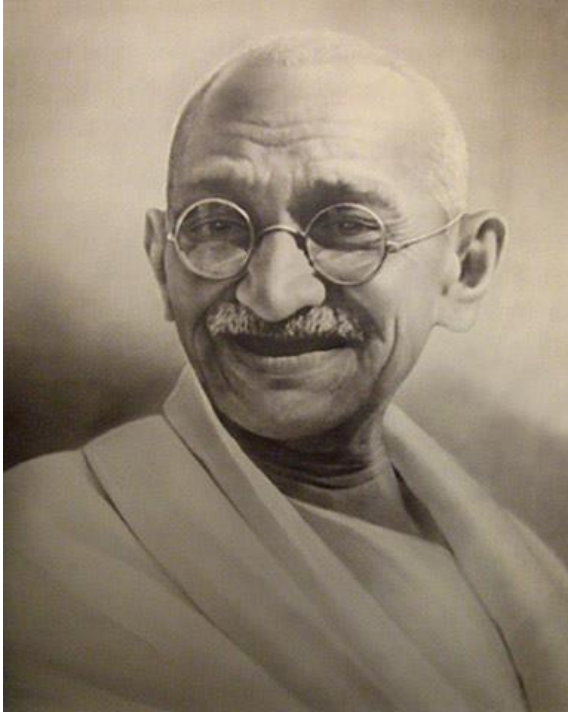
Cologne Institute for
Renewable Energy

Technology
Arts Sciences
TH Köln

Researchers need to involve themselves into the fight



Stages of Change



First they ignore you,
then they laugh at you,
then they fight you,
then you win!

„It Is Not the Strongest of the Species that Survives
But the Most Adaptable.“ [C. Darwin]



Quelle: posterlounge.de