



The German experience

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eclareon Management Consultants

eclareon Management Consultants

PROFILE International research & consulting firm with a focus on the renewable energy and energy efficiency sectors

BUSINESS LINES Policy Consulting

Industry Consulting

Mergers & Acquisitions

Market Intelligence

HISTORY Founded in 2000

CLIENTS Public bodies, European Commission, energy agencies, manufacturers, wholesalers, system integrators, installers, utilities,

OFFICES Berlin, Madrid & Milan (US office planned in 2011)

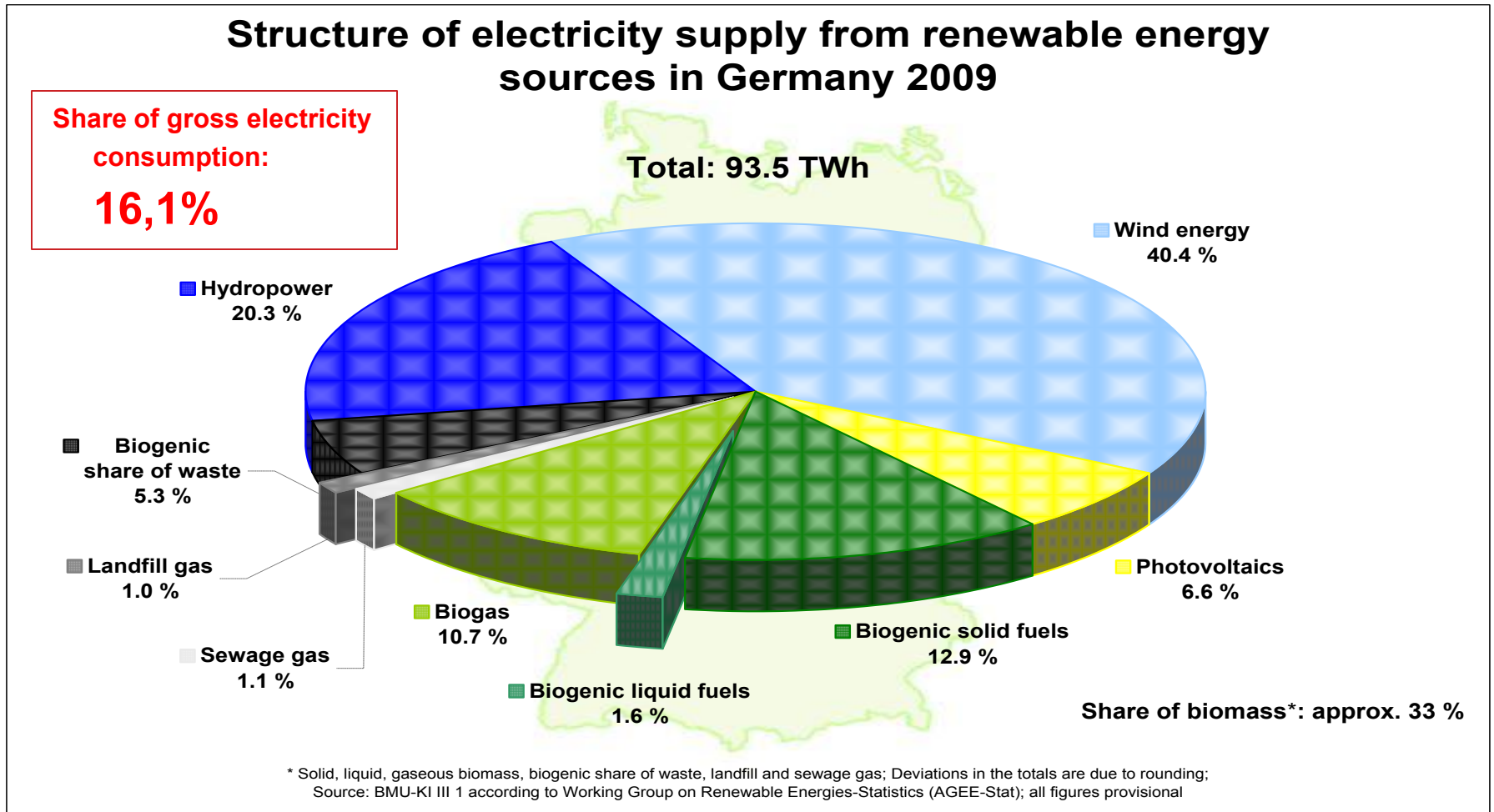
PERSONNEL 25 people

CONTACT www.eclareon.com



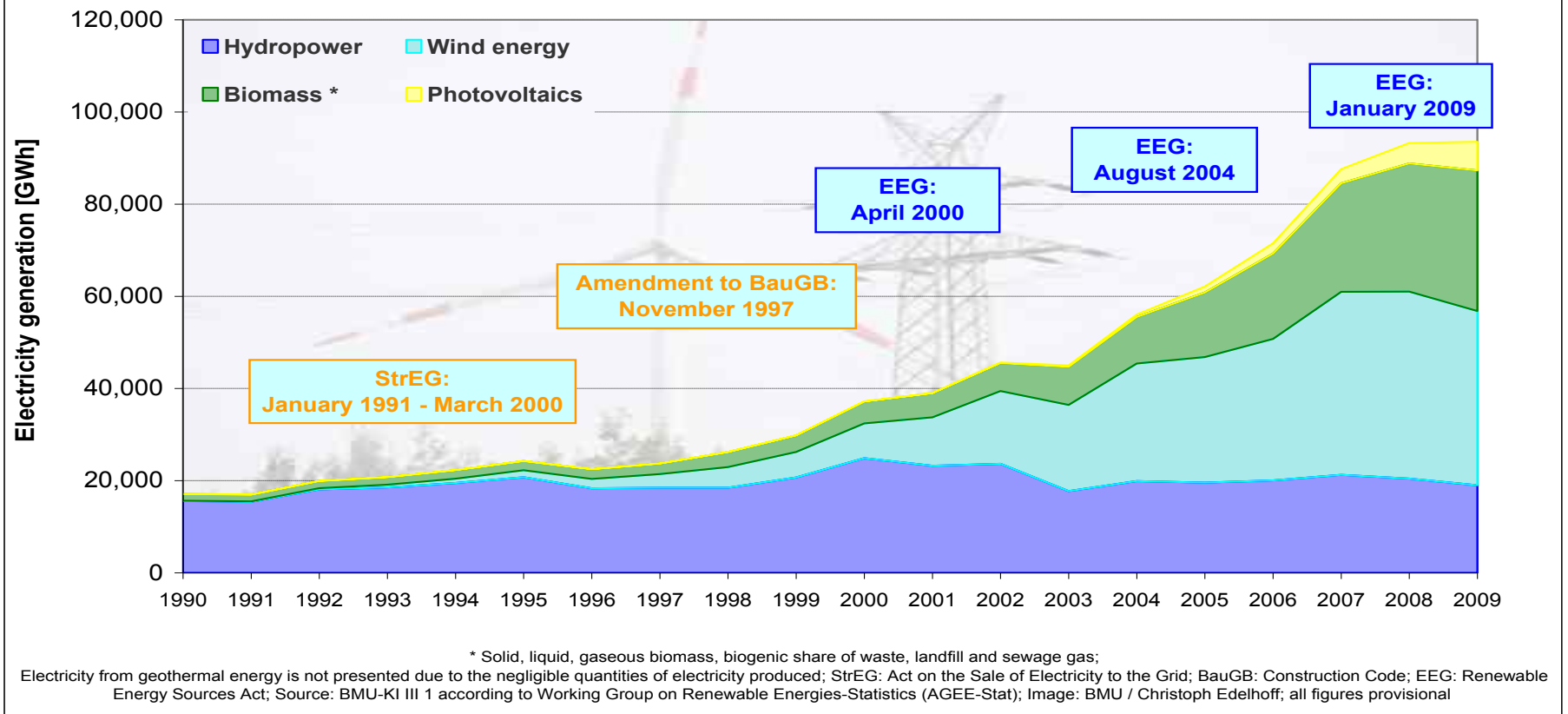
Status Quo in Germany

RES constitute a significant share of the German electricity supply

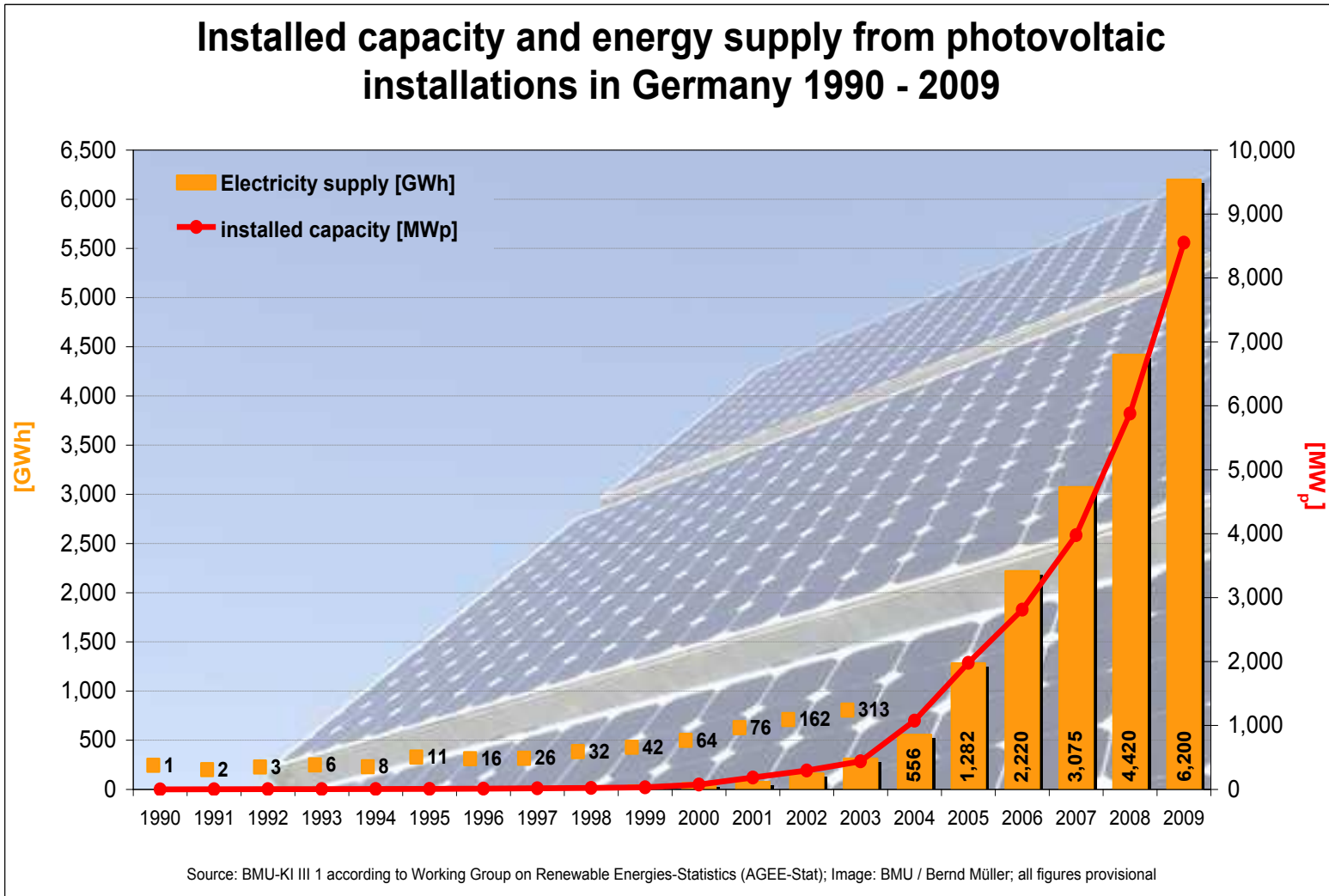


PV plays an increasing role within the strong growth of electricity generation from RES

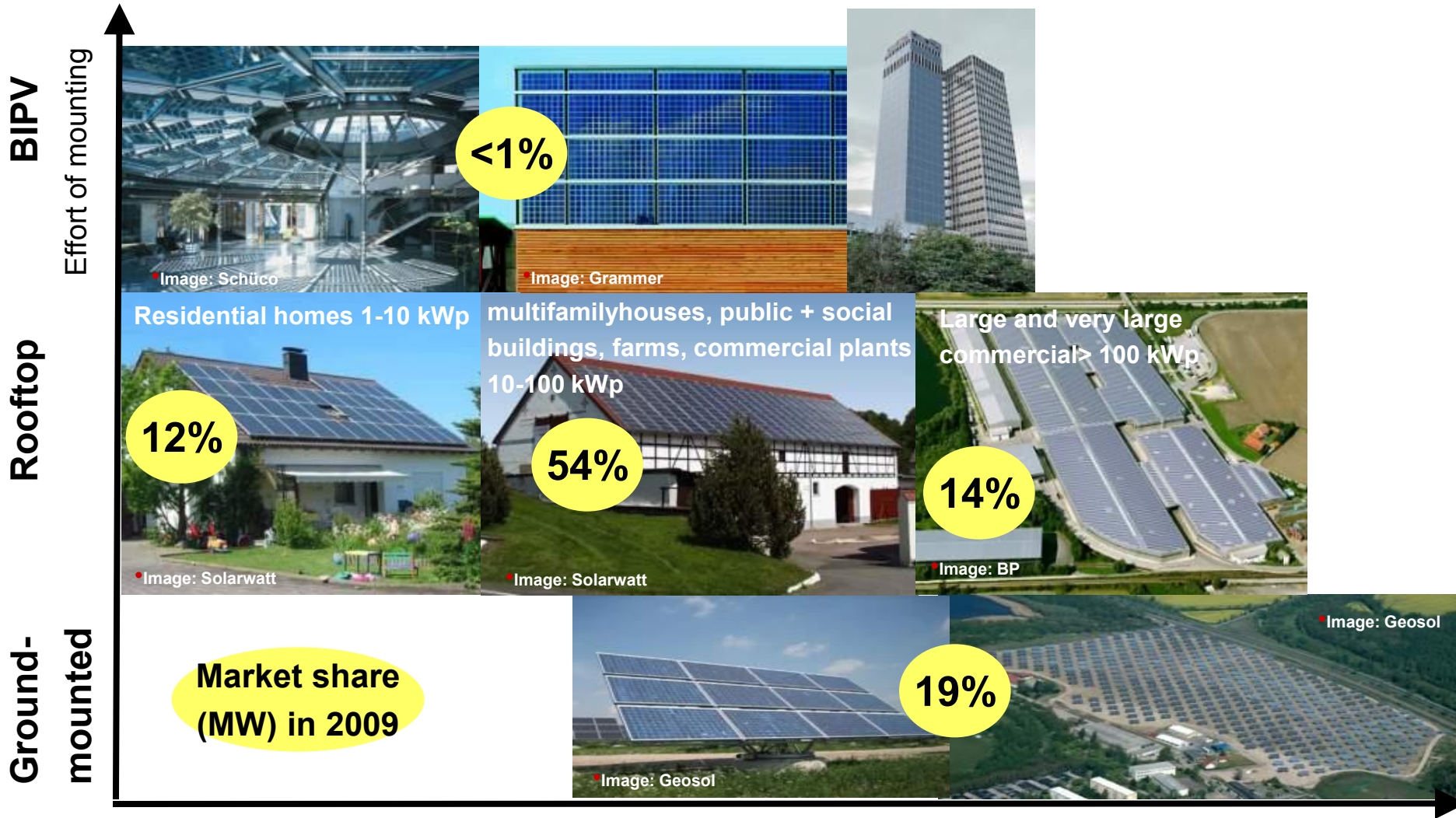
Development of electricity generation from renewable energy sources in Germany 1990 - 2009



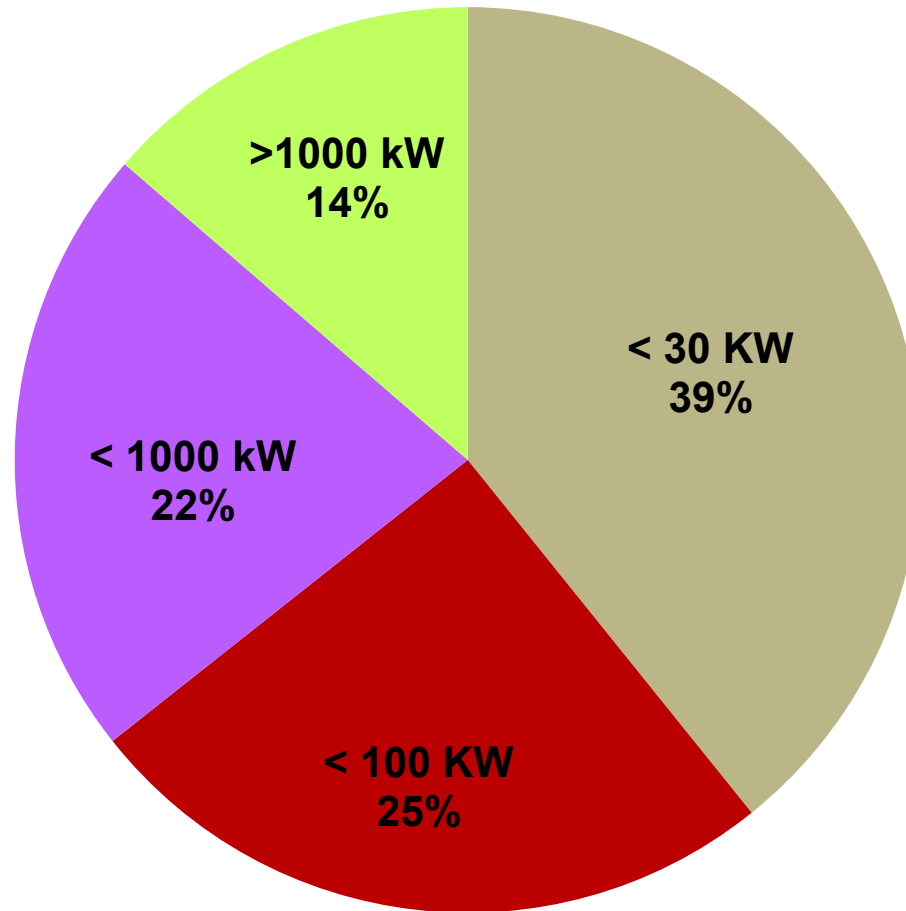
Particularly strong development of PV sector in the last 6 years



Market shares of grid connected PV systems according to usage



Market shares of PV systems installed in 2010 (according to their size)



Gross costs of the German EEG. Part 1

Entwicklung der EEG-Kosten für nicht privilegierte Stromkunden

	EEG-Kosten
Jahr	[Mrd. Euro]
2000	1,0
2001	1,2
2002	1,8
2003	1,9
2004	2,5
2005	2,8
2006	3,3
2007	4,3
2008	4,5
2009	4,7

In Preisen von 2009

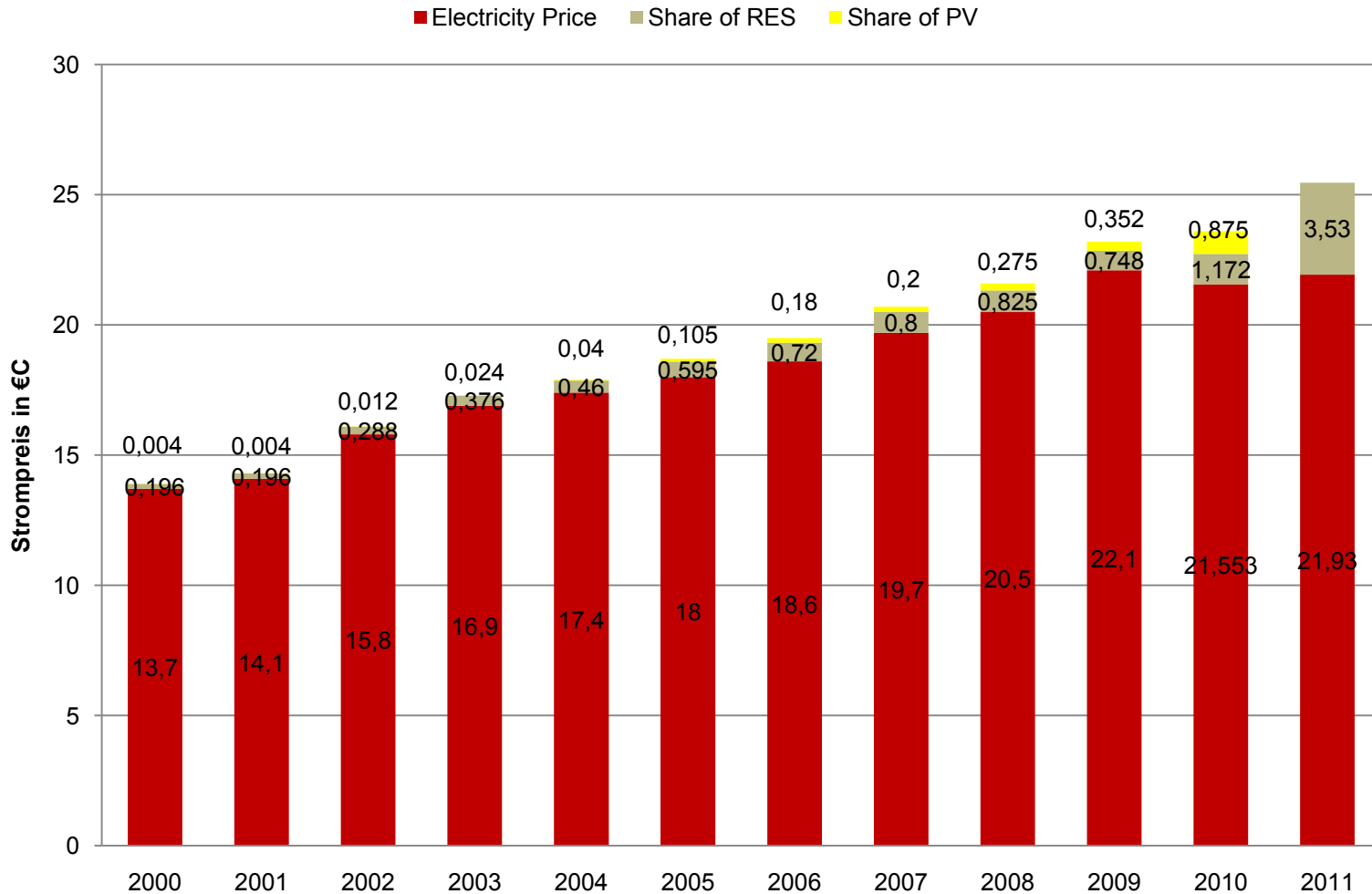
Quelle: IfnE [145]

- Development of total EEG costs
- Costs born by final consumers through distribution mechanism
- Final data for 2010 not available yet
- Forecast of sharp increase in 2010 and 2011

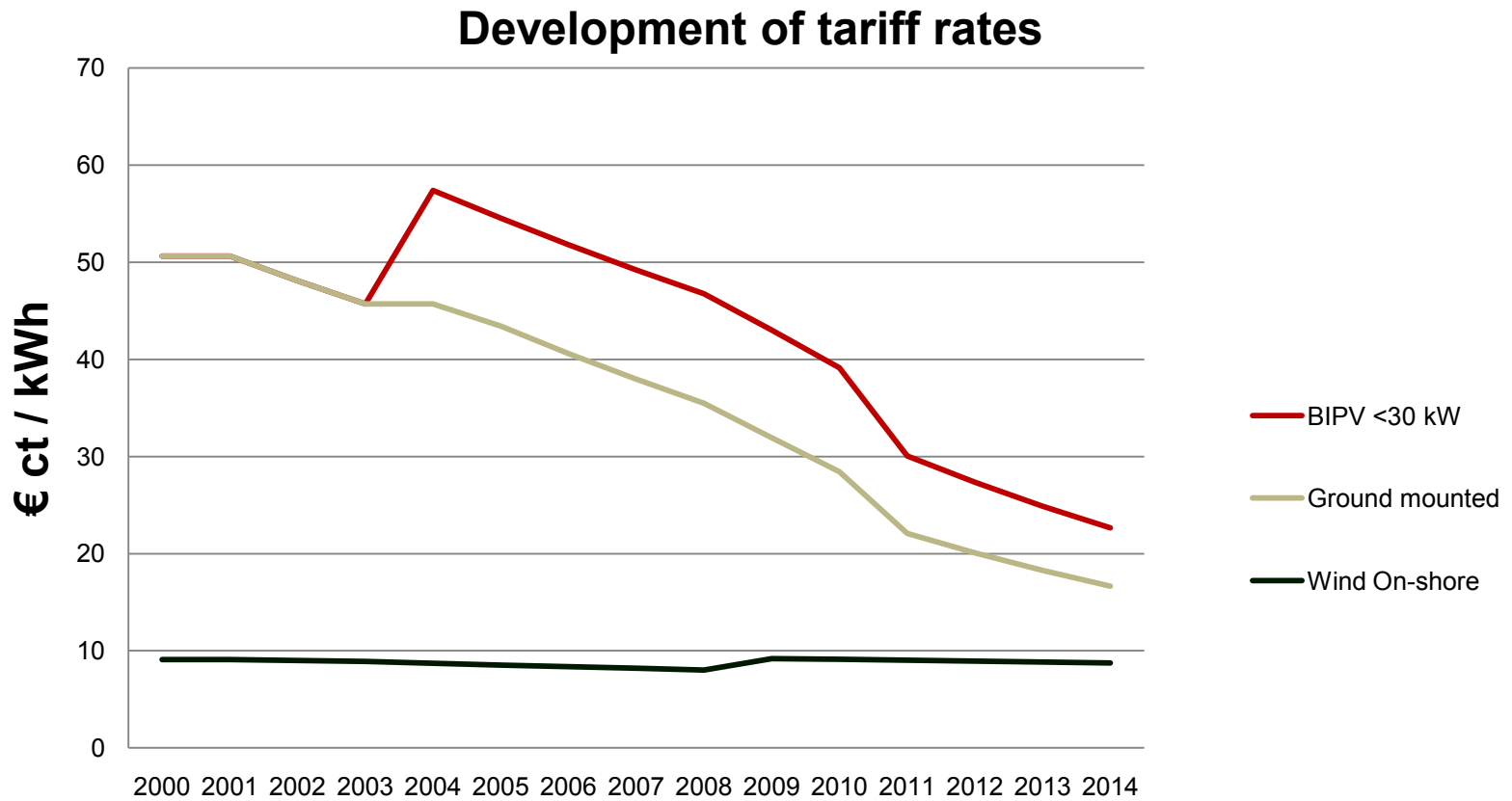
Sources: Federal Ministry for the Environment,
Nature Conservation and Nuclear Safety

Gross costs of the German EEG. Part 2

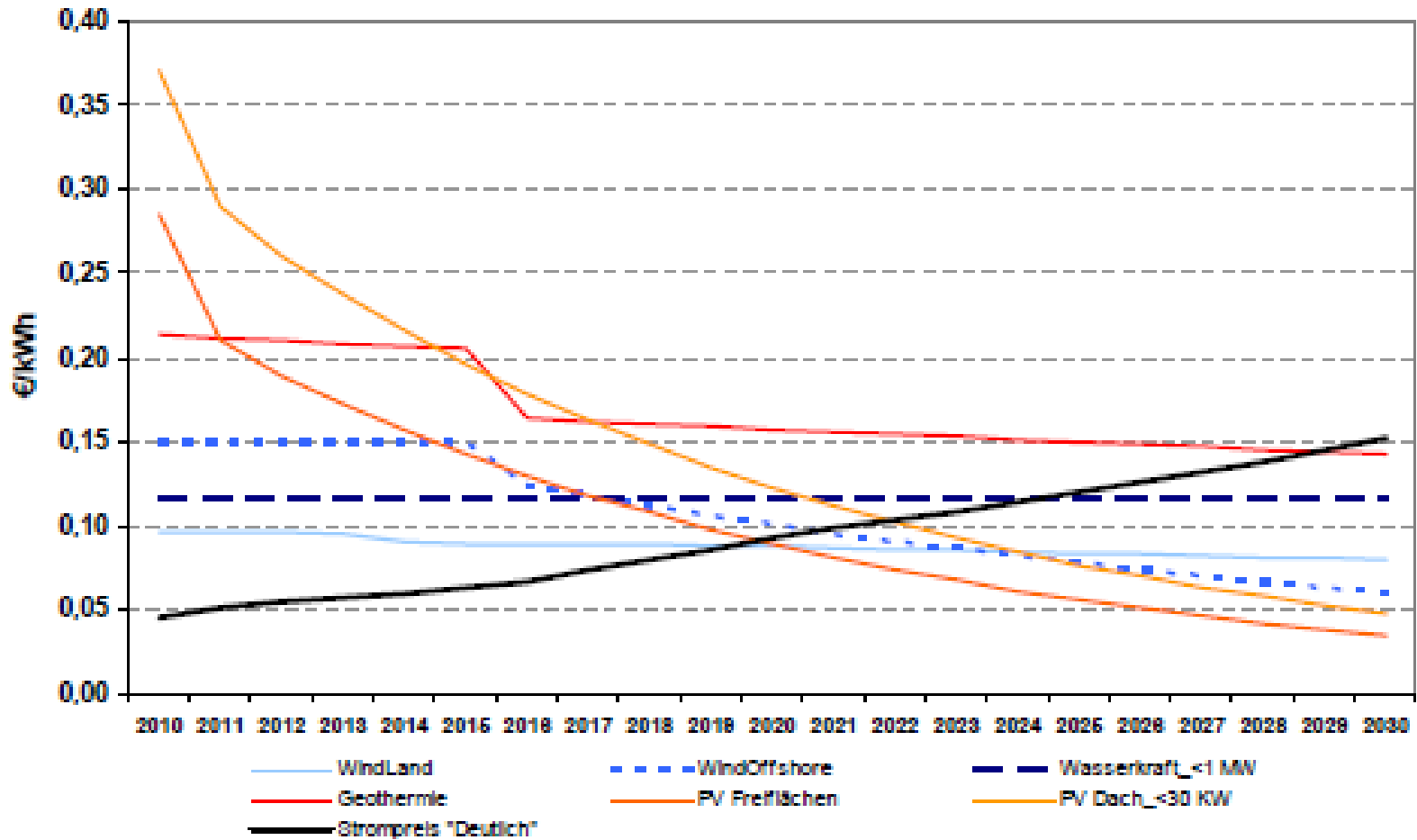
Electricity price for households - share of RES and PV



Gross costs for the German EEG. Part 3



Development of the costs for PV - perspectives





Support Schemes

The German Feed-in Tariff An Overview

- **Feed-in tariff (EEG – Erneuerbaren Energien Gesetz)**
- **Fixed remuneration for every kW/h produced**
- **Obligation of grid operator to accept delivery of electricity**
- **Fixed tariff for 20 years**
- **Differentiation according to technology, category and system size**
- **New separate tariff to support own use of generated electricity**

Degression mechanism: No cap but radical reduction of tariff

- **Flexible degression:**
 - Final amount is determined by installed capacities. The exact amount of the reduction depends on the installed capacity in the previous year.
 - Reaction to fast growth
- **Degression corridor in the year 2010 :**
 - Annual Degression (1.1.2010): 10% + 1% (installed capacity > 1.500 MW) = 11%
 - exceptional degenerations on 1st July and 1st October 2010 : between 11% and 16% (depending on type of installation)
- **Degression in the years 2011 & 2012: degression corridor more extreme:**
 - 2011 annual degression up to 13 % (if installed capacity > 6.500 MW)
 - 2012 annual degression up to 21 % (if installed capacity > 6.500 MW)

Development of Tariff Rates in 2010 for PV

Categories of installations	Tariff Rate 1 st July 2010	Tariff Rate 1 st October 2010
BIPV <30kWp	34,05 €ct/kWh	33,03 €ct/kWh
BIPV ≥30kWp <100kWp	32,39 €ct/kWh	31,42 €ct/kWh
BIPV ≥100kWp <1.000kWp	30,65 €ct/kWh	29,73 €ct/kWh
BIPV ≥1.000kWp	25,55 €ct/kWh	24,79 €ct/kWh



Administrative Procedures

Share of legal administrative costs for the development of PV projects



	Segment A - Small-scale installations on residential buildings		Segment B - Small to medium-scale installations on commercial buildings		Segment C - Medium to large-scale ground-mounted installations on open lands	
Country	Standard PV system size (kWp)	Legal-administrative costs as a share of overall project development costs (excluding PV equipment)	Standard PV system size (kWp)	Legal-administrative costs as a share of overall project development costs (excluding PV equipment)	Standard PV system size (kWp)	Legal-administrative costs as a share of overall project development costs (excluding PV equipment)
Bulgaria	4	65%	100	31%	1000	19%
Czech Republic	5	28%	200	36%	1000	29%
France	3	19%	130	13%	5000	n/a
Germany	5	7%	50	8%	5000	8%
Greece	5	23%	20	27%	100	23%
Italy	3		50		5000	28%
Netherlands	2,5		40		n/a	n/a
Poland	n/a		54		n/a	n/a
Portugal	3,7	36%	n/a	n/a	n/a	n/a
Slovenia	7	26%	49	24%	n/a	n/a
Spain	20	39%	100	24%	1000	47%



Administrative procedures in Germany are efficient and save money

- **No building permissions required for PV systems installed on or in buildings (exceptions: historical buildings and certain capacity sizes in some regions)**
- **Limited discretion (« bound decision ») – administrative rule: if the legal requirements for the authorisation of an installation are satisfied the administration is obliged to give its consent without discretion.**
- **One-Stop-Shopping: If building permission is required, a singly authority is in charge of the administrative procedures. Acceleration of the process.**
- **Decentralised administrative process: advantages/disadvantages:**
 - **No major bottleneck between the processes**
 - **Level of qualification of official authorities on local level is often insufficient**

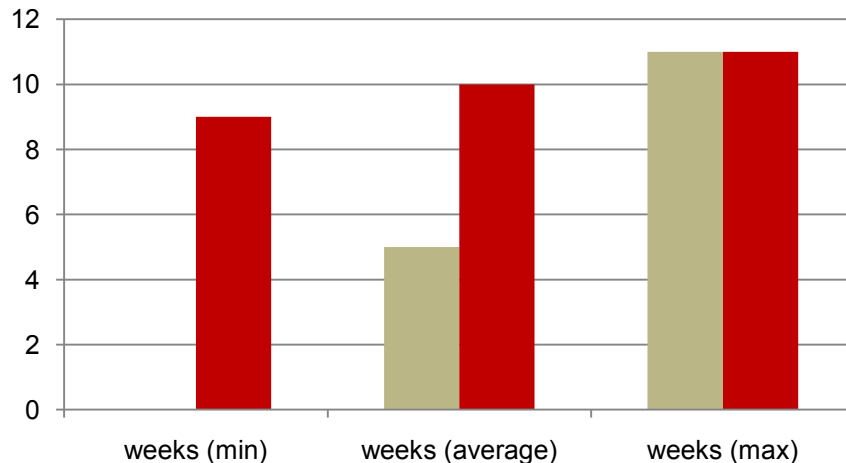


Grid Issues

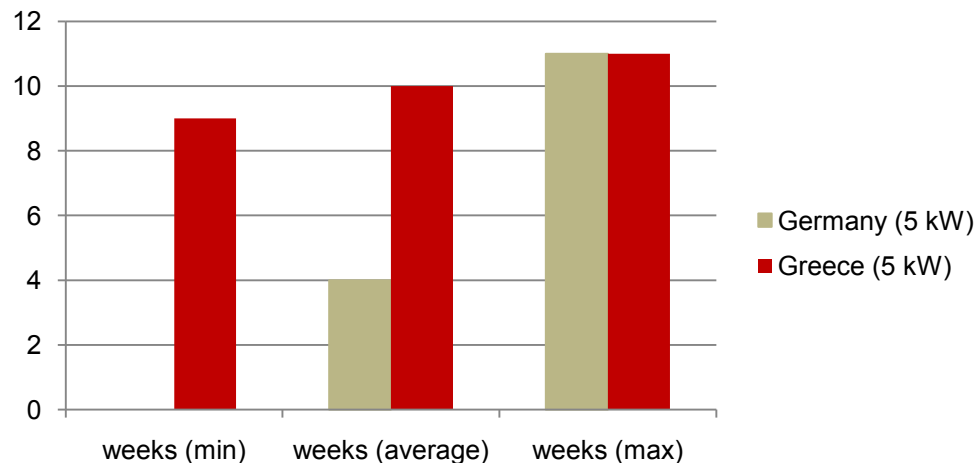
Grid Issues concerning the RES systems in Germany I

- **Grid connection:**
 - Legal right to priority access
 - Prioritised grid connection for PV system
 - No further contract required for Grid connection (Greece: contract required)

Duration for grid connection



Waiting time



Grid Issues concerning the RES systems in Germany II

Ongoing Issues:

- Reinforcement of grid (transmission grid/ Distribution grid/ Development of smart grid)
- Grid curtailment especially at the distribution grid level in rural areas

Solutions:

- Incentives to support own use
- Development of storage technologies (e-cars, batteries)
- Distribution of costs for reinforcement



Education and Training

Professional education in Germany I

- **Dual educational system (school (theory) + companies (practice))**
- **Duration of apprenticeship: between 2 and 3.5 years**
- **Uniform exam for entire Germany by regional chambers of handcrafts**
- **General Curriculum defined at federal level**

Professional education in Germany II

- **Enough specialised personnel; very high level of apprenticeship**
- **No specialized apprenticeship in the field of RES, despite of 20 professional categories in RES sector**
- **Only basic education for RES installers in the framework of the traditional apprenticeship of installers**
- **Further specialised Programmes in the framework of the handcrafts men (Specialists for solar technologies (PV&ST) & certification « solarteur » (solar installer); until 2007: 1,000 examined specialists**
- **Adaptation of the general apprenticeship to the requirements of RES professions is needed**



Awareness raising

Awareness raising in Germany

- **Public opinion very positive toward RES (particularly towards PV)**
- **Specialised campaigns developed according to the various target groups (private/ professional) and technologies**
- **Primary goal is the information of the general public and professionals (information on conditions/ functioning/ technologies)**
- **Very broad offer of information (various media)**
- **Large share of campaigns is organized by private or semi-private organisations, energy agencies, industry associations etc...**
- **Information campaigns often subsidised by the government**



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ideas into energy.

Thank you for your attention!

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