

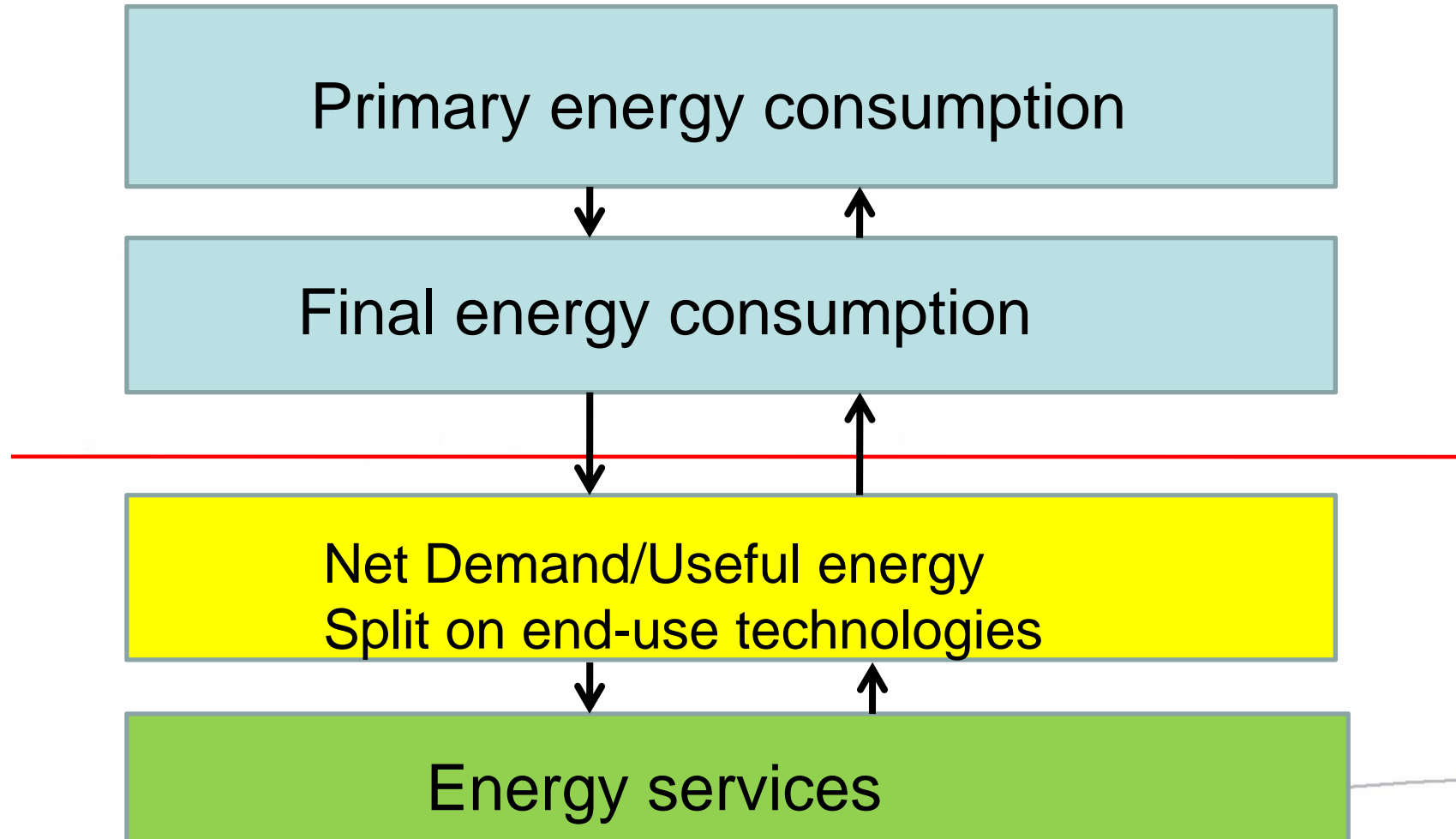


# Energy Efficiency and Energy Consumption

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Strategic Role on Energy Statistics  
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# Basic energy statistic

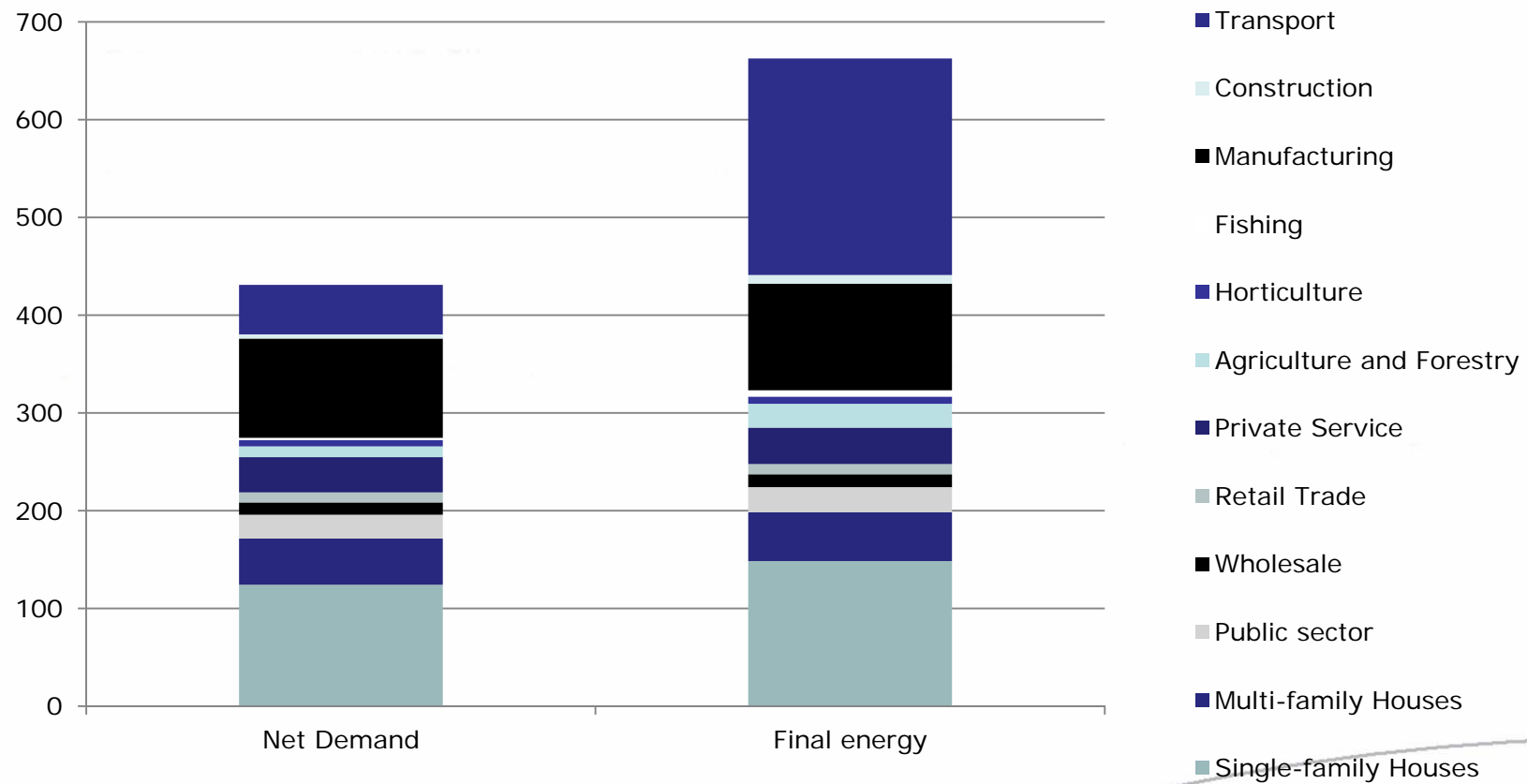


# Final energy

- A bad measurement of end-use consumption
- A mix of primary energy (oil, gas, coal, biomass) and secondary energy (electricity, district heating)
- Includes local losses in conversion
- Rules for counting renewable energy

# 1 step: Net demand at sector level

2008



## 2 step: Split on end-uses/technologies

- Heat consumption
  - Hot tap water
  - Space heating and heat losses (windows, roof, walls, etc.)
- Electricity consumption
  - Lighting, ventilation, cooling, communication, etc.
- Process in industry
  - Consumption for different process (drying, melting, burning, distillation, etc.)

# What shall “we” measure?

- Energy intensity/energy productivity
  - Whole economy or at sector level?
- Energy efficiency
  - Definition?
  - Whole economy or at sector level?
- Energy savings
  - Effect of policy measures – additionality
  - Each measure, combinations or at sector level?
- Energy consumption

# Energy intensity

- Normally energy consumption per unit of economic output
- Toe per unit of GDP is a bad indicator for energy efficiency
  - Don't show effect of structural change or structural difference
- Can be useful at sector level
  - Toe per unit of value added

# Energy efficiency

Definition (from EED)

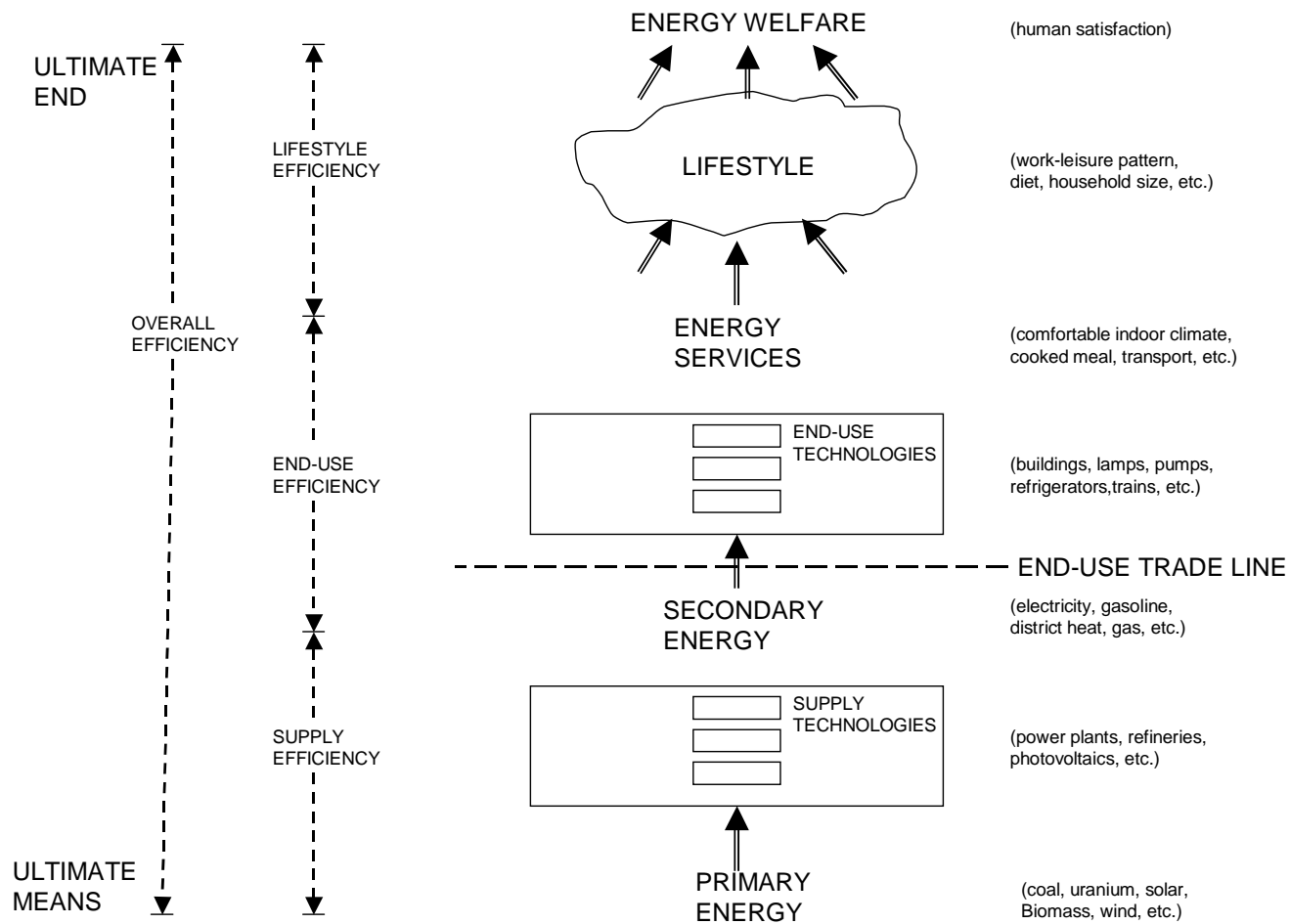
- '*energy efficiency*' means the ratio of output of performance, service, goods or energy, to input of energy;
- Energy service is the best measure of output
- Goods in physical terms can be a relevant indicator



# Energy service

- Use of energy is a mean to fulfill the need for energy services
  - It is not a goal by itself
- Examples on energy services:
  - Right temperature in buildings (heating, cooling, ventilation)
  - Light (daylight, lighting, quality)
  - Preparation of food
  - Production of goods
  - Transport from home to work, to family, etc.
  - Communication
- Goal: Fulfill the societies need for energy services as efficient as possible

# The energy chain



Source: Jørgen S. Nørgaard

# Data on energy services/output

- Heated area – m<sup>2</sup>
  - For different types of buildings
- Stock of different appliances etc.
- Production in different branches
  - In physical terms if possible
  - Special focus on energy intensity sectors
- Person km
- Ton km

# Measure of energy savings

- Definition (from EED)
  - '*energy savings*' means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption;
- Baseline is very important
- Autonomous and structural change
- Beyond energy statistic

# Conclusions

- Strong political focus on energy efficiency and energy saving
- Need for more and better data on
  - Energy consumption
  - Energy services
- Thank you for your attention
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