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## THE FUTURE OF THE STADTWERKE IN A CHANGING ENERGY MARKET

CIRIEC Vienna  
12-14th September

# The world's energy consumption



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→ Cities and urban areas ahead

# The important role of cities



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- 50 % of the earth's population live in cities.
- $\frac{3}{4}$  of the energy is consumed by cities.
- 75 % of greenhouse gas arise from cities.
- Cities are the ones mainly affected by climate change.
- Energy transition regards both generation and consumption.
- Important partners in combating climate change are the STADTWERKE

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# The conditions for energy suppliers are changing

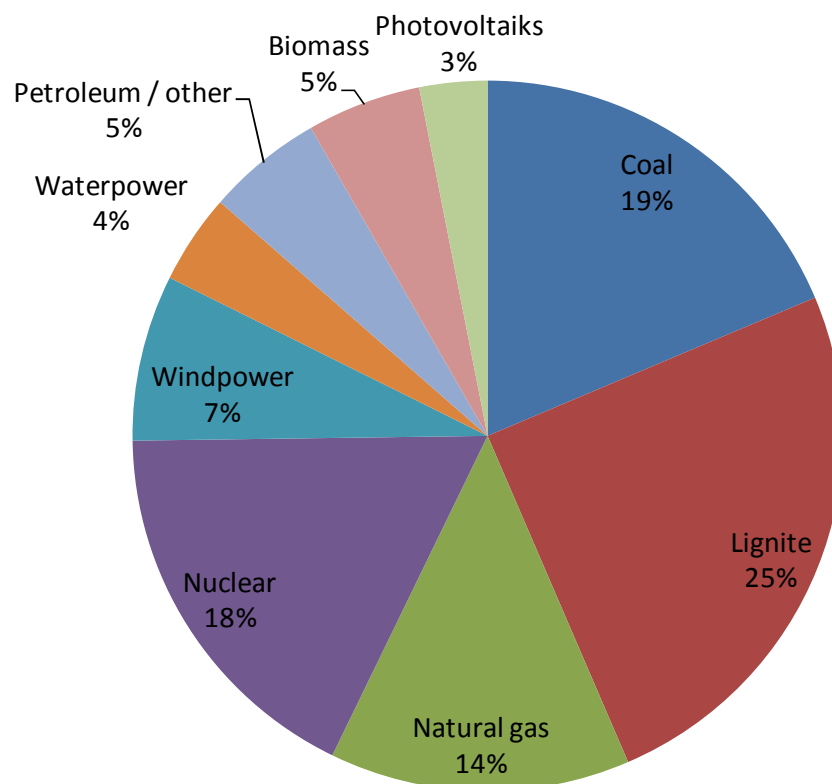


- Europe 2020:
  - greenhouse gas emissions 20% lower than 1990 ; 20% of energy from renewables; 20% increase in energy efficiency.
- Germany 2020:
  - greenhouse gas emissions 40% lower than 1990; 35% of the gross electricity consumption from renewables; heat demand in buildings is to be reduced by 20% (as compared to 2008).
- Consumers' awareness of climate issues has risen.
- Consequences are higher shares of renewables and more customer generation in the energy system.

... but there is still a long way to go



## Gross electricity generation 2011 in Germany



Source: BMWi (2011)



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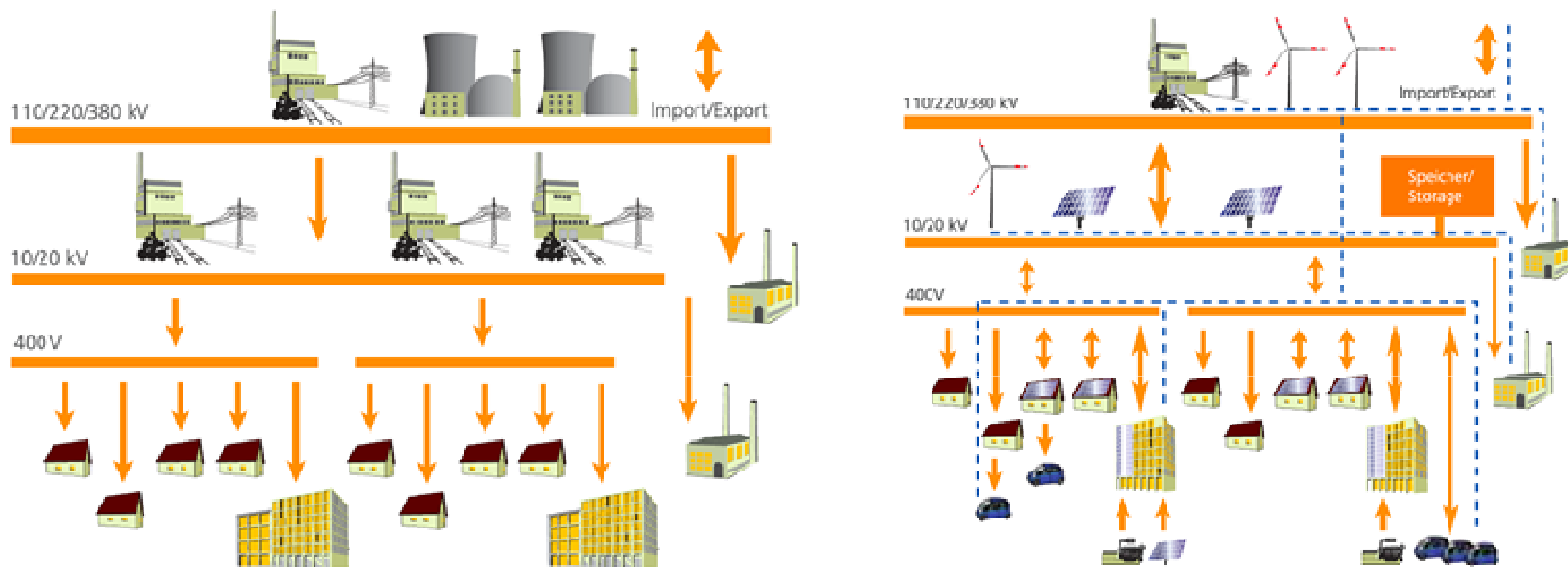
## THE CHANGING ENERGY MARKET

# There will be fundamental changes in the energy system



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Decentralization



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# The new trend is characterized by decentralization



## Three dimensions:

- More customer generation and smaller energy suppliers.
- Stronger fluctuation by wind and solar supplies (which have to be balanced).
- Load reversal by “prosumers” and overproduction.

## Consequences:

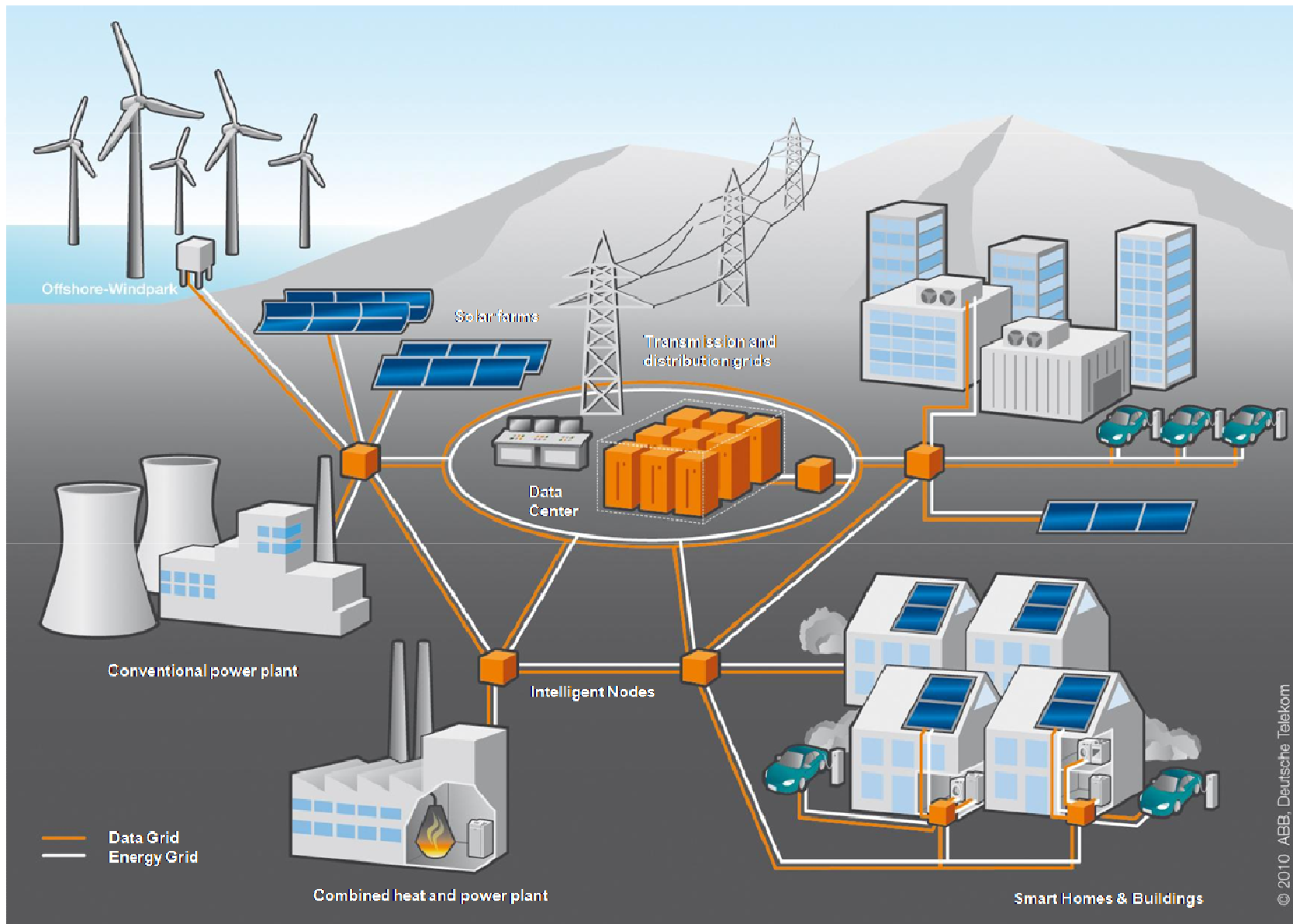
- Numerous small power generators instead of few big power plants.
- Need for more flexibility:
  - gas-steam power plants and combined heat and power generation
  - new storage technologies
- One-way load flows will be replaced by multi-directional load flows.



# Smart Grids: Data grids take over control



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# The market splits: IT in the energy system



- Intelligent network control is only possible via electronic data processing.
- Data records will increase considerably and have to be managed properly
- The market will split into energy and data grids.
- Energy suppliers have only little experience with data processing.
- High capital investments are needed:
  - Generation: Renewables and more flexible power plants
  - Storage technologies
  - Smart Metering & Data Processing



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RHEINENERGIE

# Stadtwerke Köln GmbH Holdings





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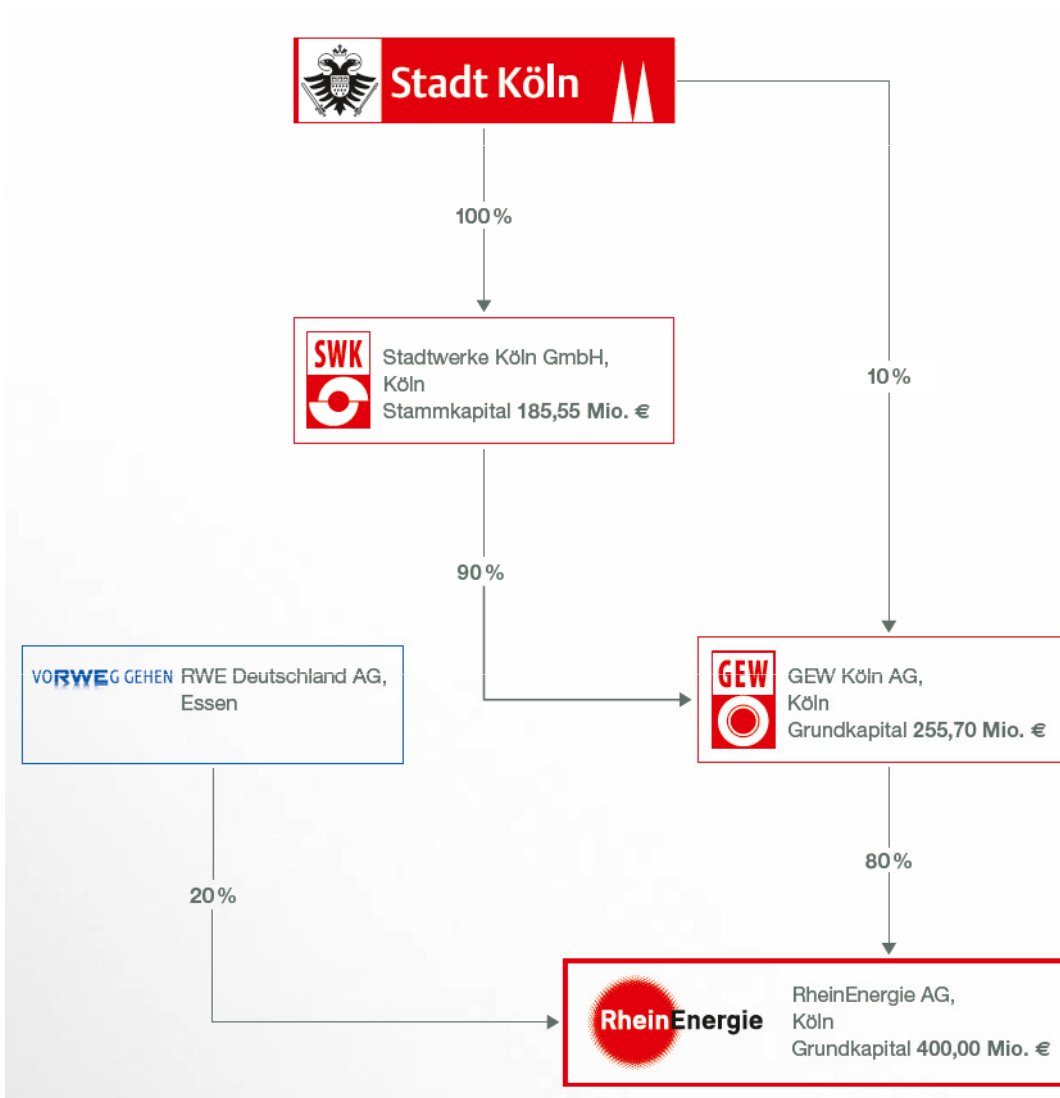
Stadtwerke Köln GmbH  
Ordinary share capital 185.6 Mio €

<p>GEW Köln AG Share capital 255.7 Mio €</p>	90%	100%	 <p>AWB Abfallwirtschaftsbetriebe Köln GmbH &amp; Co. KG Company capital 15 Mio €</p>
<p>Kölner Verkehrs-Betriebe AG Share capital 78.3 Mio €</p>	90%	50,1%	 <p>AVG Abfallentsorgungs- und Verwertungsgesellschaft Köln mbH Ordinary share capital 8.7 Mio €</p>
<p>Häfen- und Güterverkehr Köln AG Share capital 26.3 Mio €</p>	54,5%	100%	<p>modernes köln GmbH Ordinary share capital 2.1 Mio €</p>
<p>Wohnungsgesellschaft der SWK mbH Ordinary share capital 9.2 Mio €</p>	100%	50%	<p>Kölner Aussenwerbung GmbH Ordinary share capital 1.53 Mio €</p>
<p>KölnBäder GmbH Ordinary share capital 7.7 Mio €</p>	74%	25%	<p>Radio Köln GmbH &amp; Co. KG Company capital 0.51 Mio €</p>

# Stadtwerke Köln and Rheinenergie: Capital Interests

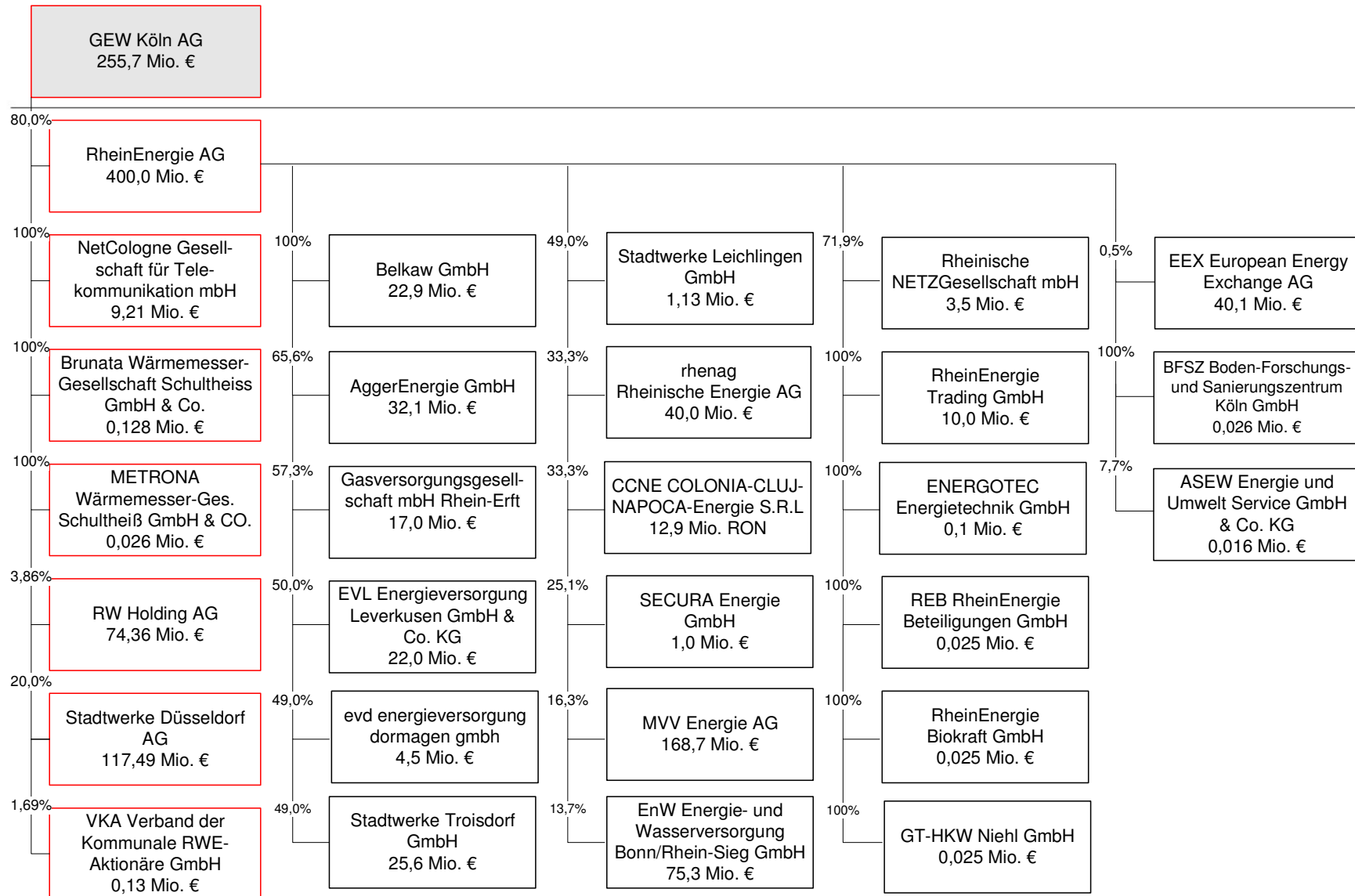


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# GEW Holdings



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# Group turnover per sector (2011 – Mio. €)



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Electricity, Gas, Water, Heating	3,856
Telecommunications	254
Waste disposal and cleaning	248
Passenger Transport	225
Commercial Transport	209
Heat meter service	81
Others (including pools operation & facility management)	47
<b>Total</b>	<b>4,920</b>

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# Added value for the city of Cologne (in Mio. €)



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2011

Annual profit	79.5
Concession fee RheinEnergie	72.9
Business tax	19.6
Loss coverage of local public transport	73.0
Loss coverage of local public pools	18.0
<hr/>	
Total added value	263.0

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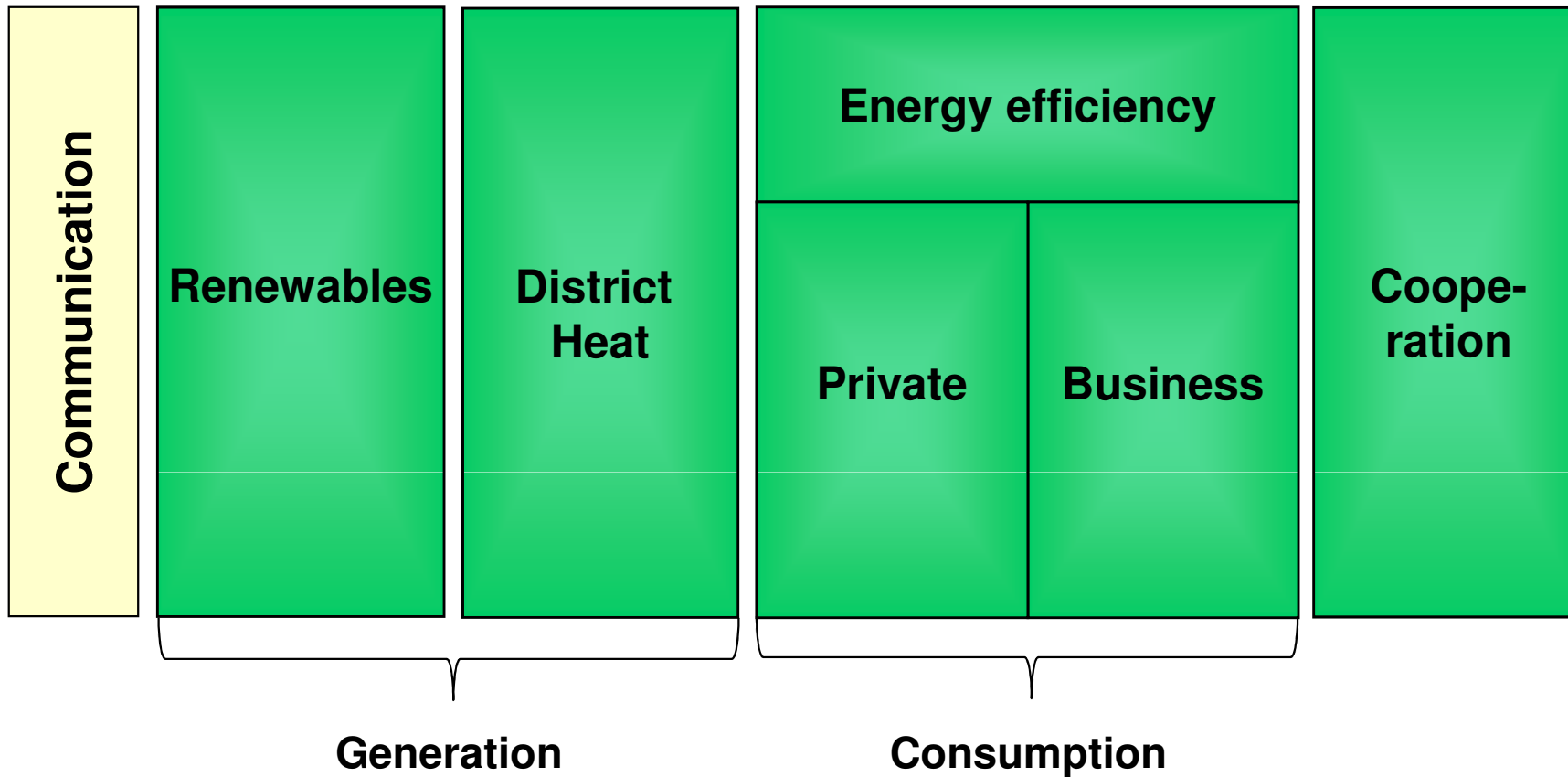


# Climate protection by Rheinenergie

**2020**  
**Energie  
& Klima**



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# Investments by Rheinenergie

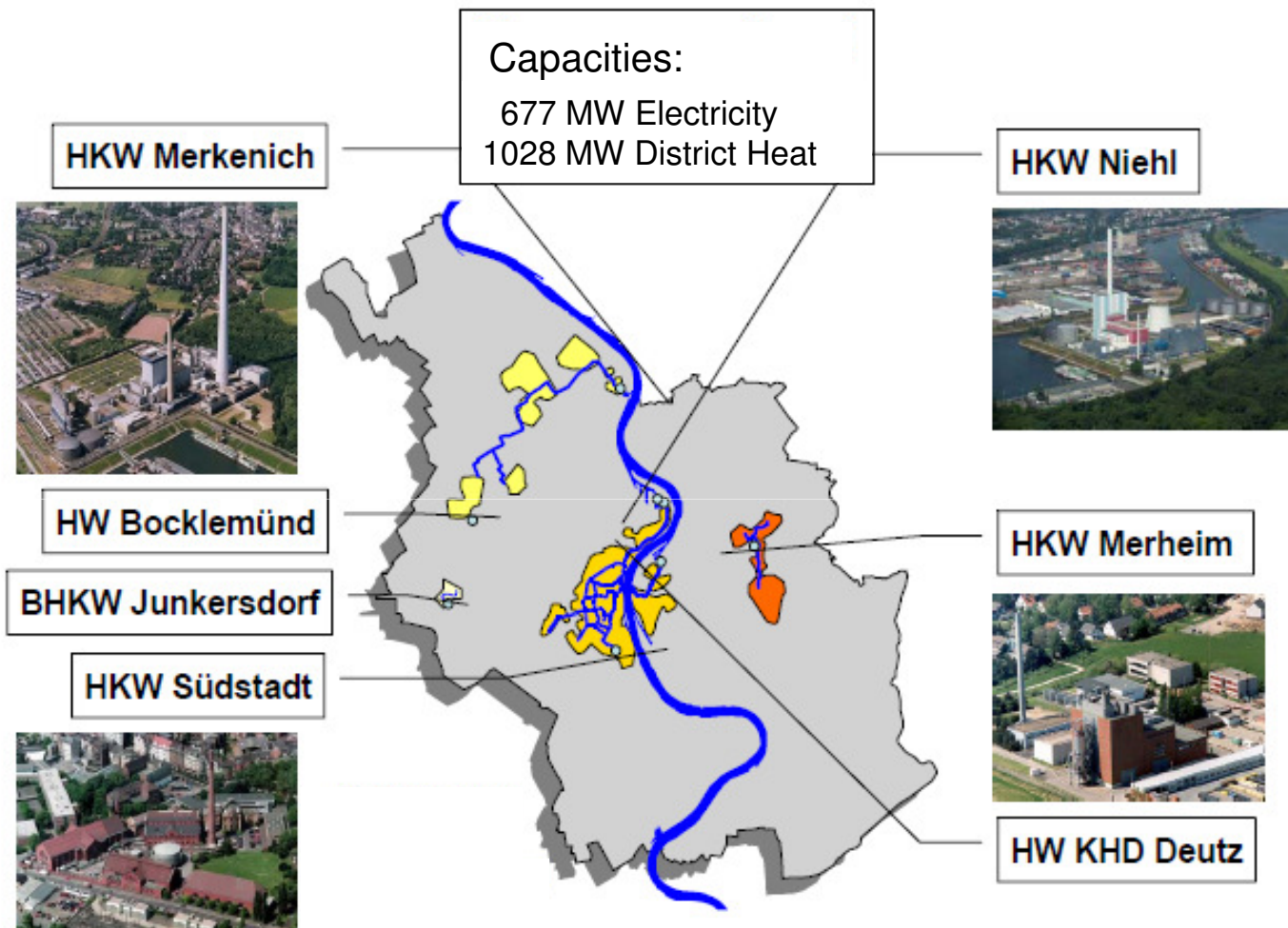


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- Rheinenergie-Windpower (100,1 MW)
- Solar thermal power plant Andasol 3
- Several biomass power plants in the region (approx. 4 MW)
- Photovoltaic power plant at Cologne/Bonn Airport
- Short rotation forestry
- Gas-steam power plants
- Extension of the district heat grid
  - Goal: Additional 10 MW / year (approx. 1,000 households)



# Generation of combined heat and power



# Consumption: Energy efficiency



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- Energy consultancy service
- Energy cheque books for customers
- Concepts for public lighting
- Learning units for schools
- Contracting (Rheinenergie Ergotec)
- Support programme for energy-efficient heating systems
- Smart Metering: Pilot project with 30,000 smart meters in Cologne in cooperation with SAP AG

**Für Mieter, Vermieter und Hauseigentümer**  
**Der E-Check**

Defekte elektrische Anlagen und Geräte sind die häufigste Ursache für Wohnungsbrände. Für die Sicherheit der elektrischen Anlage ist der Eigentümer verantwortlich. Vermieter haften für Schäden, auch wenn sie mit den technischen Vorschriften nicht vertraut sind! Mieter sind verpflichtet, ihr Mietobjekt in ordnungsgemäßen Zustand zu erhalten.

In jedem Fall ist eine regelmäßige Kontrolle der technischen Einrichtungen nach den maßgeblichen Vorschriften erforderlich. Daher prüft der Elektrofachbetrieb beim E-Check die Hausinstallation und deckt Sicherheitsängel auf, gibt Tipps zum Energiesparen sowie zum Blitz- und Überspannungsschutz.

Damit sind Sie auf der sicheren Seite

**Ihr Vorteils-Coupon**

Um die Sicherheit für Sie zu erhöhen, haben wir auch mit den Innungen in unserem Versorgungsgebiet einen besonders günstige Aktionspreise vereinbart! Für weitere Informationen wenden Sie sich an Ihren Innungsfachbetrieb, Ihre Elektro-Innung, oder an die Energieberatung der RheinEnergie, Telefon 0221 178-3311.

**Aktionspreise!**

1- bis 3-Zimmer-Wohnung	ab 99 €
4-Zimmer Wohnung	ab 114 €
Einfamilienhaus mit Keller	ab 189 €

\*Gültig nur für teilnehmende Innungsfachbetriebe. Preise inkl. MwSt. Gültig im Aktionszeitraum 1. Oktober 2007 bis 31. März 2008.

Logos: AggerEnergie, EVL, BELKAW, RheinEnergie

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# Cooperation: Regional approach



- GEW Holdings
- Competitive advantages:
  - Energy acquisition (RheinEnergie Trading)
  - Operating (Rheinische Netzgesellschaft)
  - Export (RheinEnergie *express*)
  - Services (RheinEnergie Energotec)
  - Sales & Marketing
- „KlimaKreis Köln“
  - Network of regional stakeholders
  - Multiplier and synergy effects
  - Facilitation of pilot projects and funding opportunities



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# SmartCity Cologne



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- Platform for „smart“ solutions
- Projects:
  - Climate street
  - CELSIUS (heat from sewage)
  - Ship to Grid
- [www.smartcity-cologne.de](http://www.smartcity-cologne.de)
  
- „colognE-mobil“ by the municipality, Ford, the university of Duisburg-Essen and Rheinenergie
  - Energy-efficiency
  - Storage



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## FUTURE PROSPECTS

# Crucial points



- The demand for electricity will decrease.
- There will be more competition in the energy market due to more actors on the market.
- Energy suppliers have to acquire competitiveness in the IT sector.
- Energy suppliers have to conquer new markets.
- High capital investments are needed.



# New opportunities



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- Conditions:
  - The customer's satisfaction.
  - The political will to provide public services within a new framework of a changing energy market.
- The importance of the distribution network will rise.
- New possibilities for investments in renewables.
- New options in the IT-market via cooperation .

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# Advantages of the STADTWERKE structure



- STADTWERKE include
  - energy generation & -efficiency
  - water supply & sewage
  - mobility

**= integrated approach towards climate protection.**

- STADTWERKE are owned by the municipality and often cooperate with regional actors.

**= concerted action towards climate protection.**

- Climate protection involves change of behavior. STADTWERKE operate **close to the customer.**

**= change managers towards climate protection.**

# The public interest



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- The public interest consists in the provision and security of energy supplies and the protection of the environment.
- Decentralized networks with highly fluctuating energy supplies are exposed to a greater risk of market failure.
- There will be a stronger need for control in order to prevent blackouts.
  - „Smart“ regulation of storage- and feed-in-processes
  - „Smart“ consumption
- IT is expensive and technically demanding = STADTWERKE need to cooperate with other companies.

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# Four questions arise:



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- In the light of public interest:
  - Who is controlling the “smart” grids and the network in general?
  - How can new revenue be directed towards the public interest?
  - How should public authorities regulate in order to maintain control?
  - What political decisions should be taken?

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THANK YOU  
FOR YOUR ATTENTION