



**Martin Forsén**  
Manager International Affairs  
NIBE Climate Solutions

# The energy system of the future With focus on the heating sector

# A world in (rapid) change



COP21 - CMP11  
**PARIS 2015**  
UN CLIMATE CHANGE CONFERENCE





# EU:s targets for 2030

- 40% reduction in greenhouse gas emissions compared to 1990
- 32% renewable energy  
*no binding targets at national level*
- 32,5% increased energy efficiency  
*indicatively target*



# Political Tools within EU

- The Renewable Directive
- The Energy Efficiency Directive
- Ecodesign Directive and Energy labelling
- The Energy Declaration Directive on buildings  
*“Near zero energy”*



# Megatrends – The Energy Sector

- Electrification
- Energy Efficiency
- Renewable Energy
- Decentralization
- Digitalization



# Electrification – Energy Efficiency

- The transport sector
  - Cars
  - Buses
  - Bicycles
  - Rail-bound traffic
- The heating sector
  - Heat pumps
  - 5<sup>th</sup> Generation District Heating
- Industry

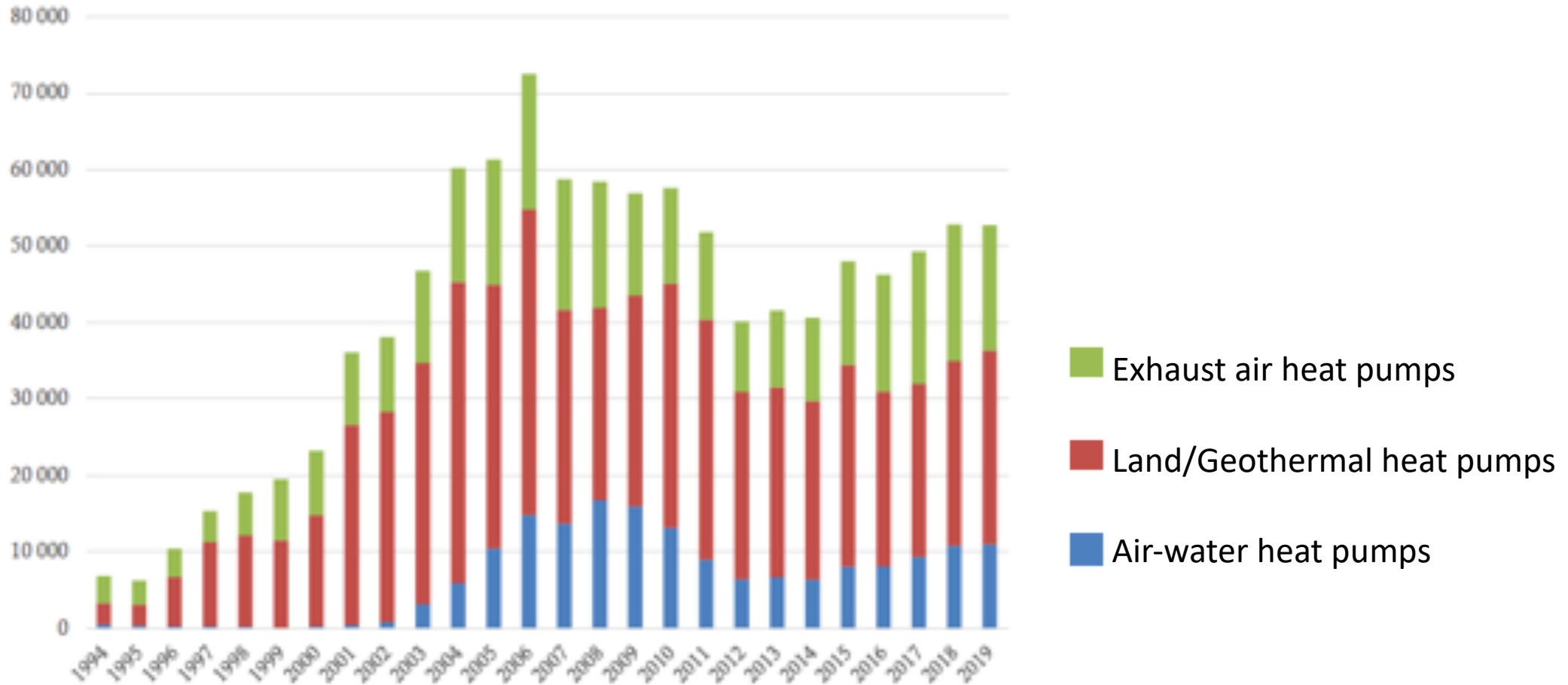


# Use of heating oil for heating



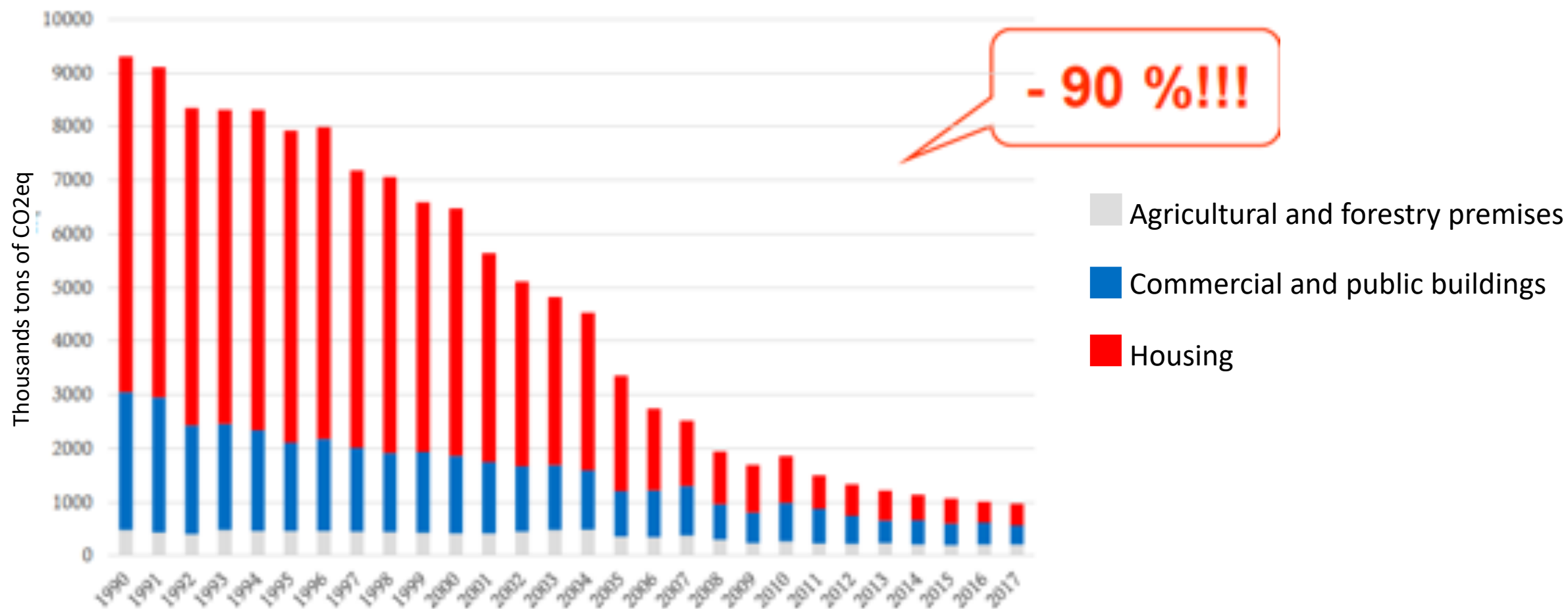


# Sales of heat pumps in Sweden





# CO2-emissions related to heating of buildings



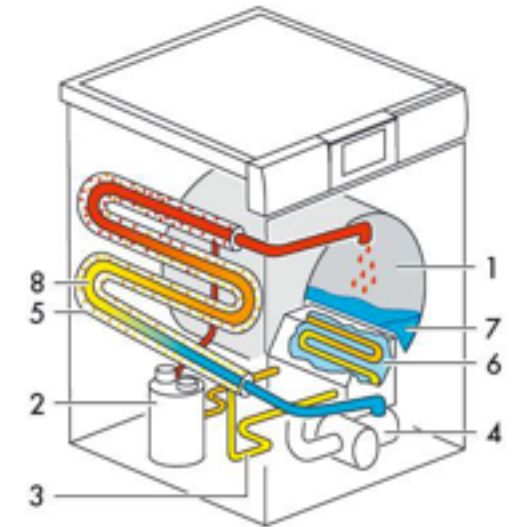
# Heat pumping of society



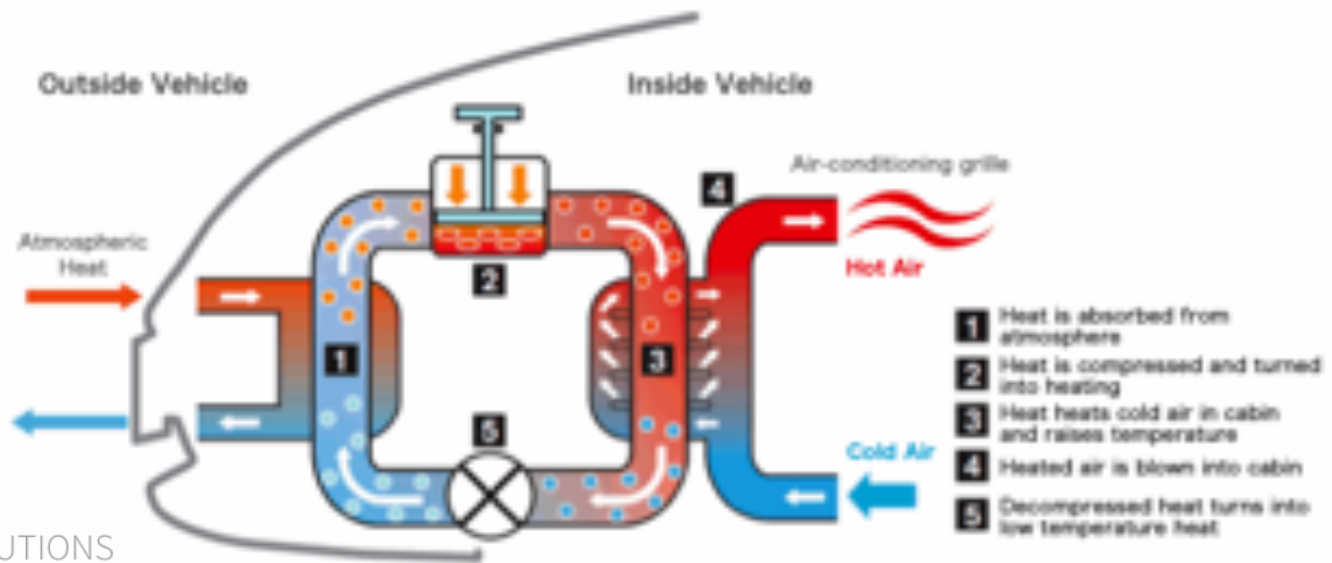
## Nutzen

Der Stromverbrauch gegenüber einem herkömmlichen Waschautomaten wird noch einmal um ca. 55 % gesenkt. Die neue Adora SLQ WP ist somit der sparsamste Waschautomat und schont die Umwelt und Ihr Portemonnaie.

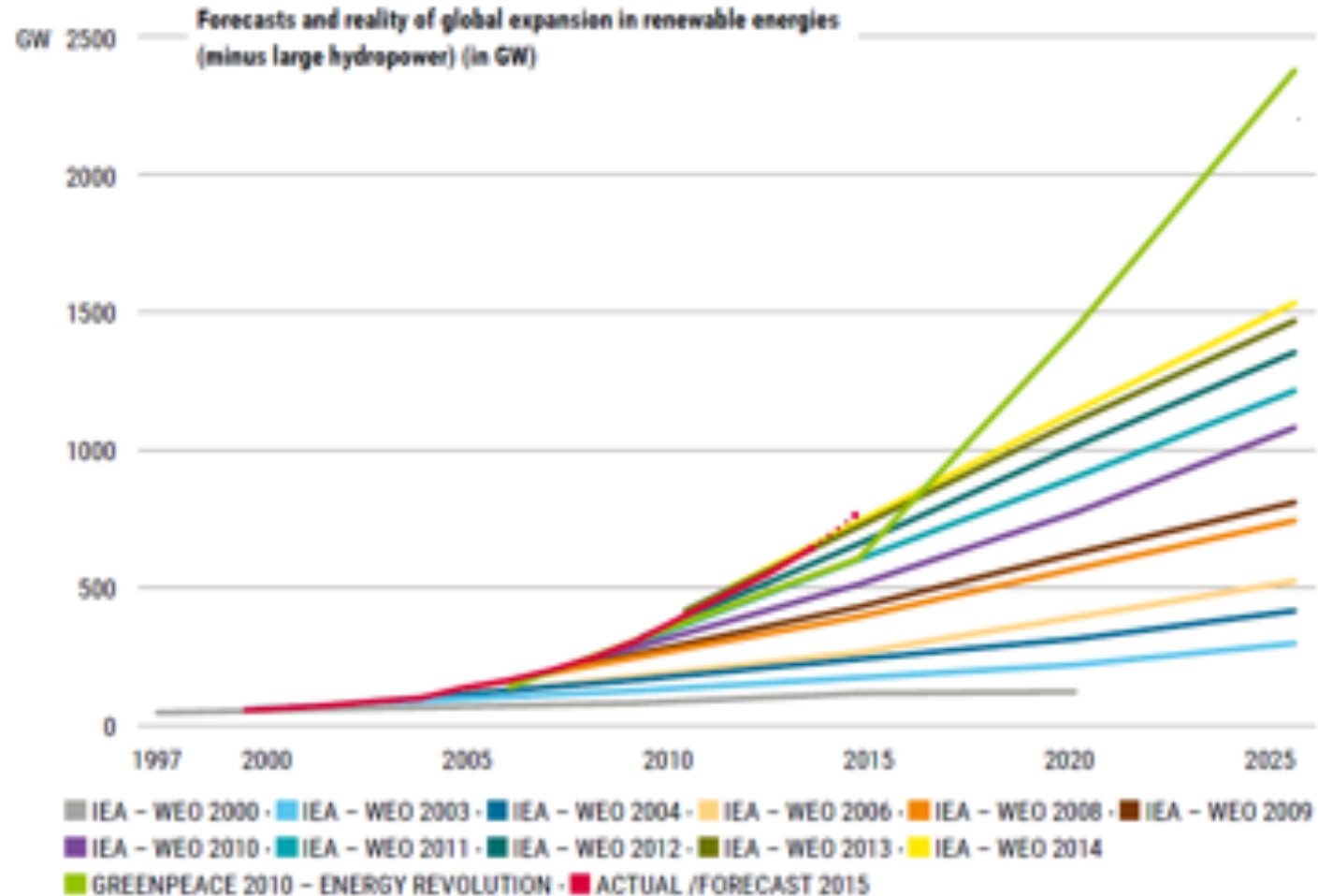
## Funktion



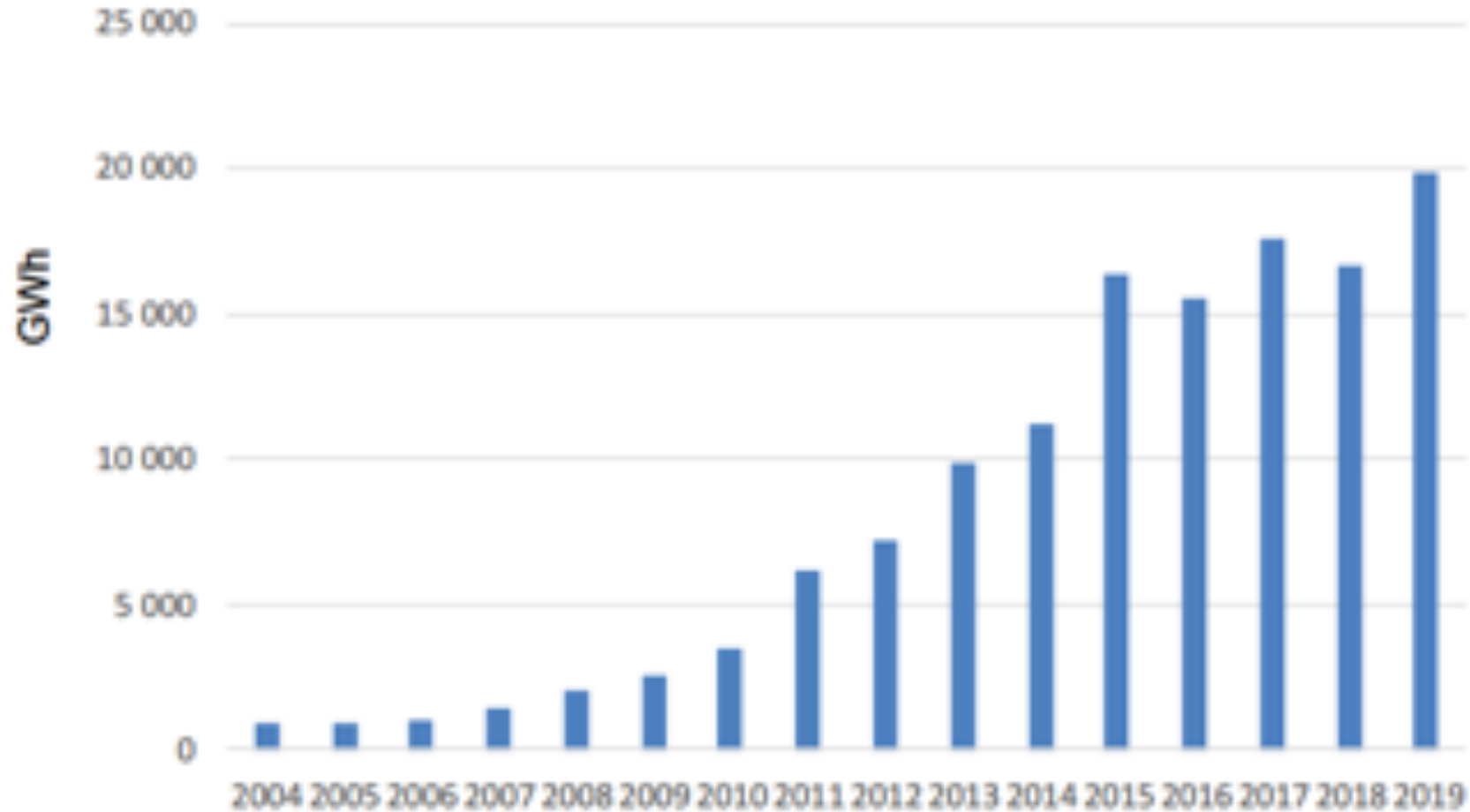
- 1 Wäschetrommel
- 2 Kompressor
- 3 Kältemittelkreislauf
- 4 Zirkulationspumpe
- 5 Wärmetauscher
- 6 Verdampfertank



# Megatrends – Renewable Energy



# Wind Power in Sweden





# Decentralization – Renewable Energy



# The Future – Solar Cells integrated in building elements



*Picture: Tesla*



*Picture: Ventus Energy*



*Picture: Toyota*



# Solar Cells integrated in building elements



# Buildings of the Future





# Ectogrid – Smart Thermal Grid by EON



ectogrid™

Energirevolutionen är äntligen här



# The smart cities of the Future



Smart Thermal Grid

# Digitalization



***SMART  
GRID***



- Electronics
  - Monitoring
  - Surveillance
  - “Smart price adaption”
  - Demand side management



A vibrant landscape featuring a tea plantation on a rolling hillside. The tea bushes are arranged in neat, terraced rows, creating a rhythmic pattern of green. Several tall, slender trees are scattered across the slope, some standing prominently. The sky is a clear, deep blue, and the overall scene is bright and sunny. A white rectangular box is overlaid on the lower portion of the image, containing the text "Thank you for your attention!".

Thank you for your attention!