

May 15, 2014 - Berenberg Energy Efficiency Conference in Zurich, Dr. Anders H Nordström

Trends in global energy efficiency

An analysis of industry and utilities

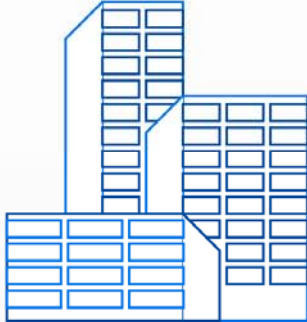
A global leader in power and automation technologies

Leading market positions in main businesses

~150,000 
employees

 **\$42**
billion
In revenue
(2013)

Present
in
+100 
countries

Formed
in
1988 
merger of Swiss (BBC, 1891)
and Swedish (ASEA, 1883)
engineering companies

Sustainability - part of our business

Energy and resource efficiency



Energy and resource efficiency are integrated into our technology and what we offer customers

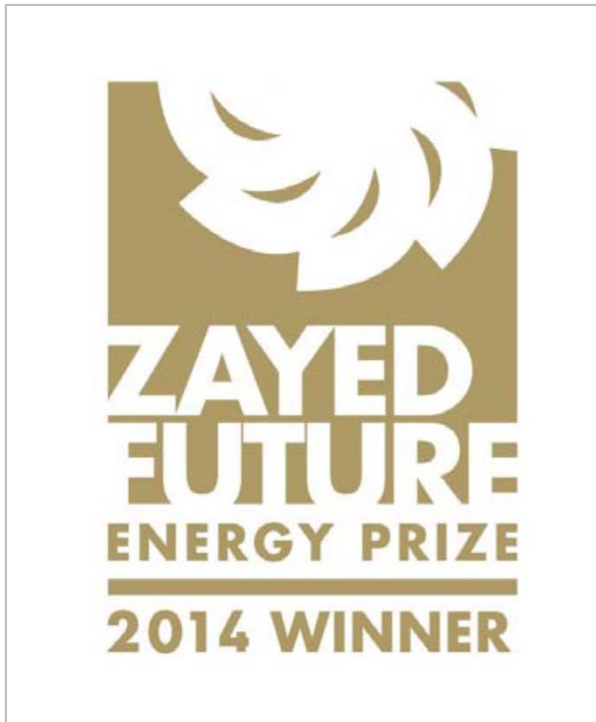
ABB is world's

- Largest supplier of high-efficiency power grids to integrate renewable energy
- Largest manufacturer of energy efficient industrial motors and drives
- Largest provider of generators to wind industry
- Second largest solar inverter company, following Power-One acquisition
- Leading supplier of electric vehicle charging infrastructure



ABB's vision: Power and productivity for a better world

Strong external endorsement



Recognition for ABB's efforts in energy efficiency and renewable energy technologies

Underlines our relentless drive for innovation to create new offerings and value for our customers

Reflects ABB's pioneering heritage in technology innovation

Strengthens our reputation in the Gulf region and in key market segments

Trends in global energy efficiency 2013

Raising awareness about the potential



- 2nd edition of “Trends in global energy efficiency,” comprising:
 - Interactive maps, with a special focus on industry and utilities
 - White paper based on exclusive survey of executives in manufacturing and utilities, and in-depth interviews
 - Global overview of energy efficiency in industry and utilities
 - Reports on state of energy efficiency in 46 countries

Researched and written by independent partners EIU and Enerdata



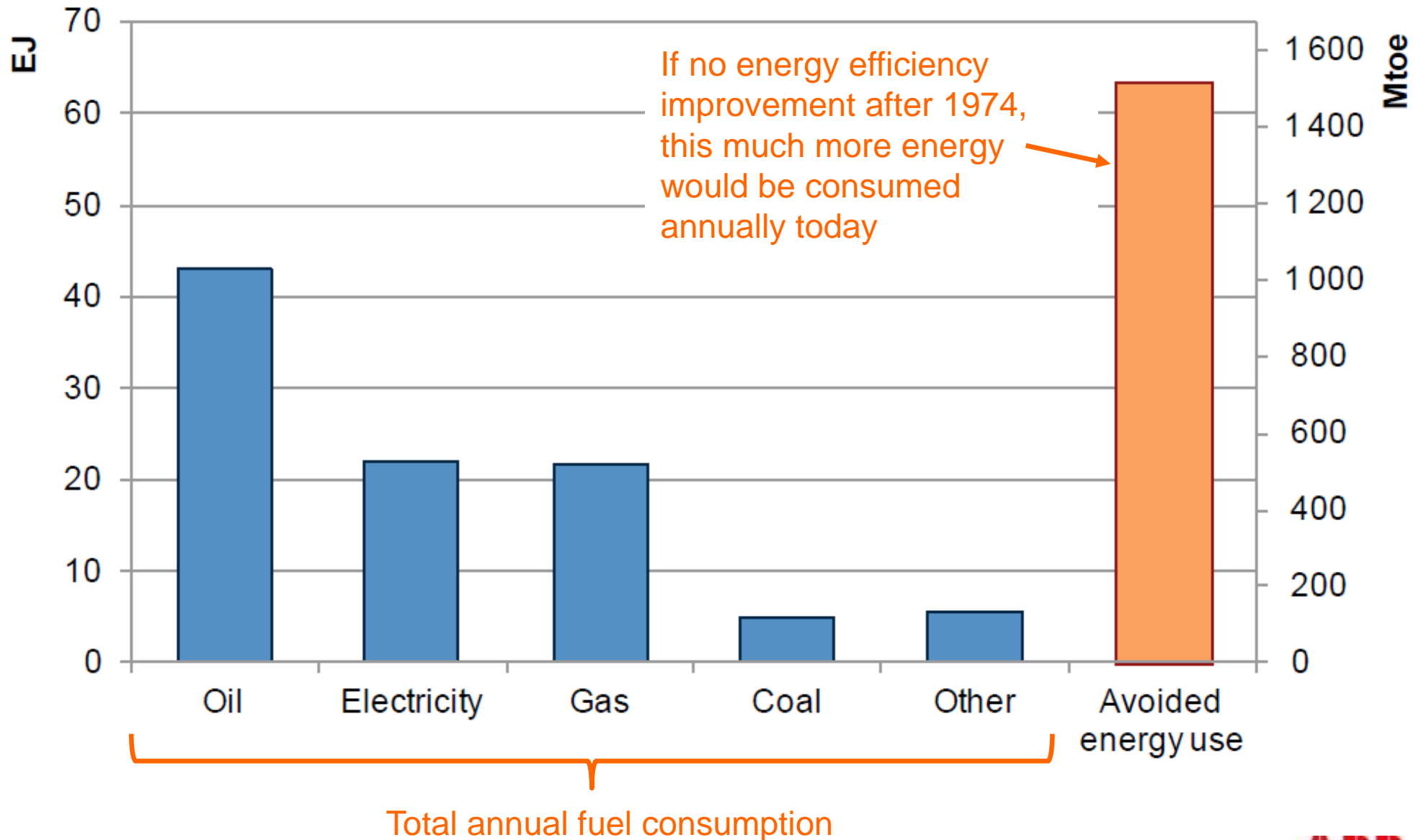
Business intelligence for
decision makers



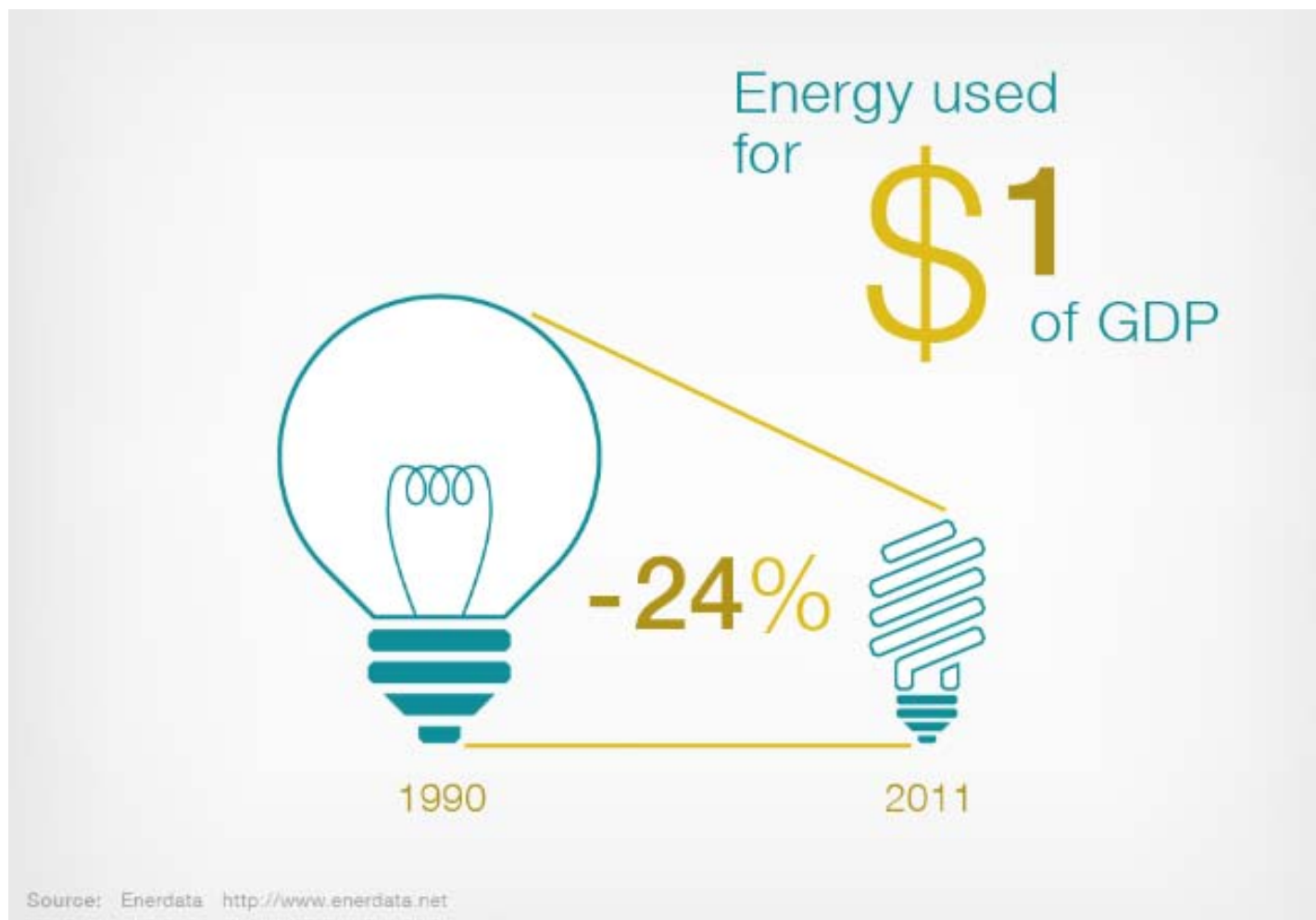
Research and consulting on
global oil, gas, coal, power,
renewable and carbon
markets

Energy efficiency - the first fuel

Large annual savings from continual efficiency efforts

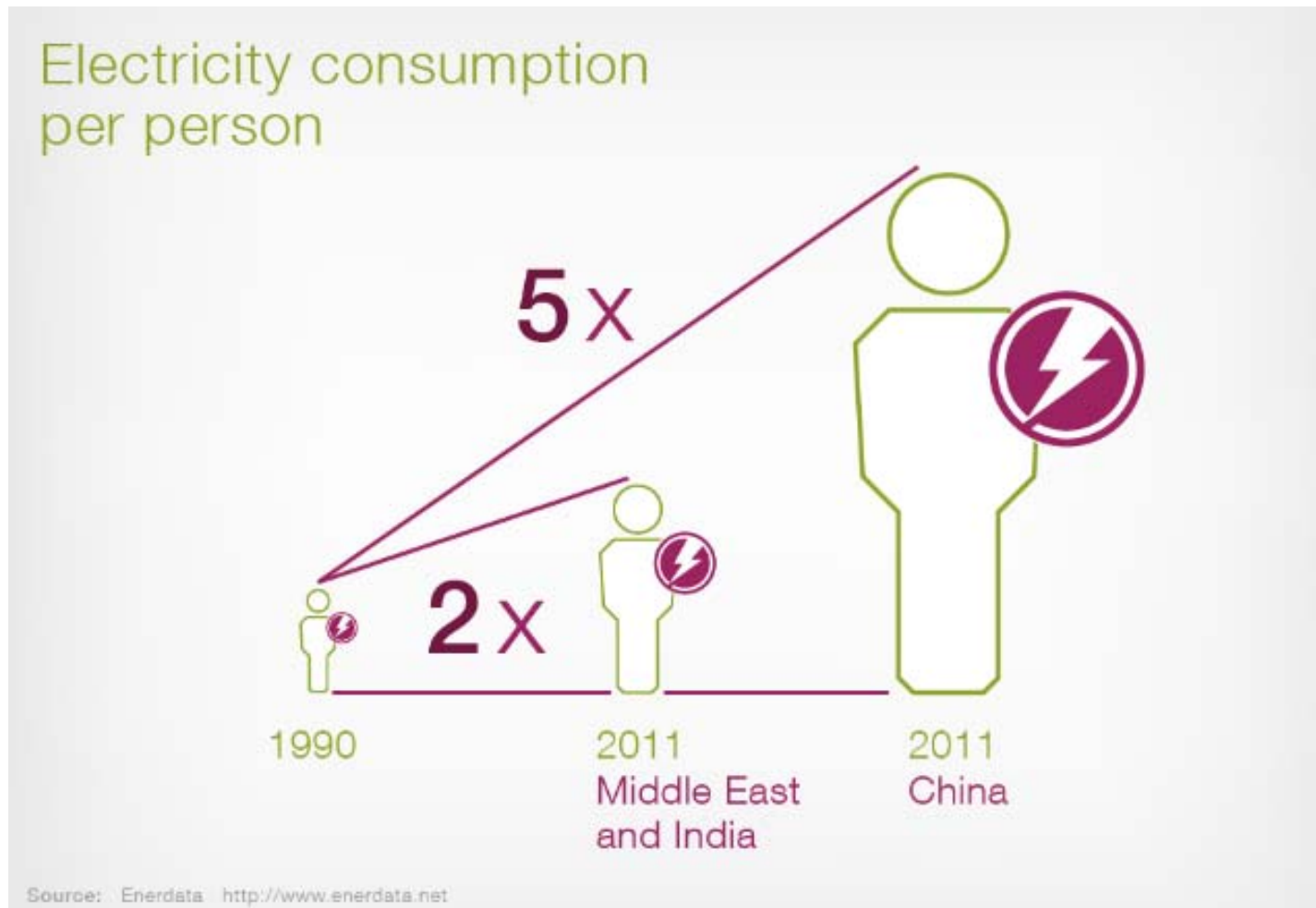


Energy consumption is decoupling from GDP growth But improvement has slowed in latest decade



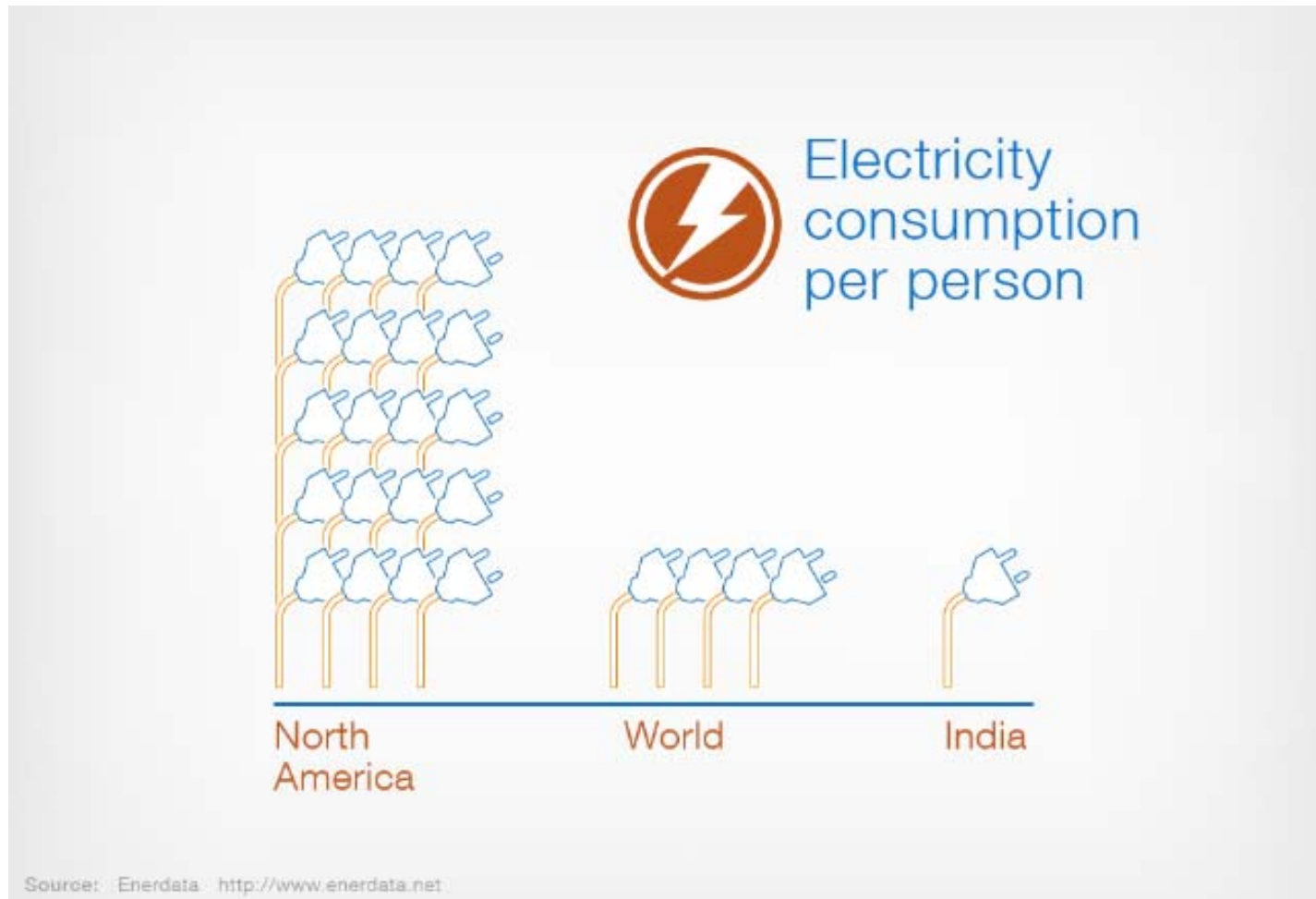
Energy consumption is still increasing worldwide

Rising living standards in emerging markets fuel growth



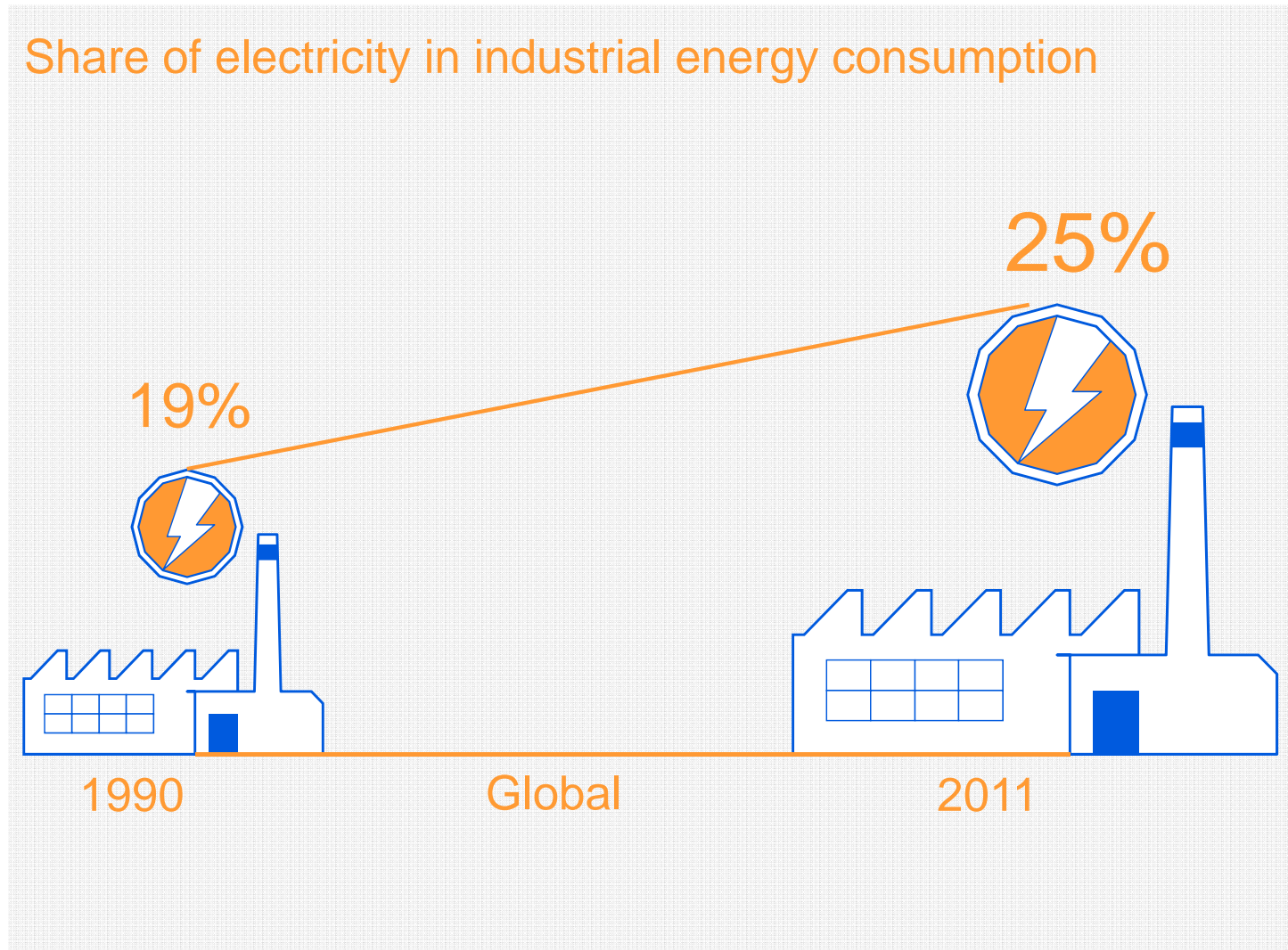
Emerging markets still have a lot of catching up to do

Growth in demand could persist for many years



Increased share of electricity in industry

Automation of processes and substitution of fuels



Key findings from survey and white paper

Industry executives say energy efficiency is critical

72% **75%**
2011 2013

Agree 'strongly' or 'somewhat' that **energy efficiency is a critical success factor** for manufacturers

- Industry executives say better energy efficiency is critical and will remain so over the next two decades
- More companies are seeing energy efficiency as a key part of their efforts to promote sustainability
- More firms are investing in efficient lighting, heating and air conditioning – but the proportion investing in efficient plant and equipment is static

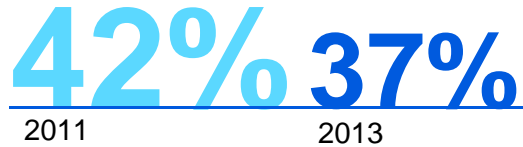
26% **35%**
2011 2013

Say **improving the company's image** as environmentally concerned is a main driver of energy efficiency investments

Key findings from survey and white paper

Regulatory pressure expected to intensify

42% 37%



Year	Percentage
2011	42%
2013	37%

Say **lack of a clear-cut financial case** is the main barrier to investment in industrial energy efficiency

50% 67%



Year	Percentage
2011	50%
2013	67%

Say they have a **company-wide energy management system** to track and optimize energy use

- Although barriers to investment in energy efficiency remain, they appear to be lifting for some companies
- Industry is embracing better practices around energy management
- Regulatory pressure on industry will further intensify
- Innovations in process design and execution will also promote better energy efficiency in the future
- The key to improved energy efficiency will increasingly lie in software rather than in hardware

Strengthening energy efficiency policy in OECD countries

Significant progress says IEA evaluation

27% 39%

2009 2011

Have achieved **full implementation** or **substantial implementation** of IEA's energy efficiency policy recommendations

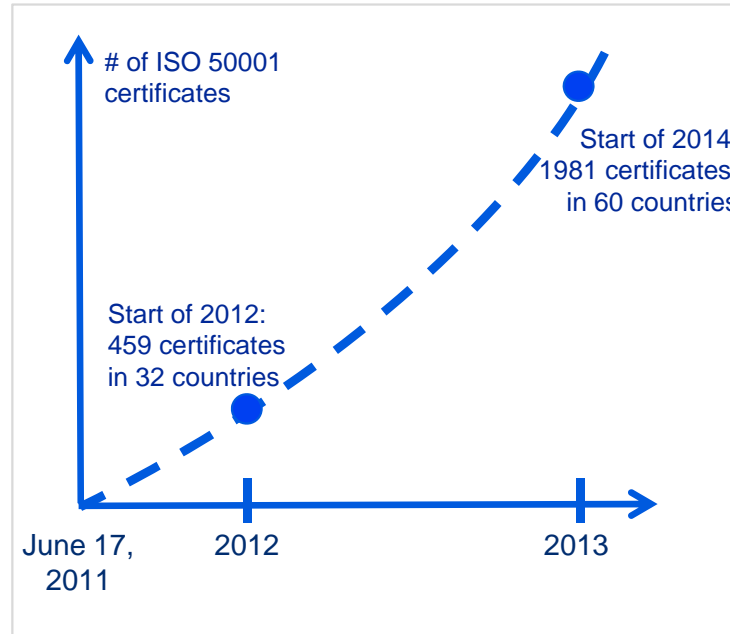
Electric Motors:

- New IE3 European standard is being introduced in January 2015
- MEPS – Minimum Energy Performance Standards – are used around the world

- IEA made energy efficiency policy recommendations (in 2008) to OECD governments
- 25 policy recommendations covering:
 - Appliances, buildings, cross-sectoral, lighting, transport, industry and utilities
- 20% cut of global final energy use by 2030, if recommendations implemented widely

Global focus on energy management in industry

ISO 50001 – new, global energy management standard



- ISO 50001 could influence 60% of world energy use
- It helps achieving and sustaining significant energy savings over time
- Helps integrate energy efficiency into management practices
- Regulation:
 - Germany plans surcharge to manufacturing companies that don't implement ISO 50001 by end of 2014

Energy efficiency in industry

Large opportunities and good progress while gap between awareness and action

* *Trends in global energy efficiency (2013)*, by the Economist Intelligence Unit and Enerdata



Industry accounts for about one third of the world's final energy demand

Industry's total energy use continues to grow

- In global survey*, 77% of manufacturers say energy efficiency critical success factor in next two decades
- However, only 39% had made energy efficiency investments in the past three years

Big opportunity for energy efficiency improvements

Potential in power industry with current best practice

Sources:

- The state of global energy efficiency, Enerdata
- Key World Energy Statistics 2013, IEA



Power generation

Savings potential: 700 Mtoe

= annual primary energy consumption of:

- 345 million Chinese
- 100 million Americans

Power transmission and distribution

Savings potential: 800 TWh

= annual electricity consumption of:

- 242 million Chinese
- 60 million Americans

Industry also offers big potential

Opportunities in steel and cement industries

Sources:

- The state of global energy efficiency, Enerdata
- Key World Energy Statistics 2013, IEA



Steel

Savings potential: 250 Mtoe



Cement

50 Mtoe

1 x Germany or Brazil

Potential in power generation, steel and cement 1,000 Mtoe with today's best practice



Savings potential in power generation, steel and cement

1,000 Mtoe

>\$680 bn

(at \$100 per barrel of oil)

Coal-fired power generation

Optimize operations and use efficient technologies



Coal-fired generation rose by 6% from 2010 to 2012

Half of coal-fired power plants built in 2011 use inefficient technologies

(Tracking clean energy progress, IEA 2013)

Case:

Better control of pumps at coal-fired power plant in Germany:

- 25% energy consumption

+ \$800,000 annual revenues

Energy Efficiency in industry

Energy audits help identify saving opportunities

* *Trends in global energy efficiency (2013)*, by the Economist Intelligence Unit and Enerdata



In global survey*, 36% of firms say they have conducted company-wide energy audits over the past three years

Case:

Energy savings audit at ArcelorMittal steel mill in France:

+ 53 saving opportunities identified

+ €10 Million annual energy savings

"For once we have completed a successful energy assessment on electricity opportunities in ArcelorMittal"

J. van Lishout, Energy Manager, Europe

Energy efficiency in buildings

40% of world primary energy used in buildings



80% of the economic potential of energy efficiency in buildings remains untapped

(World Energy Outlook, IEA 2012)

Cases:

Refurbishment of library in Australia:
- 50% energy consumption
+ \$160,000 annual savings

Building automation at museum in Italy:
- 28% energy consumption
+ \$112,000 annual savings

Energy efficiency in food and beverage industry

Large savings from automation systems and power solutions

Food and beverage industry is under great pressure – from retailers and distribution networks with tremendous price-setting power



ABB offers broad range of products, software and services to help food and beverage industry monitor, report and reduce energy use, and manage processes effectively

Case:

ABB Power Quality Solution at Pepsi Bottling plant, India:

- 10-20% on annual electricity bill for whole plant

+ Pays for itself in less than two years

Summary



- Energy efficiency is improving but the pace of improvement has slowed in recent years
- Industry executives say energy efficiency is critical to competitiveness and expect further regulatory pressure
- Executives cite a lack of information as one of the main barriers to greater investment in energy efficiency
- Better energy management helps achieving and sustaining significant energy savings over time
- Today's best practice could save more than \$680 bn in energy costs in the power generation, steel and cement industries alone

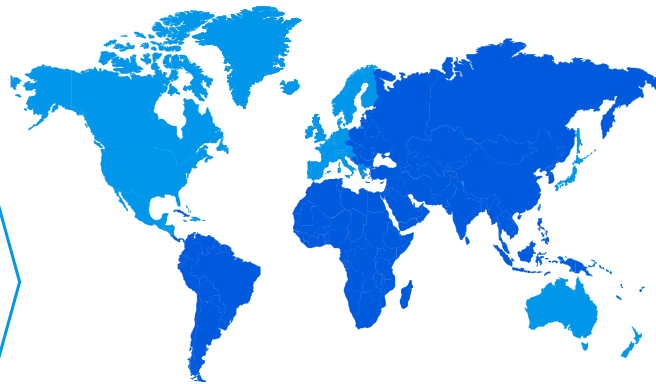
Power and productivity for a better world

Our contribution

Sustainable products and technology ...

- Industrial automation products and systems that use less energy and raw materials
- Power transmission and distribution solutions to deliver electricity more reliably, with lower losses and less environmental impact

... delivered globally



Approx. share of total revenues 2012



... with strong processes

- Profitable growth
- Resource efficiency
- Social progress
- Ethics and integrity

Benchmarked internally and externally



FTSE4Good

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