



**A2EP – 2xEP Energy Productivity Summit**  
**04-05 April, 2017**  
**Australian National Maritime Museum**  
**Darling Harbour, Sydney**

**Session 01**

**The 2xEP imperative: Why? How?**

Benoit Lebot

Denise Swink

*Christoph Spesshardt > Presentation follows*

Peter Burn

*Chair: Jonathan Jutsen*



*Doing more. Using less.*

# Energy Efficiency

## Why and how we must do it

A2EP – 2xEP Energy Productivity Summit

Sydney, 4<sup>th</sup> /5<sup>th</sup> April 2017

Introducing DENEFF > The World's First Fuel > A Growing Global Market > A Public Affairs Perspective > Instruments in Germany

# GUTEN MORGEN!\*

\*G'day!



# WHO?



# Christoph von Spesshardt



# Public Affairs & Strategy for Knauf Group

- Knauf Insulation is one of the world's leading insulation manufacturers and is part of the Knauf Group of companies, a family owned global building material business established in 1932.
- Operating in 35 countries with over 40 manufacturing plants, Knauf Insulation are specialists in insulation manufacturing and research and development; providing advanced energy efficiency solutions for buildings around the world.



# Introducing DENEFF:

## The German Industry Initiative for Energy Efficiency

### Background

- **Founded in November 2010** by 10 front-running companies and with support by Rainer Brüderle, the then German Minister of Economics
- **First general meeting in February 2011**, with more than 40 companies and Dr Norbert Röttgen, the then Minister of the Environment, as keynote speaker

### Members

- **More than 140 member companies**, ranging from SMEs to MNCs, many of which are **market leaders** in providing energy efficiency solutions across a broad range of industries
- **An advisory board of over 40 energy efficiency experts**, including scientists, consultants, representatives of civil society, and ~10 MPs/MEPs

### Goals

- **Accelerate the market development** of energy efficiency products and services
- **Improve market conditions**, including political regulation
- **Spark jobs, investments and technological advancement** in Germany, Europe and beyond

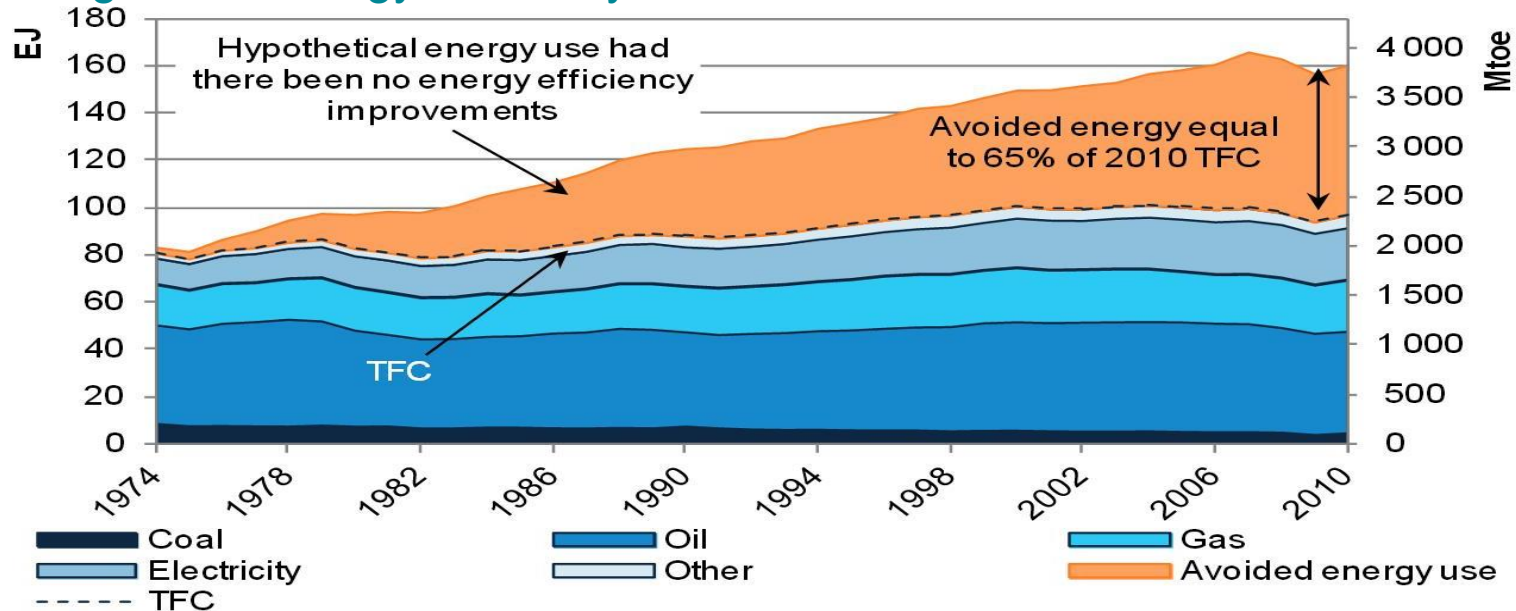


# WHY?



“If energy efficiency is the world’s first fuel – you need to fuel energy efficiency first!” - Benoit Lebot, IPEEC

## Current energy consumption would be 65% higher without gains in energy efficiency

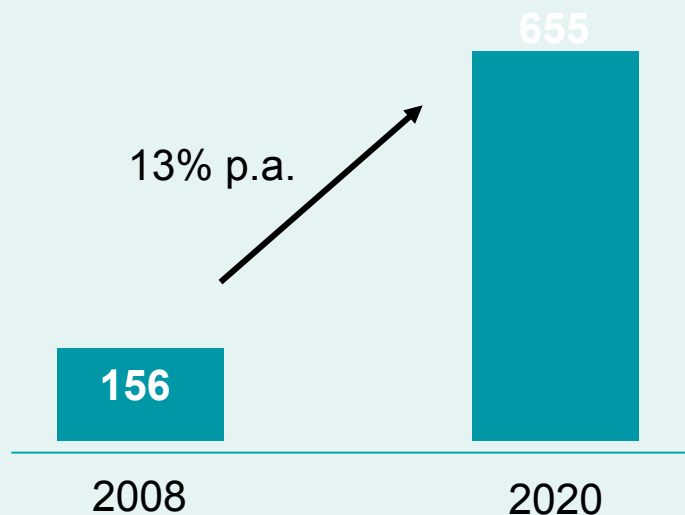


Source: IEA indicators database



# Energy Efficiency: A Growing Global Market

Global market potential for selected sectors<sup>1</sup> (billion Euro)



- Size of global energy efficiency in 2008  
**~160 billion Euro**
- At an average growth rate of 13 % p.a. the market potential will reach **~655 billion Euro by 2020**
- Significant CO<sub>2</sub> abatement potential at a **negative cost**: e.g. 90% of the total saving potential in the German building sector (~72 MtCO<sub>2</sub>e)<sup>2</sup>

<sup>1</sup> McKinsey (2009): Wettbewerbsfaktor Energie

<sup>2</sup> BDI/McKinsey (2007): Kosten und Potenziale der Vermeidung von Treibhausgasemissionen ...

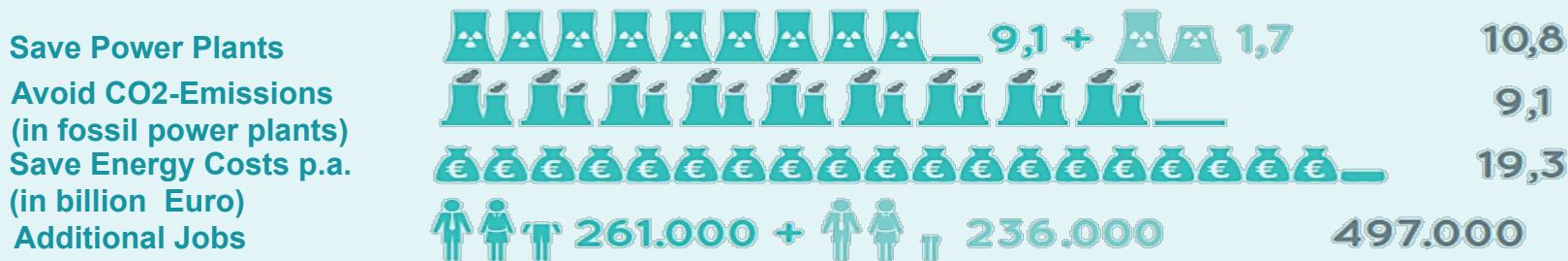


# Energy Efficiency: The German “Energiewende”

## The cleanest, safest, cheapest, readily-available energy resource

- **Capacity to save more than 10 power plants by 2020 (68.3 TWh p.a.)**
- **Easy to implement policy measures** to save 14% of final energy consumption by 2020 (excl. traffic, conversion and transmission)
- **Reduced system costs** (e.g. avoided grid and storage capacities) support the integration of renewable energy sources
- **Potential to reduce emissions equivalent to the emission of 9 fossil fuel power plants (40 MtCO<sub>2</sub>e p.a.\*)**

## Total benefits of DENEFF 10-points-immediate-action-programme



Source: Wuppertal Institut / Deutsche Unternehmensinitiative Energieeffizienz e.V.

\* Assuming 595 g CO<sub>2</sub>/KWh for the electricity sector (UBA 2015)



# 5 theses on EE

- ① Energy Efficiency is micro-economically feasible and macro-economically, socially and ecologically reasonable
- ② But: Energy Efficiency does not happen by itself due to policy and market biases
- ③ Therefore EE businesses are responsible for enabling the „Effizienzwende“ in their own interest
- ④ To get there uniting forces and telling the „big story“ is more promising than lobbying own individual interests
- ⑤ A2EP in Australia, EU-ASE in Europe and DENEFF in Germany are good examples of how joint business activity can create a success story



# HOW?



# Energy Efficiency: Potential Policy Instruments

## An Overview of the National Action Plan on Energy Efficiency

Measure	Forecast savings by 2020	
	PEC in PJ	GHG in million tonnes of CO <sub>2</sub> -e
<b>Short-term NAPE measures</b>		
Quality assurance and optimising existing energy consulting	4.0	0.2
Granting tax incentives for energy efficiency renovations*	40.0	2.1
Upgrading the CO <sub>2</sub> Building Renovation Programme	12.5	0.7
Introduction of a competitive tendering scheme	26 – 51.5	1.5 – 3.1
Funding for energy performance contracting (including default guarantees)	5.5–10	0.3–0.5
Upgrading KfW energy efficiency programmes	29.5	2.0
Energy Efficiency Networks Initiative	74.5	5.0
Top Runner Strategy – at national and EU level	85.0	5.1
Energy audit obligation for non-SMEs	50.5	3.4
National energy efficiency label for old heating installations	10.0	0.7
Additional short-term measures in NAPE	about 10	about 0.5
<b>Total for short-term measures</b>	<b>350 – 380</b>	<b>21.5 – 23.3</b>

Source: NAPE (2014)

\* Currently on hold



# Energy Efficiency: Most Promising Instruments

Instruments			Potential	
1	<b>Tax incentives for energy efficiency renovations</b>	<i>Currently on hold in Germany</i>	2.1	million t of CO2-e
2	<b>Competitive tendering scheme</b>	<i>Focus on electricity, potential to expand to heating sector</i>	3.1	million t of CO2-e
3	<b>Energy Efficiency Networks</b>	<i>Inspired by Energy Model Zürich</i>	5.0	million t of CO2-e
4	<b>Energy audits for non-SMEs</b>	<i>Bridging information asymmetries</i>	3.4	million t of CO2-e
5	<b>Financial Tools (e.g. effin project)</b>	<i>Not included in the NAPE</i>	<b>Unlock bottleneck for private capital</b>	
<b>Aggregate potential to save more than</b>			13.6	million t of CO2-e



# New Green Book discusses additional political options to close the gap and stimulate EE market

## Green Book Energy Efficiency



### Questions

- How to put „energy efficiency first“?
- Need for an EE-act to set a level playing field and binding targets?
- Additional Instruments: flexi-tax, obligations?
- Role of EU-instruments?
- How to vitalize the ESCO market?
- Role of digitalization?

### DENEFF's key comments:



# Deep dive buildings: German building stock

-> 40 mln residential units – the largest housing stock in Europe

-> Political goal: Almost climate-neutral building stock by 2050

## **(Semi-) detached**



**15.4 mln  
bldgs.**

## **Multi-family**



**3.2 mln  
bldgs.**

## **Commercial**



**~2 mln  
bldgs.**

70% built before 1979

75% not or only partially refurbished for energy efficiency

75% owner-occupied or rented out by small-scale landlords

**55% of households rent!**

**50% of housing stock up for refurbishment in next 20 years!**

*Sources: Federal Ministry of Transport, Building and Urban Development, BBSR dena, Foundation New Responsibility*



# Building energy efficiency policy in Germany

-> Germany uses a mix of requirements, information, and incentives to improve the performance of the building stock

- Maximum allowed **primary energy needs** in new bldgs – **NZEB from 2021** (EU)
- Regulation of permitted **heat transmission losses** of the building envelope (and of components after major refurbishments)
- Performance standards for building technologies (HVAC) + **mandatory renewable heating** in new buildings
- Mandatory **energy performance certificates** (EU)
- Attractive **incentive programs** for those who go beyond minimum standards!

**ENERGIEAUSWEIS für Wohngebäude**  
gemäß den §§ 16 ff. der Energieeinsparverordnung (EnEV) vom 1.10.2002

**Berechneter Energiebedarf des Gebäudes** Registriernummer 2 (oder „Registriernummer wurde beantragt am...“) **2**

**Energiebedarf**

CO<sub>2</sub>-Emissionen 3 kg/(m<sup>2</sup>·a)

Endenergiebedarf dieses Gebäudes kWh/(m<sup>2</sup>·a)

0 A+ 25 A 50 B 75 C 100 D 125 E 150 F 175 G 200 H 225 >250

Primärenergiebedarf dieses Gebäudes kWh/(m<sup>2</sup>·a)

Anforderungen gemäß EnEV 4

Primärenergiebedarf (u-Wert) kWh/(m<sup>2</sup>·a) Anforderungswert kWh/(m<sup>2</sup>·a)

Energetische Qualität der Gebäudehülle H<sub>T</sub> (u-Wert) W/(m<sup>2</sup>·K) Anforderungswert W/(m<sup>2</sup>·K)

Sommerlicher Wärmeschutz (bei Neubau) ☐ eingehalten ☐ nicht eingehalten

Für Energiebedarfsberechnungen verwendetes Verfahren

☐ Verfahren nach DIN V 4108-6 und DIN V 4701-10

☐ Verfahren nach DIN V 18596

☐ Regelung nach § 3 Absatz 5 EnEV

☐ Vereinfachungen nach § 9 Absatz 2 EnEV

**Endenergiebedarf dieses Gebäudes** kWh/(m<sup>2</sup>·a)

(Pflichtangabe in Immobilienanzeigen)

**Angaben zum EEWärmeG 5**

Nutzung erneuerbarer Energien zur Deckung des Wärme- und Kältebedarfs auf Grund des Erneuerbare-Energien-Wärmegesetzes (EEWärmeG)

Art: Deckungsanteil:

**Ersatzmaßnahmen 6**

Die Anforderungen des EEWärmeG werden durch die Ersatzmaßnahmen nach § 7 Absatz 1 Nummer 2 EEWärmeG erfüllt.

☐ Die nach § 7 Absatz 1 Nummer 2 EEWärmeG verschärften Anforderungswerte der EnEV sind eingehalten.

☐ Die in Verbindung mit § 5 EEWärmeG um verschärften Anforderungswerte der EnEV sind eingehalten.

Verschärfter Anforderungswert Primärenergiebedarf kWh/(m<sup>2</sup>·a)

Verschärfter Anforderungswert für die energetische Qualität der Gebäudehülle H<sub>T</sub> W/(m<sup>2</sup>·K)

**Vergleichswerte Endenergie**

0 A+ 25 A 50 B 75 C 100 D 125 E 150 F 175 G 200 H 225 >250

Endenergie kWh/(m<sup>2</sup>·a)

EEH (Energieeffizienzklasse)

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**Erläuterungen zum Berechnungsverfahren**

Die Energieeinsparverordnung (EnEV) ist für die Berechnung des Energiebedarfs unterschiedliche Verfahren zu, die im Einzelfall zu unterschiedlichen Ergebnissen führen können. Insbesondere wegen standardisierter Randbedingungen werden die angegebenen Werte keine Rückschlüsse auf den tatsächlichen Energieverbrauch, die ausgetauschten Bauteile oder die spezifischen Werte nach der EnEV pro Quadratmeter Gebäudenutzfläche (A<sub>n</sub>), die im Allgemeinen größer ist als die Wohnfläche des Gebäudes.

1 siehe Fußnote 1 auf Seite 1 des Energieausweises

2 nur bei Neubau sowie bei Modernisierung im Fall des § 16 Absatz 1 Satz 3 EnEV

3 nur bei Neubau

4 nur bei Neubau im Fall der Anwendung von § 7 Absatz 1 Nummer 2 EEWärmeG

5 siehe Fußnote 2 auf Seite 1 des Energieausweises

6 siehe Fußnote 1 Satz 3 EnEV

7 teilweises Angabe

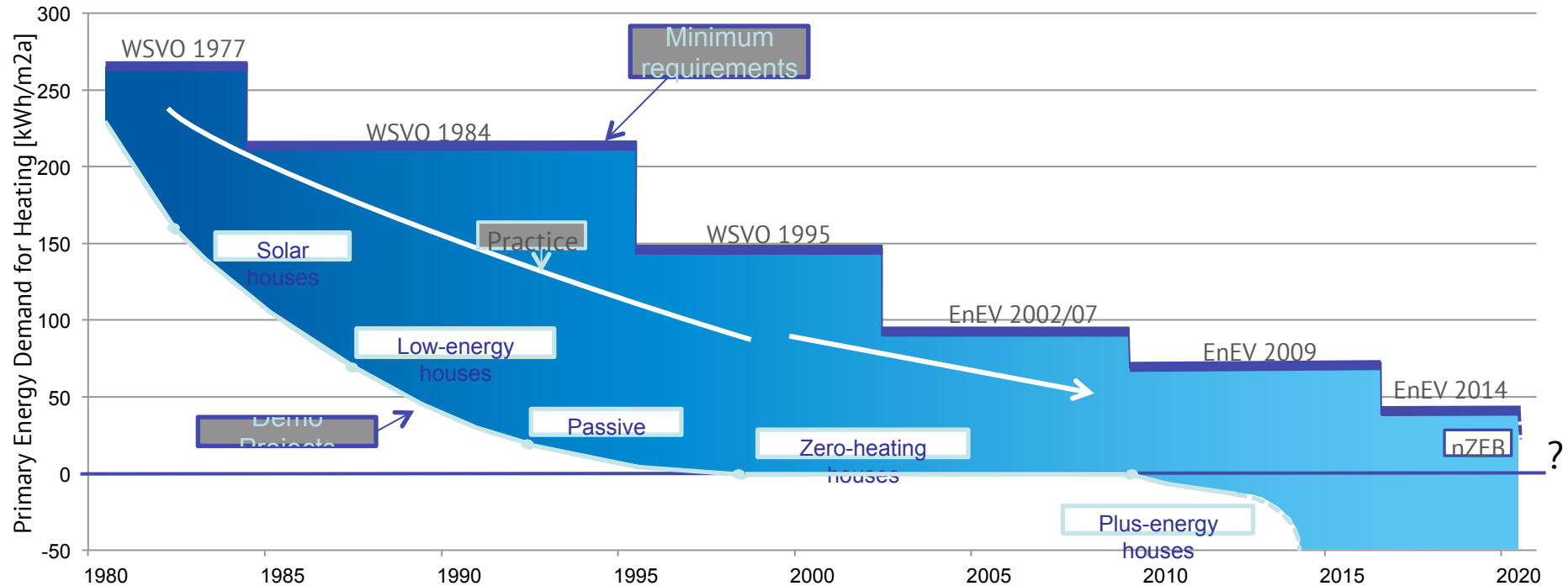
8 nur bei Neubau

9 EPH: Einbaufenster, MFH: Mehrfamilienhaus



# Evolution of new energy-efficient buildings in Germany

Integrated approach of R&D, incentives, and standards drives market.



Source: gtai.com - Based on data from Fraunhofer IBP



# The next big thing: competitive tenders

## How it works

### Tendering Energy efficiency

- Awards those market actors who save the most energy (by measures) at the least costs
- Complements existing instruments
- Activates innovation and searching capabilities of the market



**Ludwig Erhardt would love it!**

Create the right political frame for a vital energy efficiency market

## International practices



- Switzerland (ProKilowatt)
- Portugal (PPEC)
- USA (Efficiency Vermont, Efficiency Maine...)
- UK: Pilot with Peak-EE
- Germany: Start 2016 (envisages also heat)



# Thank you!



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