



## Modernization and fuel conversion of district heating and combined heat and power systems in Germany

“Challenge to Lithuanian energy:  
Lose the chance or use the EU experience”

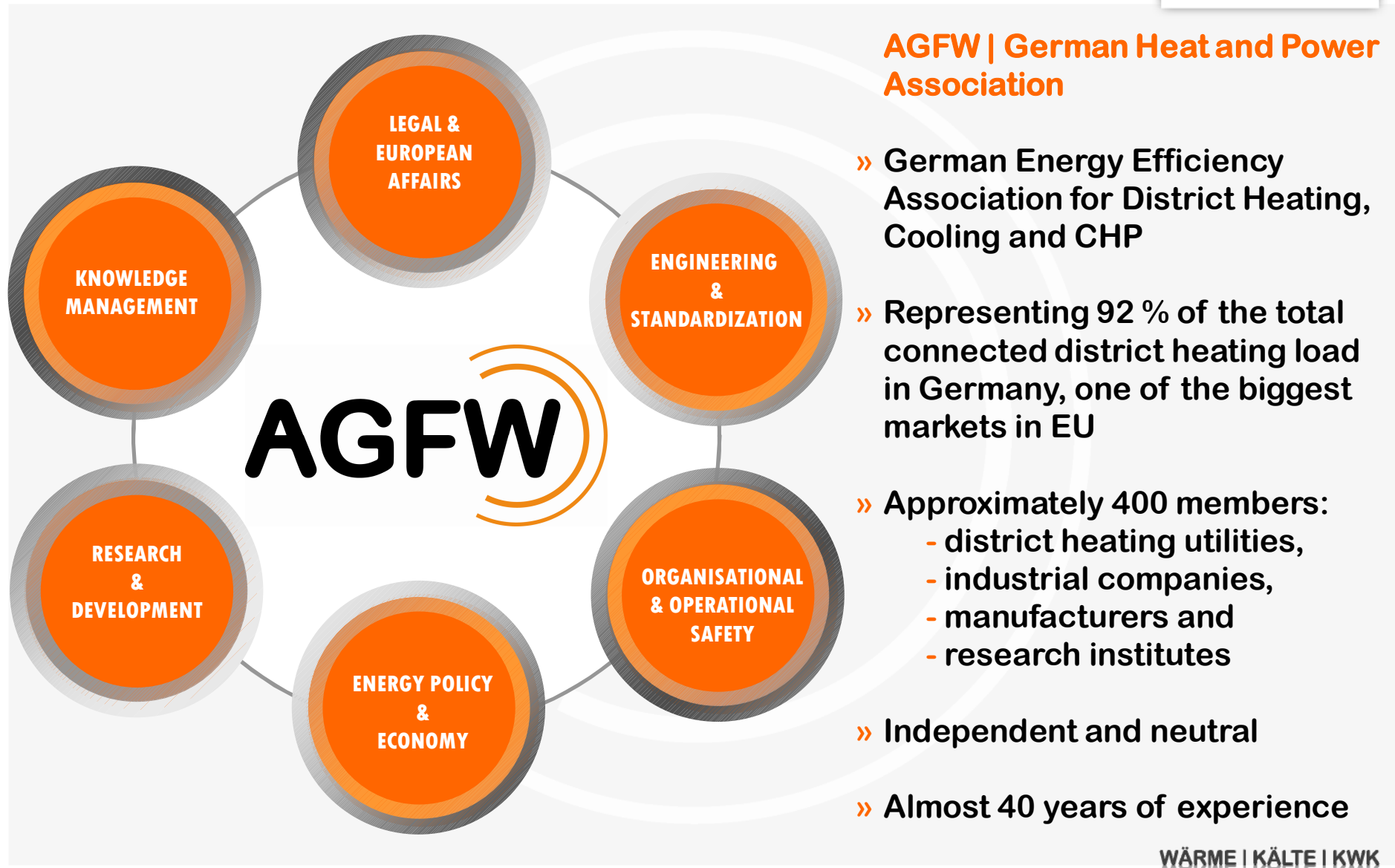
Werner R. Lutsch / Managing Director  
AGFW, Frankfurt a.M.

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## » Topics

- » AGFW - who we are
- » German reunification and DHC/CHP - challenges and lessons learned
- » Political targets for DHC/CHP
- » Electricity from cogeneration and DHC networks – incentivizing development
- » RES in DHC/CHP - framework for integration
- » Waste management - chance for DHC/CHP
- » DHC/CHP - ready for today and future-proof

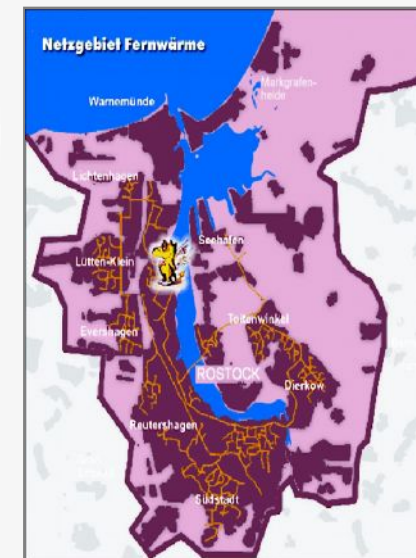
## » AGFW – who we are



## » German reunification and DHC/CHP

### Challenges and lessons learned

- » **Challenge:** *High market share* of CHP/DHC in eastern part of Germany but *inefficient systems*
- » **Solution:** Refurbishment Program 1992-1995 - *Modernization* of network, customer installations and generation
- » **Main effects:** 1.615 projects, 3,4 billion EUR investment
  - » *Decrease* in distribution *losses* by 11.000 GWh per year
  - » Average *decrease* in district heating *prices* by 25 %
  - » *Preservation* of 5.000 *jobs* in the construction industry
  - » *Emission reduction:* CO<sub>2</sub> 33 %, SO<sub>2</sub> 83 %, CO 49 % and dust 95 %
- » **Structural approach a necessity:**
  - » Energy *concepts*
  - » Analyzing and defining *operating structures*
  - » Creation of *marketing units*
  - » *Cooperation* of utilities, housing market and end-users
  - » *Legal framework*



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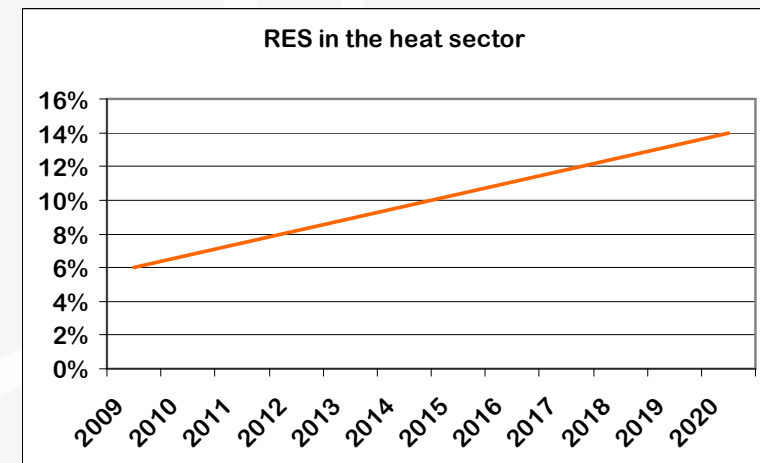
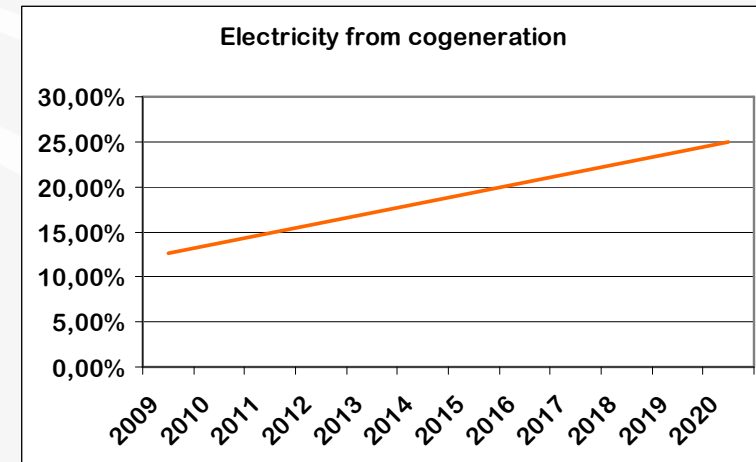
## » Political targets for DHC/CHP

### Targets for 2020

- » Increasing the share of *electricity from cogeneration to 25 %*
- » *40 %* reduction of *CO<sub>2</sub> emissions*
- » Increasing the use of *RES in the heating sector to 14 %*
- » Doubling energy productivity

### German legislation to implement DHC/CHP

- » KWKModG 2009 (Act on retention, modernisation and expansion of CHP)
- » EEWärmeG (Act on promotion of renewable energies in the heat sector)



## » Electricity from cogeneration and DHC networks

### Incentivizing development

#### Newly amended **KWKModG 2009**:

- » **Obligation to connect** CHP plants **and buy** electricity from cogeneration
- » **Premium** for electricity from cogeneration - 1,5 to 5,11 ct/kWh
- » Premium is **declining** over the years
- » Support for **DHC networks** - € 1 per mm diameter and meter length
- » Costs for the premium and network support are **allocated to all** end-consumers
- » **Compatible** with European law



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## » RES in DHC/CHP - Framework for integration

### New EEWärmeG:

- » Pre-emptive implementation of *RES-Directive* (*Obligation to use RES*)
- » *DH* based on CHP as an *alternative measure*
- » Natural gas from *processed gaseous biomass* (natural gas quality) fed to the grid is treated as *RES*
- » *Obligation to use* biogas (gaseous biomass) in *CHP*



Alex Marshall, Clarke Energy

### Potential for RES in DHC/CHP:

- » *Processed gaseous biomass* could solve logistical problems for bigger CHP plants
- » *Regional value added* through “Bio-energy towns” based on biomass production for smaller CHP
- » To save valuable primary energy *biomass* should *only* be used *in CHP*
- » *DHC* is a *flexible* way to incorporate different heat sources



Dschwen

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## » Waste management

### Chance for CHP/DHC

- » **Challenge:** Extensive use of landfills for untreated municipal waste due to lack of internalizing external costs
- » **Solution:** Ban of landfills for untreated municipal waste
- » **Main effects:**
  - » 15.000 jobs created
  - » Since 2005 waste-to-energy plants with a capacity of 12.5 million tons have been planned, built or put into operation
  - » Promotion of efficient use of waste in CHP



Stadtwerke München

## » DHC/CHP - Ready for today and future-proof

### Research and Development (R&D) in DHC/CHP

- » Intelligent Energy Europe (IEE)
  - » Ecoheat4Cities
  - » Stimulate the Use of Renewable Energy sources based on District Heating systems (Project SURE-DH)
  - » Urban Planners with Renewable Energy Skills (Project UP-RES)
  
- » Joint Research Project “Efficiency in District Heating” („Effizienz in der Fernwärme“)
  - » Analysis of the possibility for an increase in efficiency
  - » Decrease in life cycle costs of heat supply
  - » Consistent quality and security level



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## » Targets reached

### To sum up

- » The current awareness of climate change and the decision of the German Government to base future energy supply in Germany on efficiency and CHP **has brought the district heating sector** and the possibilities of district heating **into the focus**.
- » This is a **positive development and the right signal** for AGFW-related organizations.
- » The current laws come **close to the expectations and requirements** of the German district heating, cooling and CHP sector.
- » **AGFW is satisfied** with this initiative of the German Government!
- » Our appeal to the companies: **“Let’s take this chance!”**



District heating and CHP

# The intelligent solution

# for a better climate

Thank you for your kind attention!



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AGFW e.V.  
Stresemannallee 28  
60596 Frankfurt a. Main

[www.agfw.de](http://www.agfw.de)  
[www.energieeffizienzverband.de](http://www.energieeffizienzverband.de)