

MÉXICO-ALEMANIA

DIÁLOGOS POR UN FUTURO SUSTENTABLE | TRANSICIÓN ENERGÉTICA HACIA UNA ECONOMÍA DE BAJO CARBONO

La Embajada de Alemania en México y el Centro Mario Molina le invitan a participar en la 10ª edición de los Diálogos por un Futuro Sustentable México-Alemania

Key Messages Transformation of the Energy Sector

Lugar: Hacienda de los Morales, CDMX

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Embajada
de la República Federal de Alemania
Ciudad de México



ALEMANIA
MÉXICO

ALIANZA
PARA EL FUTURO



centro
mario
molina

Miércoles 21 de junio, 2017

Registro: 14:30

Evento y brindis: 15:00-18:30

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Key messages

- Implementation of the Paris Agreement asks for ambitious climate action at global scale
- Main options are improved energy efficiency and shift to renewable energy sources (RES)
- RES-electricity share has been growing recently in many countries and for many reasons
- Transforming the energy system on time can save cost and stimulate the labour market
- Key to success: A regulatory and fiscal framework that stimulates the transition process

Ambitious climate action is needed at global scale



Rio 1992



Kyoto 1997



Copenhagen 2009

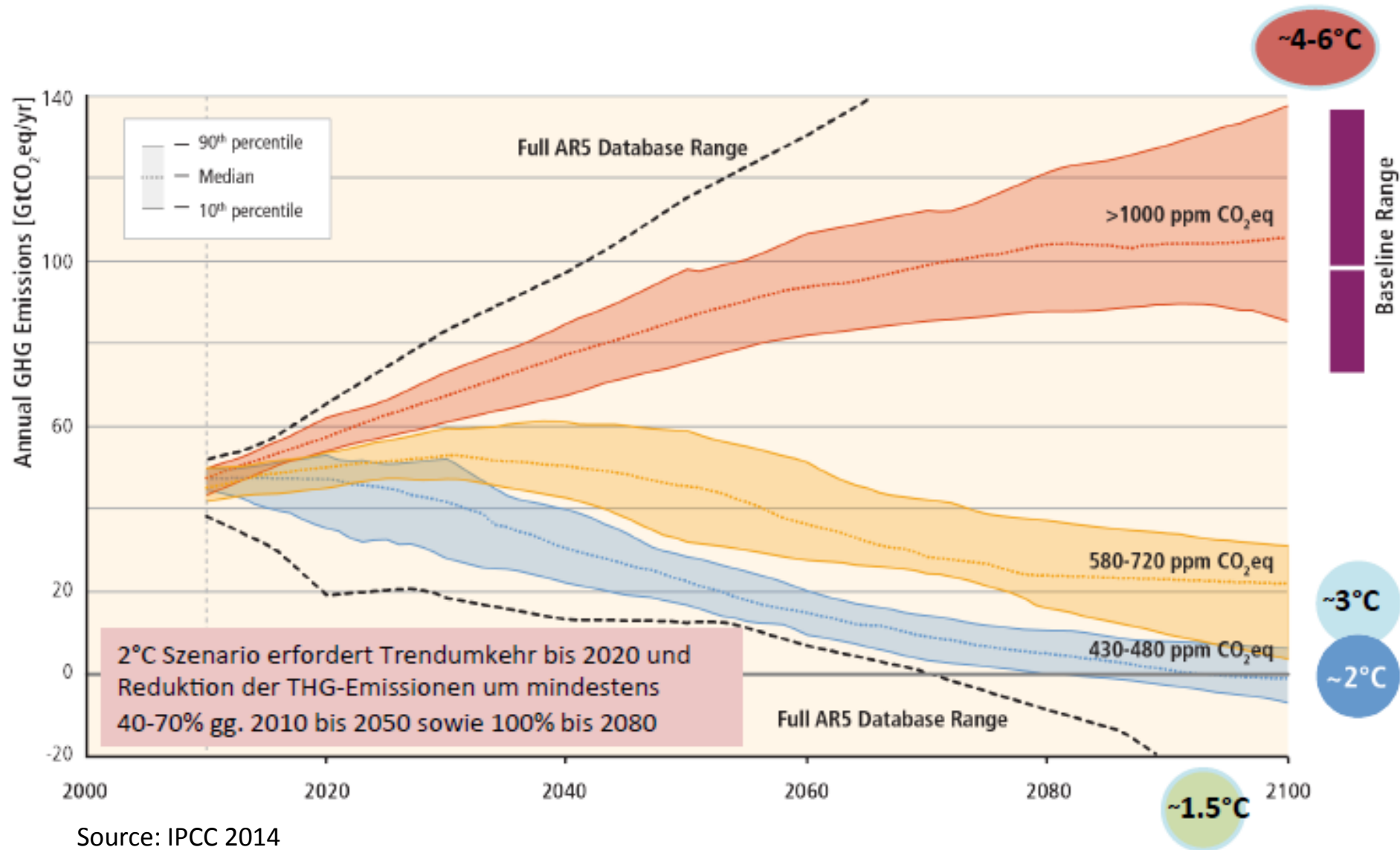


Paris 2015

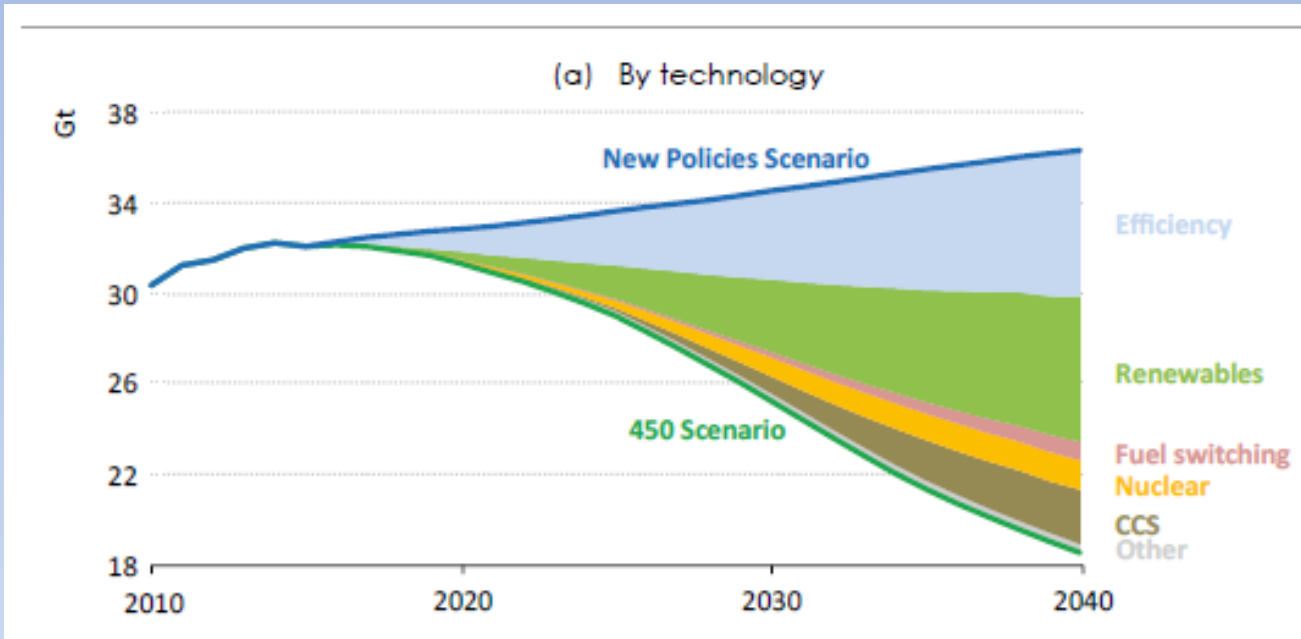


- Aim: Hold the increase in the global average temperature to well below 2 °C (above pre-industrial levels)
- IPCC: Achieving this goal needs a decarbonization of the energy sector (phase out of fossil fuels)
- 195 countries agreed to contribute through ambitious emission cuts (NDCs) in order to achieve this goal
- Share in global GHG: Germany 2.56%, Mexico 1.70%

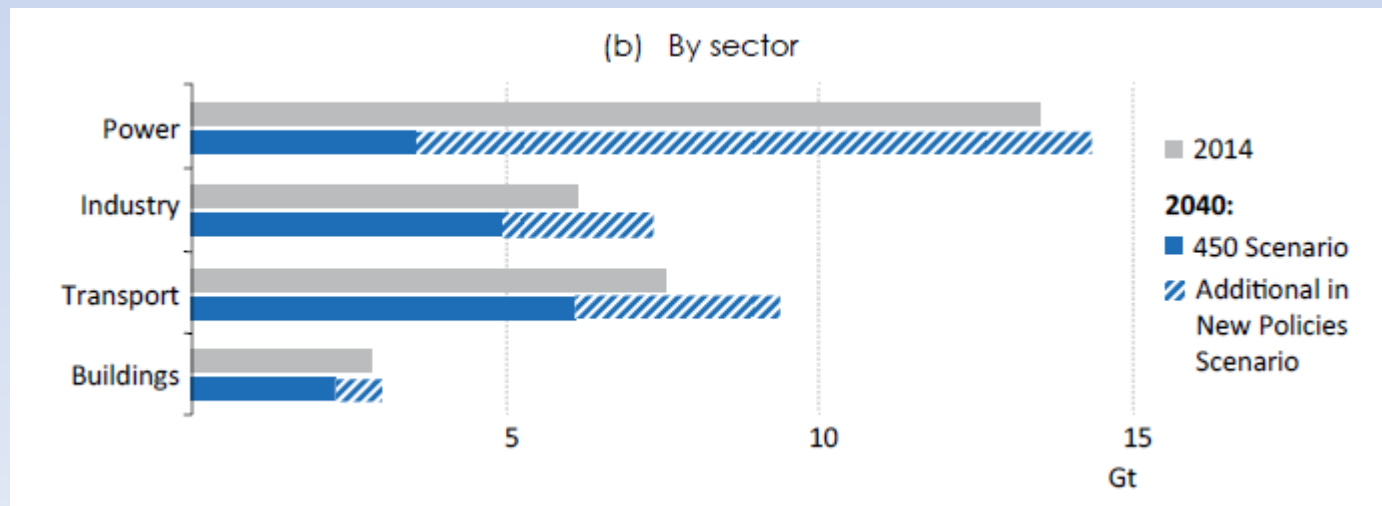
Ambitious climate action is needed at global scale



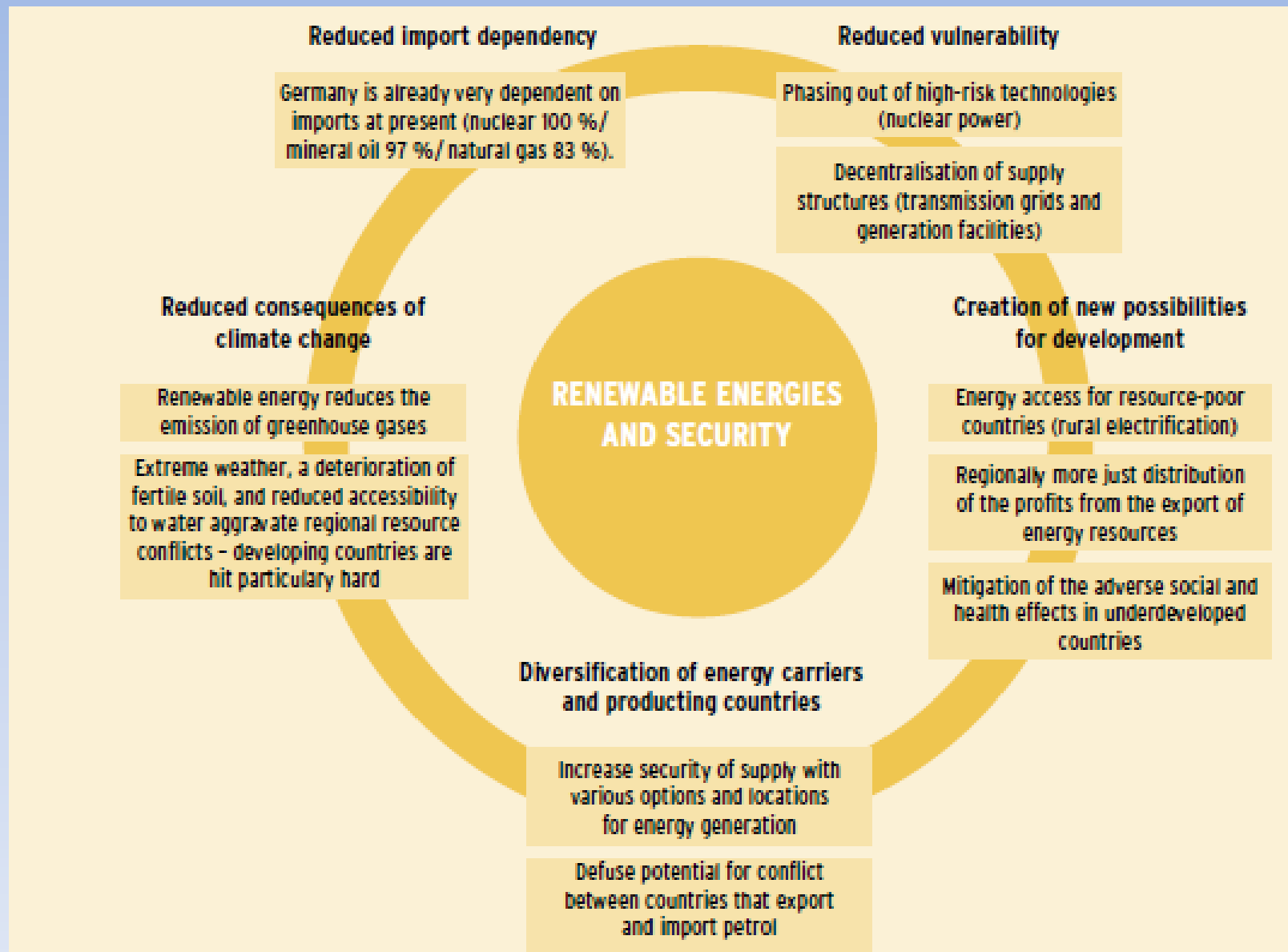
Main options are energy efficiency and renewable energy sources



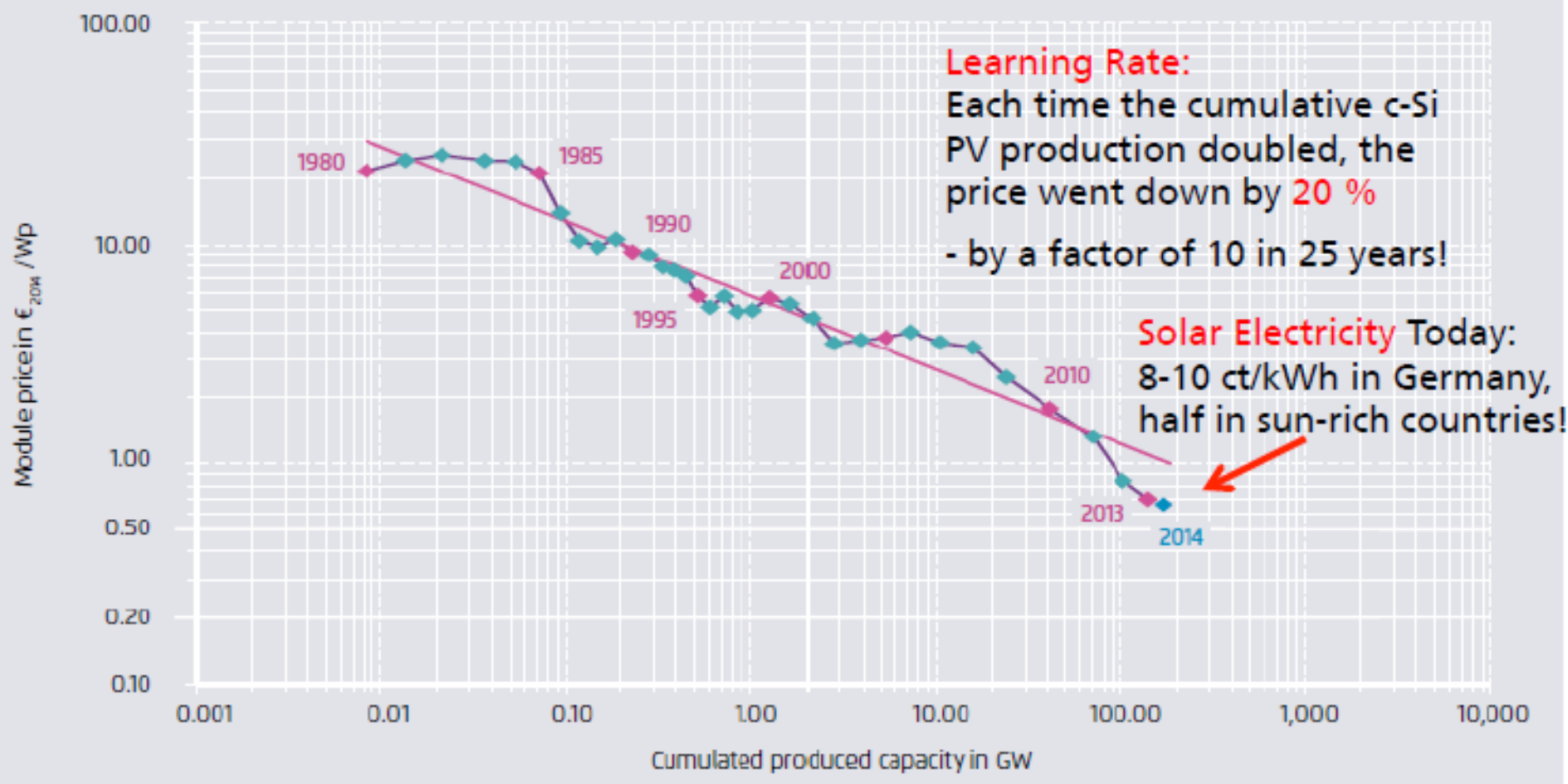
450 ppm CO₂ Scenario



Energy security and renewable energies



Falling cost of renewable energies



Source: Navigant Consulting; EUPD PV module prices (since 2006), Graph: ISE 2014

Solar PV Stuns in Mexico's First Clean Energy Auction 2016: 1,860MW won at 5 ct per kWh

Transforming the energy system on time can save cost and stimulate the labour market

ported 16

Dubai Confirms 800 MW
Expansion Brazil P...
Power


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September 18, 2014 5:02 am

US solar and wind start to outshine gas

By Ed Crookes in New York Author alerts



Large wind farms and solar plants are now cost-competitive with gas-fired power in many parts of the US even without subsidy, according to Lazard, raising the prospect of a fundamental shift in the country's energy market.

Costs have fallen and efficiency has risen for solar panels and wind turbines, the investment bank found, to the point that in areas of strong wind or sunshine they can provide electricity more cheaply than fossil fuel plants.

The falling cost of renewable power will encourage greater investment by generators and utilities, and could help ease public concerns about the cost of federal and state regulations intended to support alternative energy and cut carbon dioxide emissions.

George Bilicic, global head of power, energy & infrastructure, Lazard, said: "We used to say some day solar and wind power would be competitive with conventional generation. Well, now it is some day."

~~... worth of projects~~
~~... of day, pun intended) came~~
fossil fuels or nuclear can offer.

Policy implications for the electricity sector

- RMI 2014: Avoid grid defection through proactive regulation
- Carbon Trust 2016: Align incentives and remove barriers, monetize system benefits, reduce policy uncertainty, engage broad stakeholder in adapting market structures, define standards for performance and operation of storage
- ACORE 2016: A variety of ESS rises „behind the meter“ (backup power, demand shifting/charge management, solar self-consumption, fast-charging of EVs) -> aggregate to provide additional value as capacity or grid resources

-> Grid regulators need to (re-)act now!

Key to success: A regulatory and fiscal framework that stimulates the energy transition

POSSIBLE TRAJECTORIES FOR ELECTRICITY GRID EVOLUTION

PATH 1 INTEGRATED GRID

One path leads to grid-optimized smart solar, transactive solar-plus-battery systems, and ultimately, an integrated, optimized grid in which customer-sited DERs such as solar PV and batteries contribute value and services alongside traditional grid assets.

Pricing & Rate Reform
New Business Models
New Regulatory Models

• EXPORT COMP. (NEM, FIT, VoST) • TOU PRICING • LOCAL HOT SPOTS • ATTRIBUTE-BASED PRICING
• NRG • E.ON • RWE • ConEd BQDM
• PERFORMANCE-BASED REGULATION • NY REV • CA MORE THAN SMART • ENERGIEWENDE



Solar PV and batteries play an important role in the future electricity grid, but decisions made today will encourage vastly different outcomes.



PATH 2 GRID DEFECTION

Another path favors non-exporting solar PV, behind-the-meter solar-plus-battery systems, and ultimately, actual grid defection resulting in an overbuilt system with excess sunk capital and stranded assets on both sides of the meter.

• NO EXPORT PRICING • FIXED CHARGES
• CENTRAL GENERATION • VERTICALLY INTEGRATED UTILITIES
• COST-OF-SERVICE REGULATION • STRANDED ASSETS

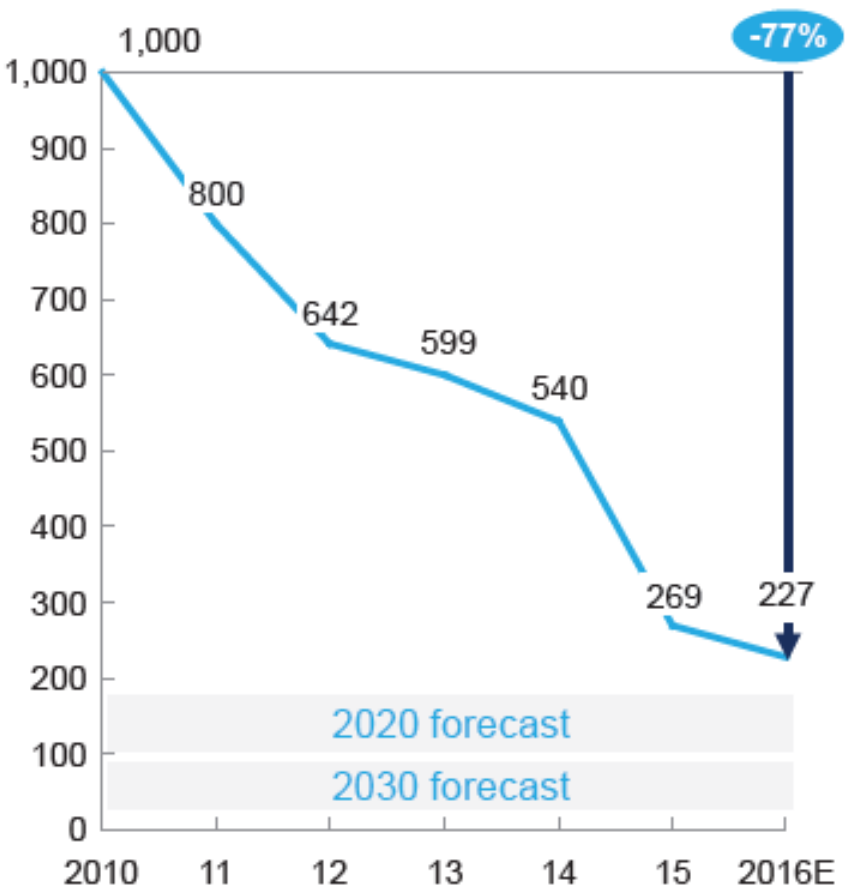
GRID DEFECTION

Source: Rocky Mountain Institute

Rapid decreases in battery prices have helped accelerate EV sales, especially in Europe and China

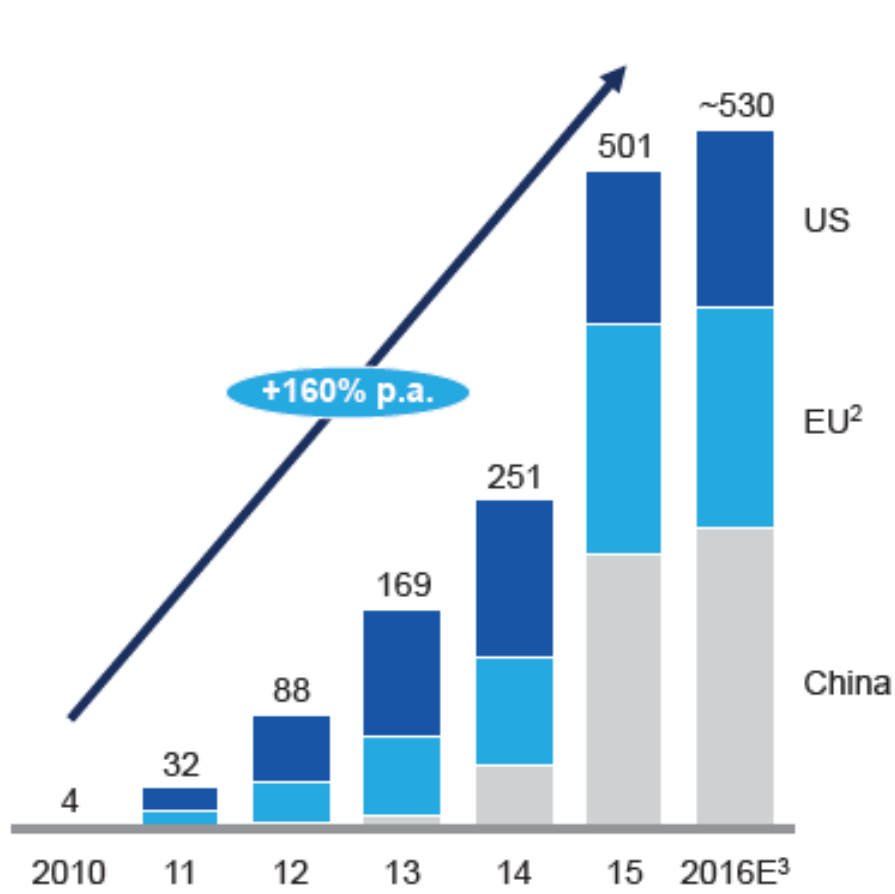
Average battery pack price

\$ per kWh



US, EU, and China electric vehicle sales¹

Units, thousands



¹ Plug-in hybrid electric vehicles and battery electric vehicles; excludes low-speed vehicles and hybrid electric vehicles without a plug

² Includes Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, and the UK

³ Extrapolated based on Q1-Q3 2016 IHS data and assuming continued growth in all three markets in Q4

SOURCE: IHS, Bloomberg, New Energy Finance

Automotive industry megatrends are self-reinforcing and will likely accelerate the transition to e-mobility in the long term

Examples of potential EV reinforcement points from other automotive megatrends

A Autonomous

- EV vehicle architecture has a central control unit to facilitate autonomy
- Autonomous charging could add convenience



C onnected

- A connected EV ecosystem could increase the convenience of charging
- Connected car grid solutions could enable cost-effective load balancing



Automotive industry megatrends

S hared

- Greater annual driving distances can offer a decisive TCO edge for EVs
- Some consumers may prefer access to multiple vehicle types over ownership (including EVs)



E lectrified

- Tightening emissions efficiency rules make EVs necessary to meet standards
- Lower battery costs improve EV economics





IRENA Report Shows Renewables Are Gaining Ground in Nearly Every Measure

IRENA Membership



Events

IRENA event on 'Battery storage cost and market outlook 2030'
15 – 16 March 2017
Düsseldorf, Germany

Berlin Energy Transition Dialogue
20 – 23 March 2017
Berlin, Germany

Kick-off Meeting for RRA Mali
3 – 6 April 2017
Bamako, Mali

[More Events](#)