



Peter Leupp, head of ABB Power Systems division, Montreal, Sept. 14, 2010

# Global energy mix in 2030

## Cost-effective solutions to the global energy challenges

# A lot can happen in 20 years...



- Mobile communications for the masses

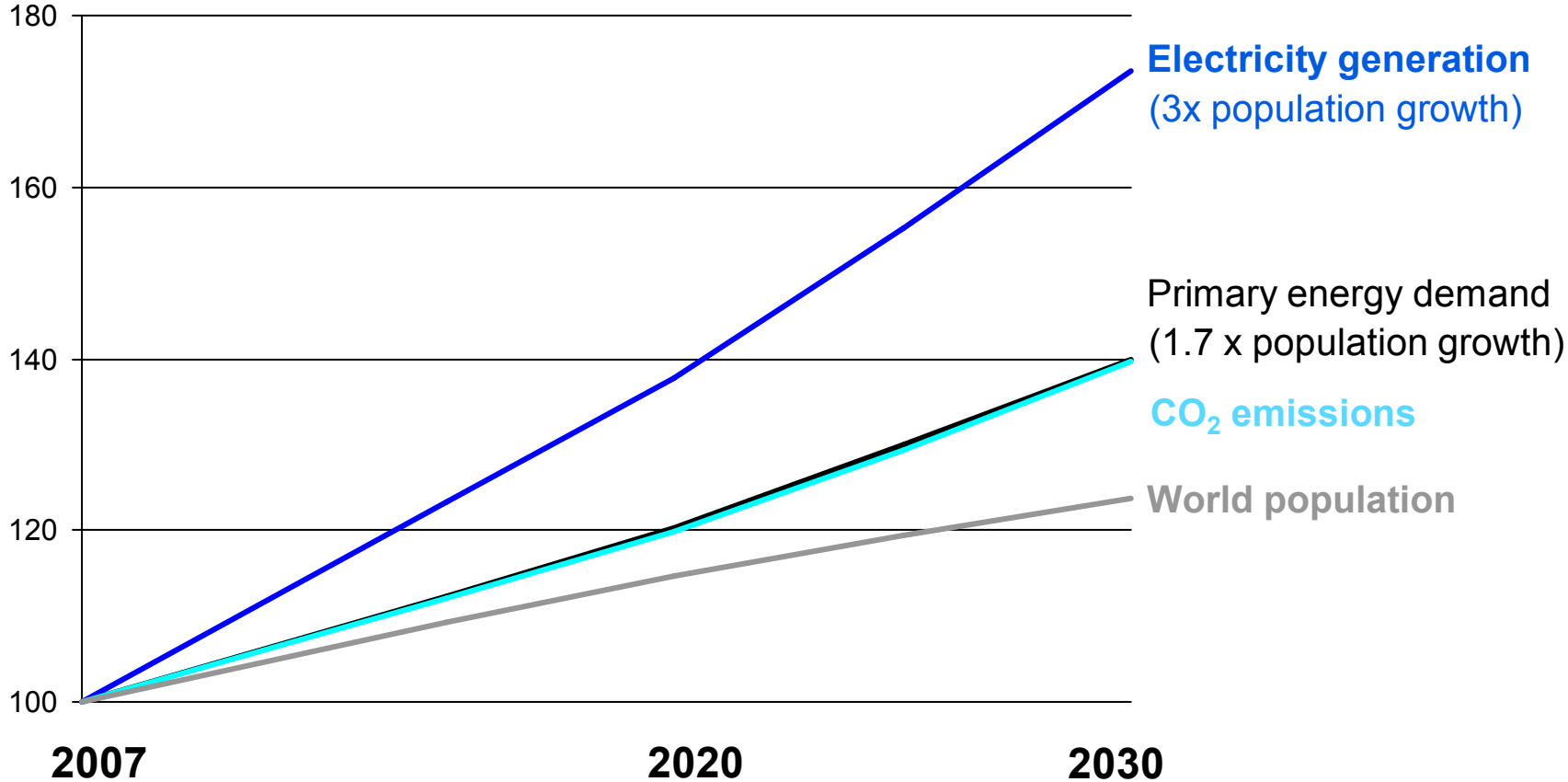
1990



and 2010

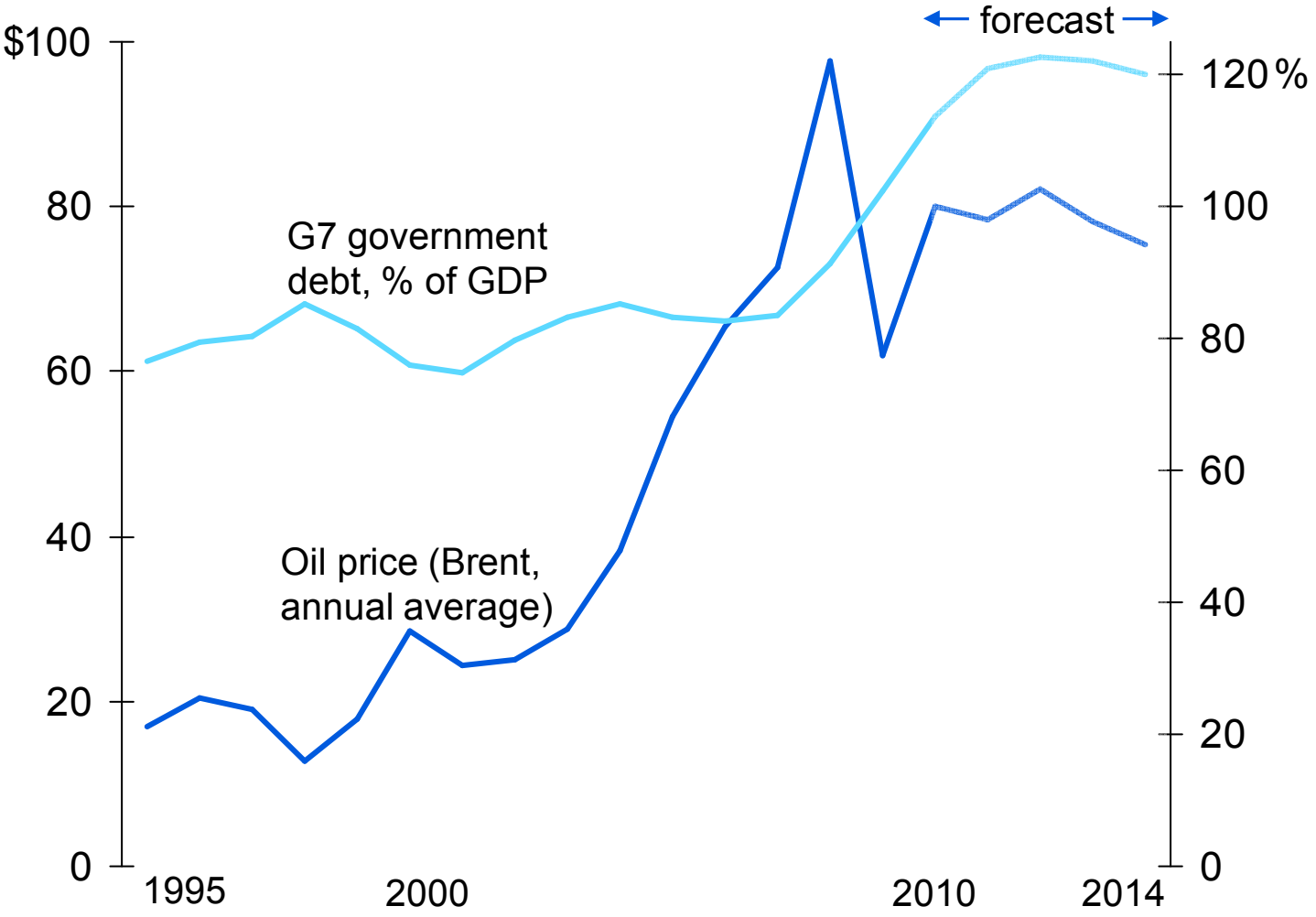
# What are the prevailing trends impacting energy? Growth in population, living standards, demand, CO<sub>2</sub>

All values rebased to 100  
Source: International Energy Agency, Global Insight



# Financial constraints also here to stay Need for cost-efficient solutions is paramount

Source: Global  
Insight, EIU



# Shaping the trends between now and 2030

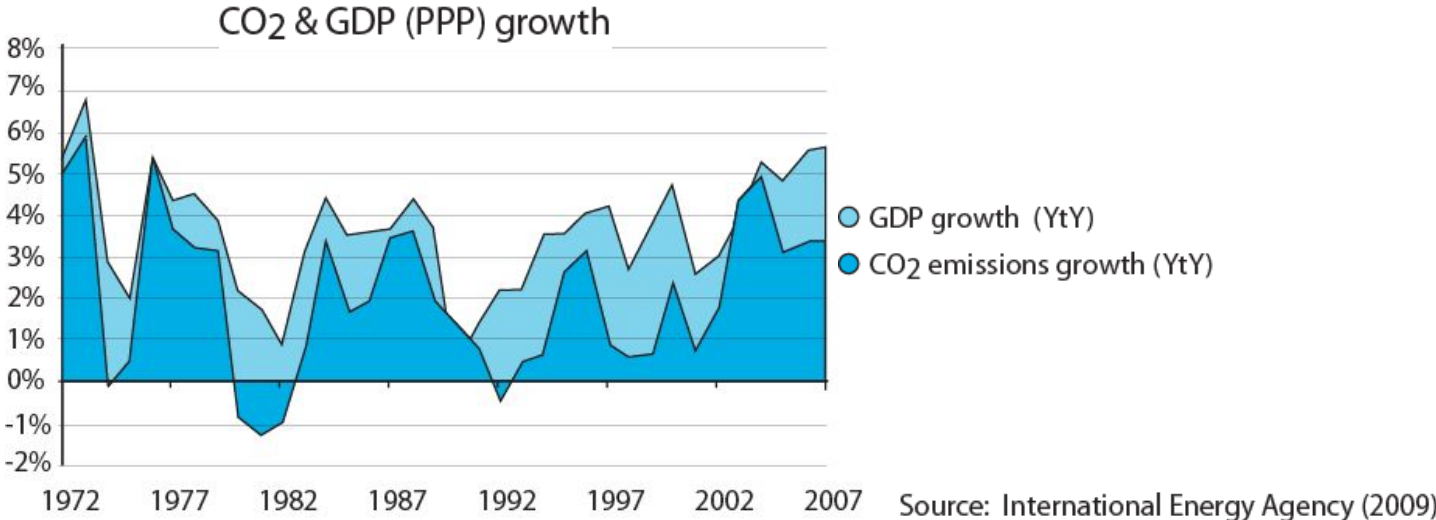
## Cut link between growth, energy use and emissions

Reduce the correlation between economic growth and energy use

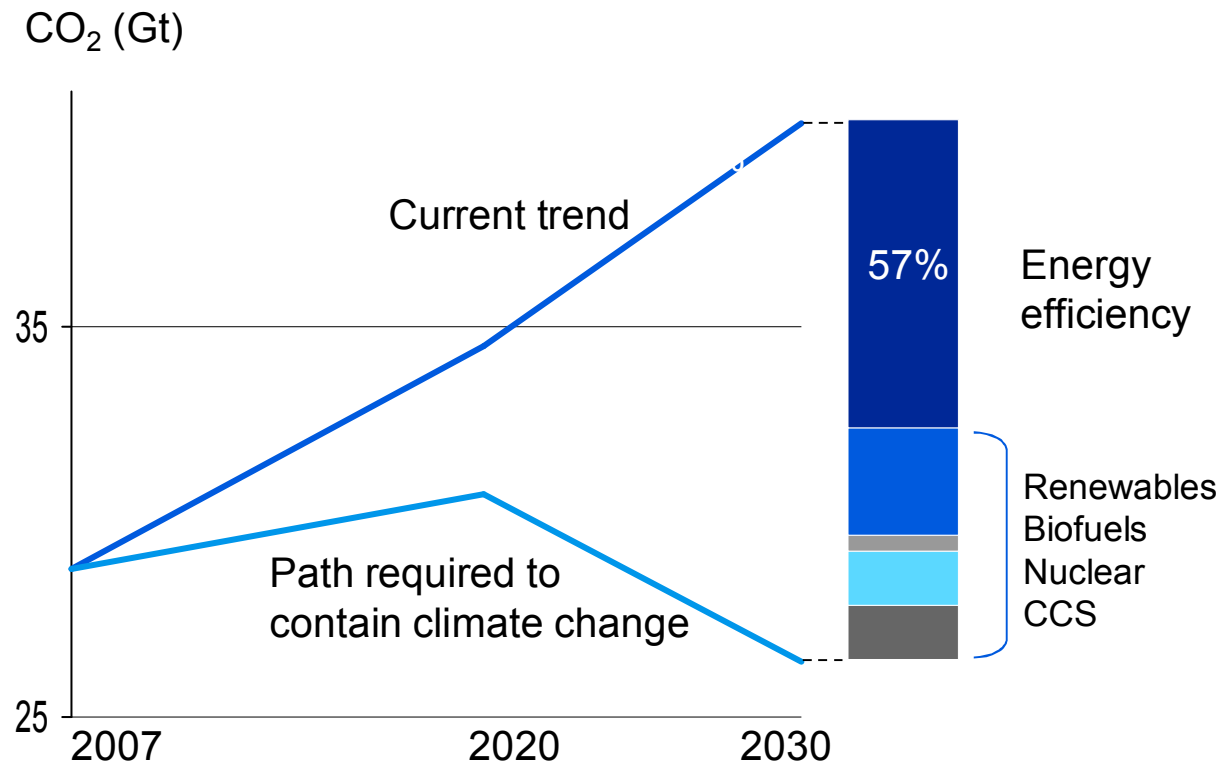
Reduce the correlation between energy use and emissions

Energy efficiency

Renewables  
Carbon capture (CCS)  
Nuclear



# Energy efficiency is more than 50% of solution So why isn't it more widely pursued?

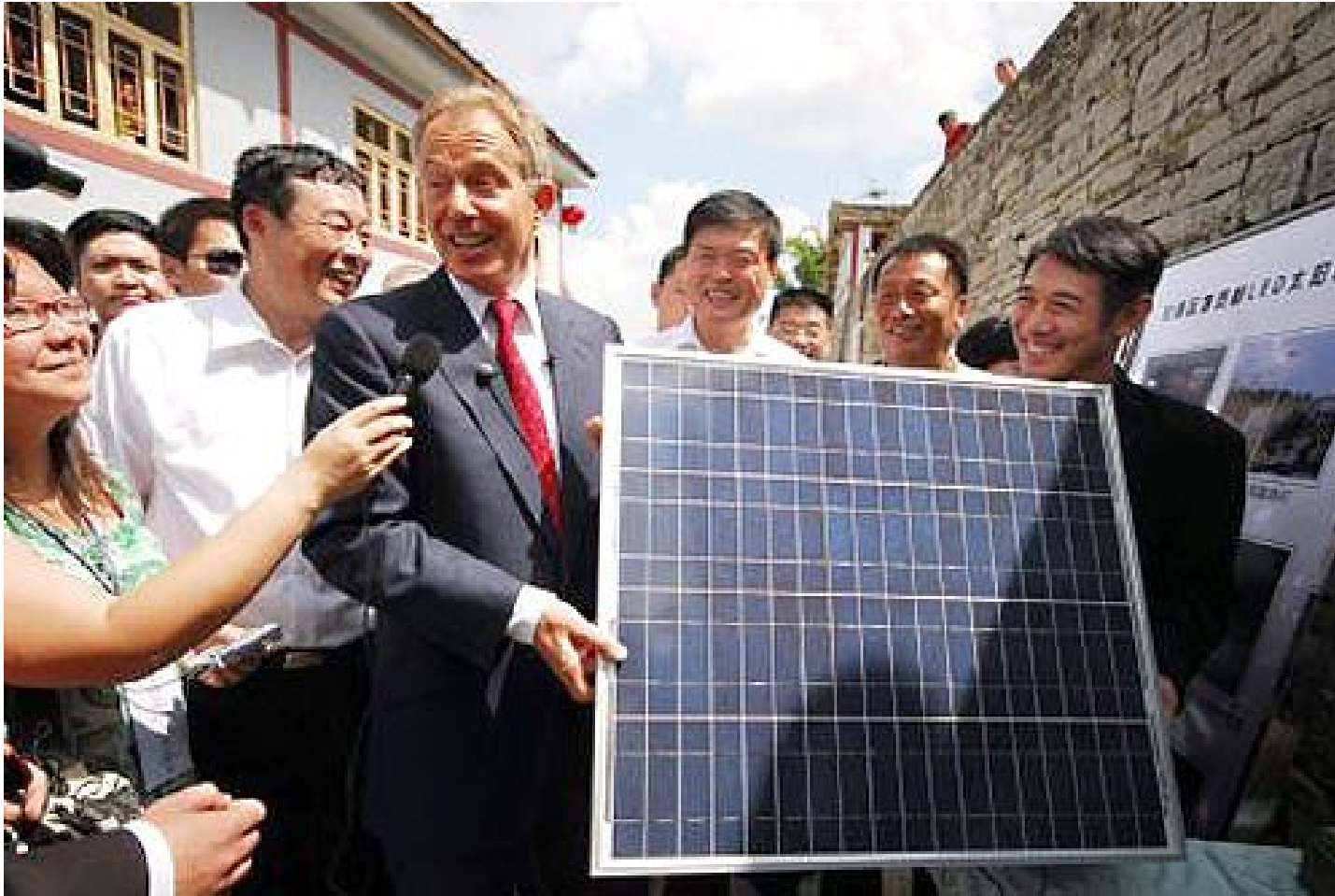


- Barriers to energy efficiency include:
  - Lack of information
  - Fragmentation
  - Apathy
  - Cheap energy (esp. power)
  - Cost of efficient equipment
  - Doubts technology will deliver
  - Misaligned incentives
  - And...

Source: IEA



...You can't be photographed with energy efficiency

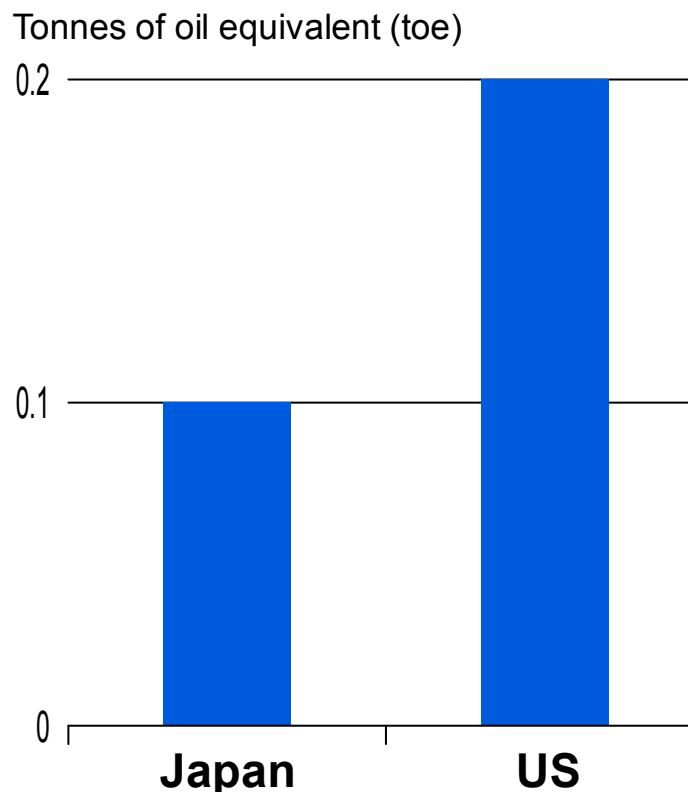


# The barriers are not impossible to overcome

## Japan twice as efficient as US: Why?

### Primary energy used per \$1,000 of GDP

Source: International Energy Agency



### Efficiency drivers in Japan

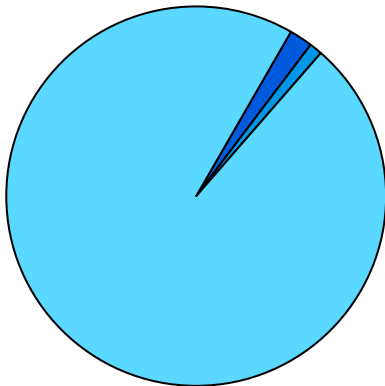
- Support for R&D since 1970
- Mandatory targets and taxation
- Subsidies for purchase of efficient equipment
- Standards
- Price of energy
- Storage of electricity
- Peer pressure



# Information is crucial

## Learning to consider the total cost of ownership

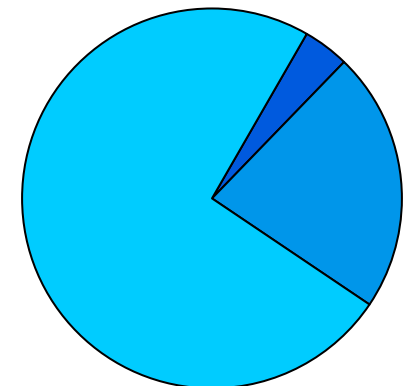
LV motor



Cost of ownership breakdown (in %)

2	Purchase & installation	4
1	Maintenance & reliability	22
97	Energy	74

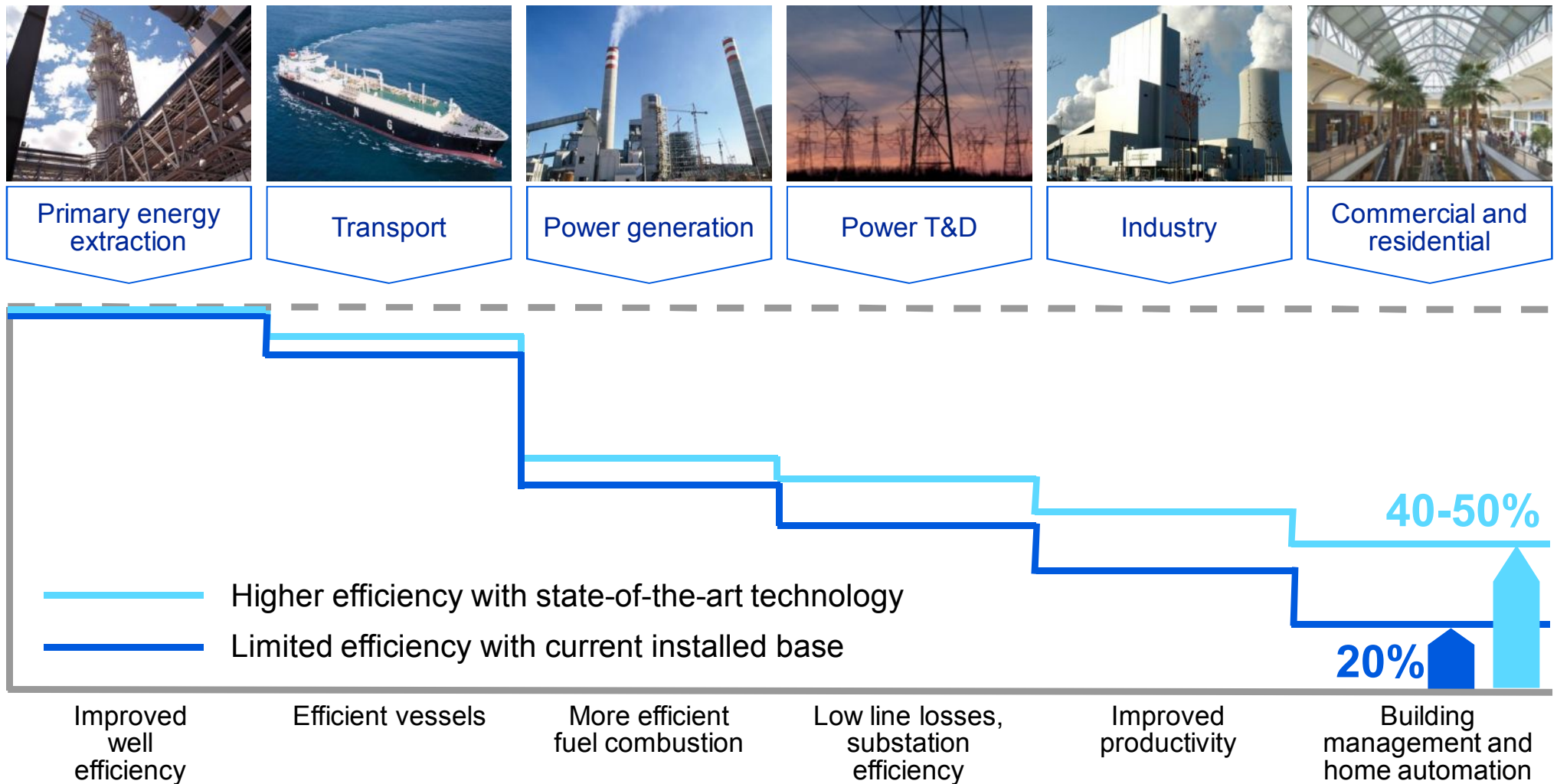
MV / HV motor



- 65% of total electricity at industrial sites is consumed by electric motors
- Motor purchasing price = 3-6 months of its electricity consumption

# The potential for electrical energy efficiency

## Losses can be reduced by half



# Summary

- Energy challenges: demand, environment, financial
- These challenges pull in opposite directions
- All available technologies must be deployed
- Solution that best addresses challenges is energy efficiency:
  - curbs demand without impacting end user
  - cuts emissions
  - saves money
- Economies such as Japan show that barriers to capturing the opportunities can be overcome

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