



# Energy Efficiency Training Week

Select energy efficiency programme measures

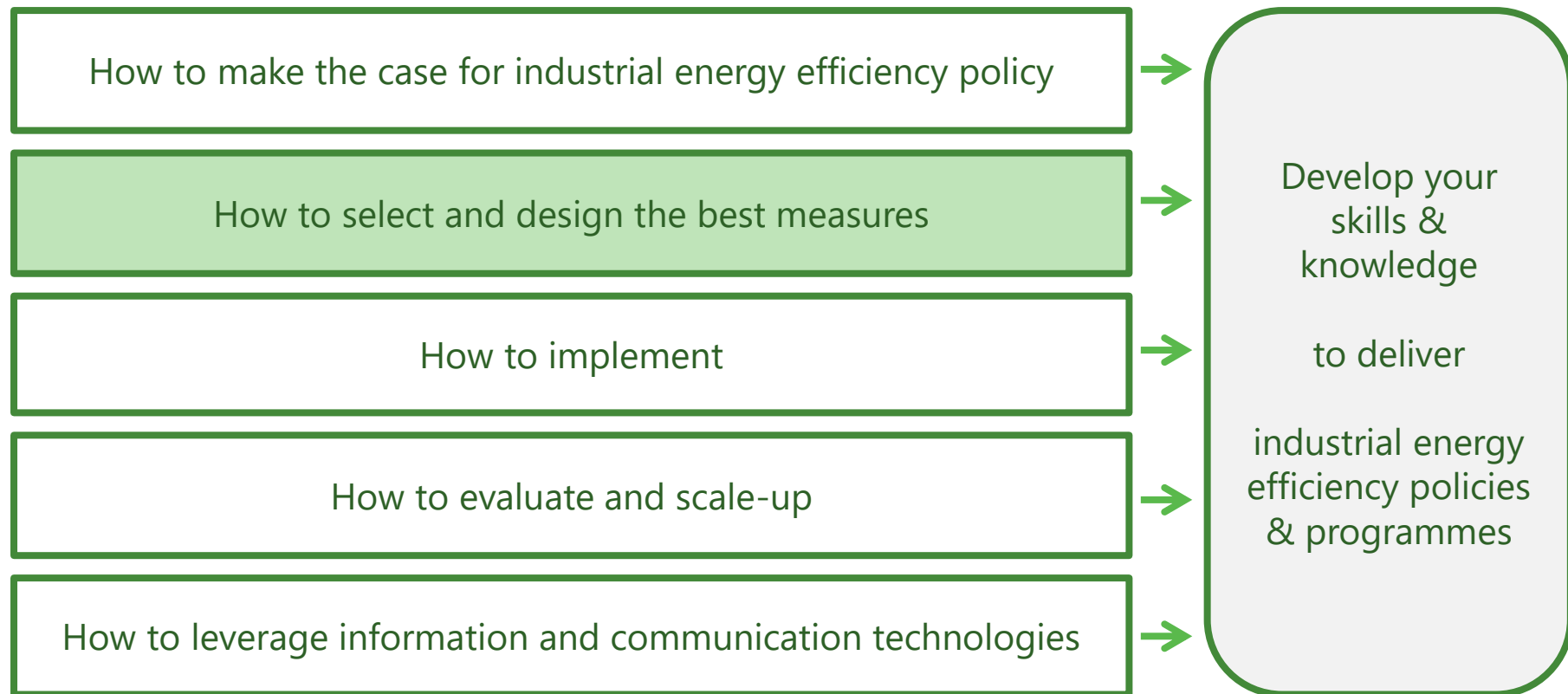
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Industry Stream

Patrick Crittenden, Energy Efficiency in Emerging Economies, IEA

Bangkok, 2 April 2019

 IEA #energyefficientworld



This session will focus on developing your capabilities to:

- Understand the different policy and programme measures that can encourage improved energy efficiency in industry
- Explore the country and market factors that influence selection of each measure
- Consider how best to combine measures

1. Information measures

2. Regulatory and target setting measures

3. Capacity building measures

4. Finance measures

5. Energy management measures

6. Technology acceleration measures

7. Supply chain measures

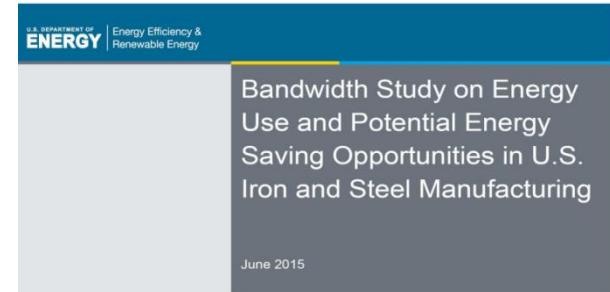
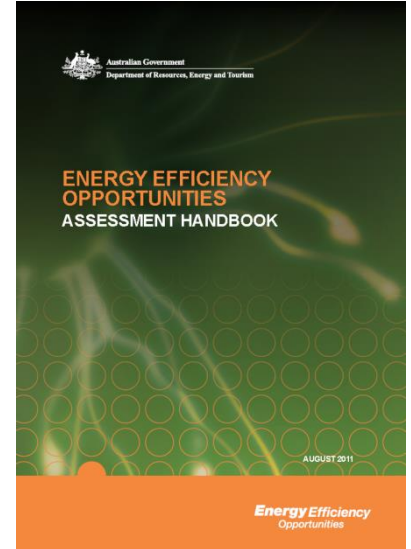


# Information measures – a range of options

- “How to” guidance materials
- Fact sheets
- Lists of typical energy efficiency projects and equipment
- Case studies
- Advice hotlines
- Workshops
- Webinars
- Energy Efficiency Networks



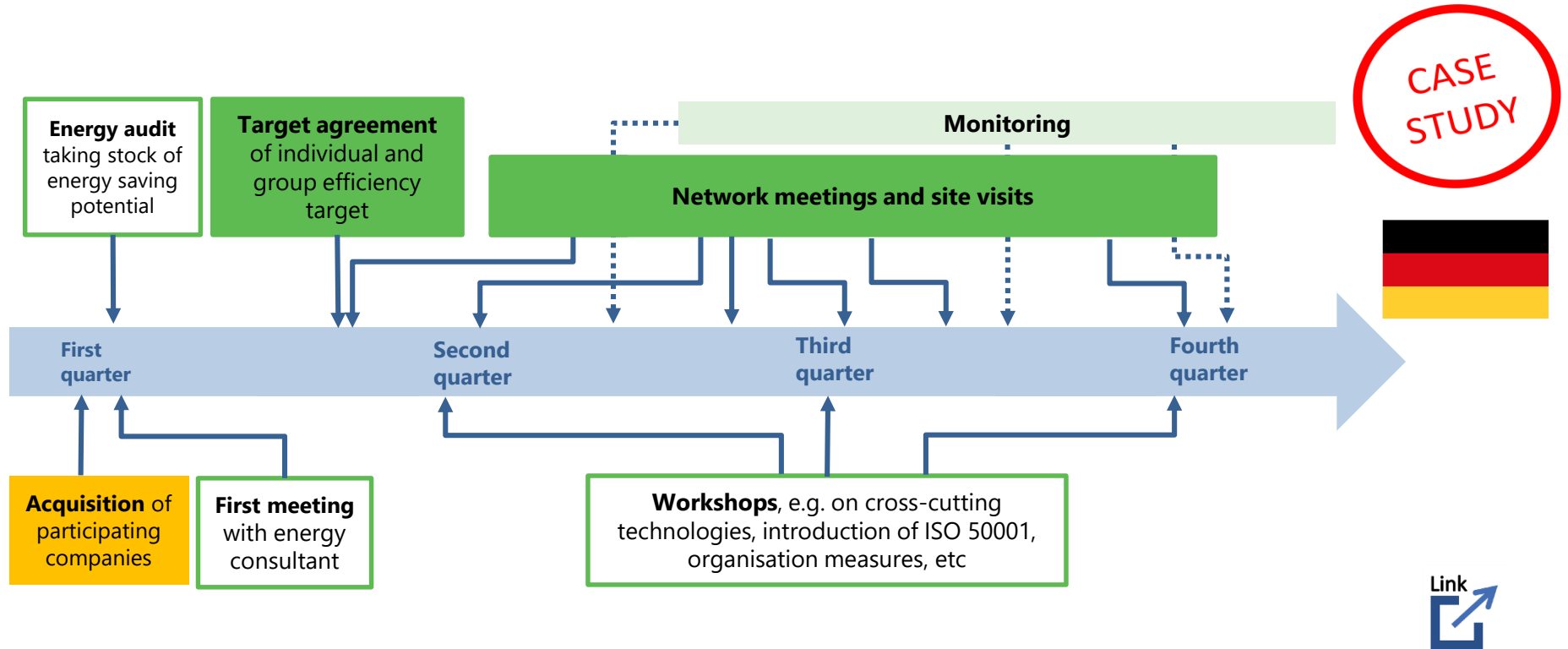
## Improving the efficiency of bakery ovens Case study



- Companies brought together from a region, sector, supply-chain, or within a corporate group
  - Exchange experiences and undertake steps together to improve energy efficiency.
- 30 pilot networks in Germany with 210 participating companies
  - Almost 2000 different EE measures realised
  - Energy savings of 870 GWh, 10% energy cost savings and 1000 tonnes CO2 reduction



# Energy efficiency networks (EENs) - Germany



## Advantages

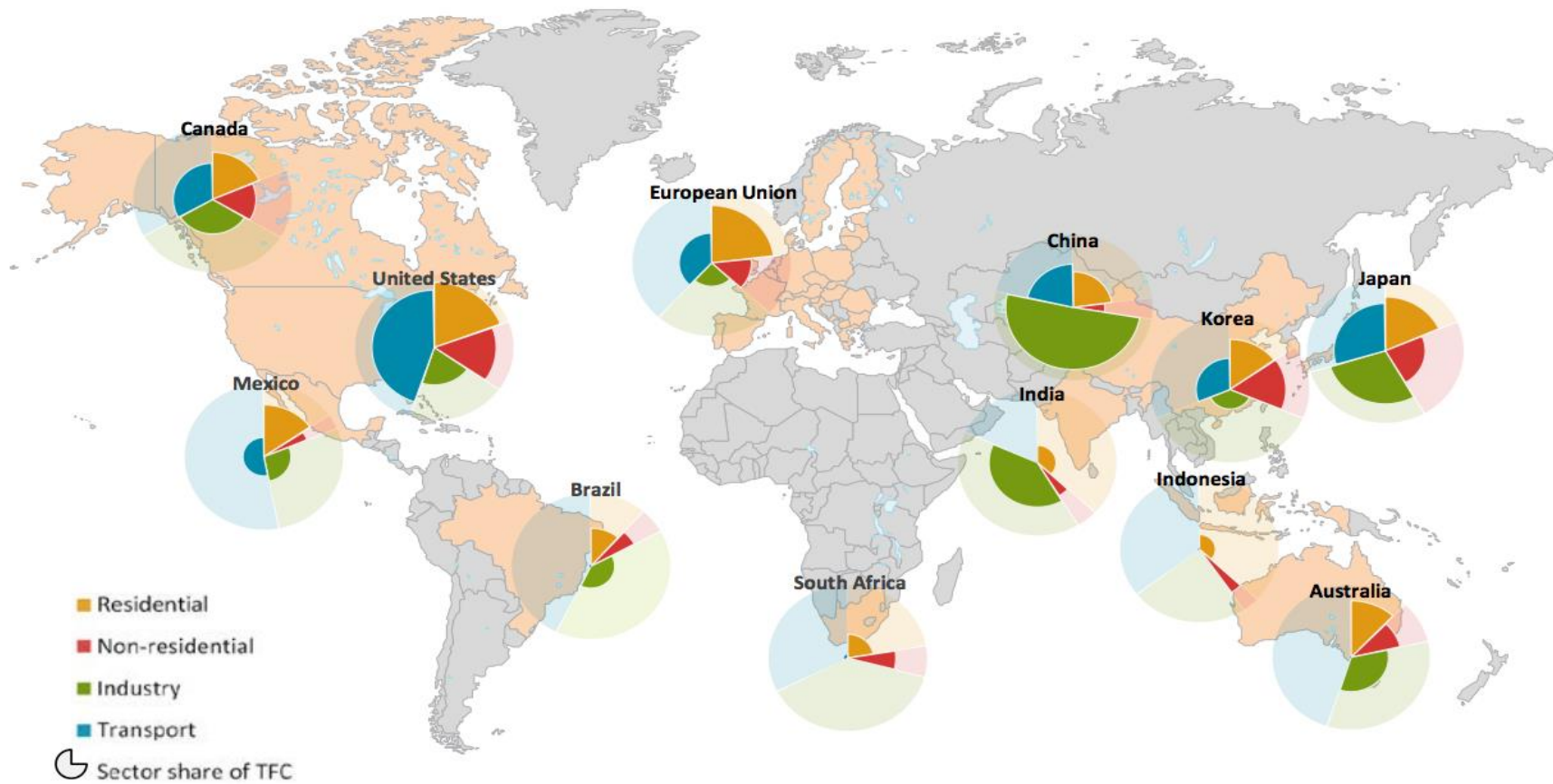
--->Can be cost effective for businesses and government

## Disadvantages

--->If information isn't contextualized, targeted and tailored it is unlikely to be actioned



# Regulatory and target setting measures



- Measures include:
  - mandatory energy efficiency targets that must be met by companies or industry sectors
  - Minimum energy performance standards (MEPS) for industrial equipment (e.g. electric motors)

- Target set at national level and then cascaded to provincial and large city level
- Local councils set targets for individual firms and monitor progress
- Local councils may also conduct mandatory energy audits and/or mandate improvements for firms that don't meet targets
- Central government support through training and capacity building, fiscal and financial incentives



## Advantages

- >Very high participation rate
- >High confidence to achieve quantifiable savings

## Disadvantages

- >Cost for business to implement
- >'Compliance' focus for business
- >Cost for government to enforce

- Training:
  - Implementation of energy management systems
  - Technical assessment
  - Opportunity identification
  - Business case development
- Online and in-person training through workshops and webinars
- Build knowledge, understanding and skills



1. Grants
2. ESCO funding model with shared savings
3. Preferential loans
4. Equipment leasing
5. Utility on-bill financing
7. Market based instruments
  - a. White certificate schemes
  - b. Utility obligations
  - c. Auctions and tenders
8. Tax incentives
9. Others ...

- Energy Management System (EnMS):
  - Systematic and structured approach to the management of energy use
  - Standards exist (ISO 50001), but many options are possible
- Energy Management Programmes:
  - Government policy/programme to promote the uptake of energy management systems

- Types of Energy Management Programmes:
  - Information (US and Chile)
  - Incentives (Germany)
  - Regulation (Australia)

Information

Incentives

Regulation

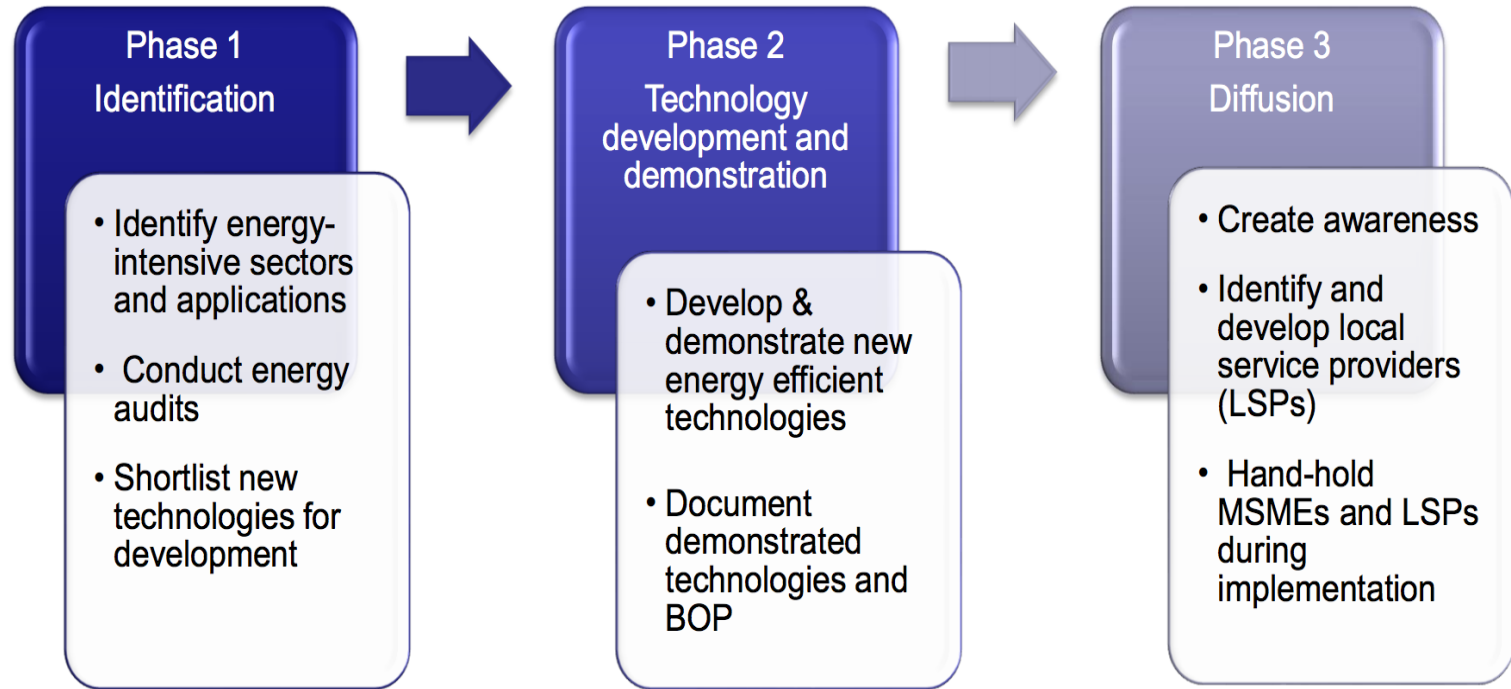


## Advantages

- >Encourages continuous improvement in energy performance
- >Addresses multiple organisational barriers

## Disadvantages

- >May lead to a focus on 'documentation' rather than results
- >Effectiveness relies on management support and leadership



# Firozabad Glass Cluster

- Largest cluster in small scale glass sector
  - Annual Glass Production: 1.0 million ton/yr.
  - Estimated annual energy consumption: 0.2 million toe
- Major product - Bangle
  - Other products: colored decorative items, tableware, lab-ware, glass shells etc.
- Falls within the Taj Trapezium Zone (TTZ)
- Industry mandated to switch over to natural gas (1996 Supreme Court Mandate)
- TERI with support of SDC (Swiss Agency for Development and Cooperation) worked in the cluster to design, develop, demonstrate and disseminate energy efficient natural gas-based technologies for glass bangle industries



Conventional coal fired pot furnace



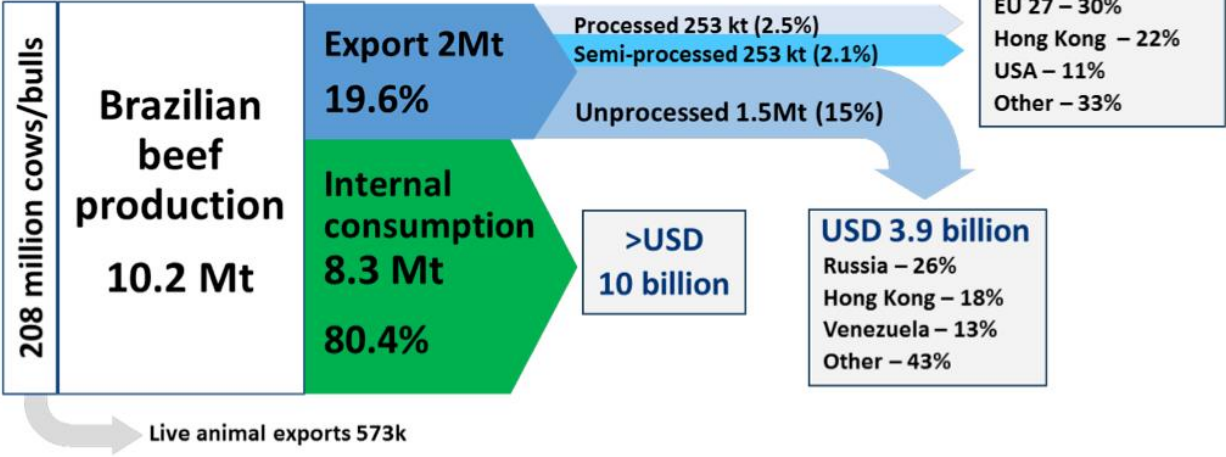
Recuperative natural gas fired pot furnace



- The focus on energy efficiency improvement is typically within the boundaries of each organisation
- Large organisations are increasingly examining opportunities to improve energy efficiency across their supply chains
- This can deliver substantial benefits for suppliers *as well as* the corporation
- Governments can promote, encourage and provide support for supply chain initiatives.

# Beef supply chain in Brazil

Brazilian beef output is expected to increase from **10.2 Mt in 2013** to **13.6 Mt in 2023**



Source: Adapted from (ABIEC, 2014) and (Abreu, 2011). Note: The value of the internal market is an estimate which assumes the same value/kg proportion seen in beef exports



**Inaction will lead to larger impacts**



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