



IEA Energy Efficiency In Emerging Economies Training Week

Industry Stream: Making the case for industrial energy efficiency policy

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 #energyefficientworld

- Establish the benefits of industrial energy efficiency policy
- Determine the barriers to energy efficiency within businesses
- Identify the data that you can use to make the case for policies and programmes
- Identify other relevant policies and programmes that can complement your efforts

These are all important factors that help you to make a compelling case for an industrial energy efficiency policy or programme.

What is industrial energy efficiency policy?



- A set of strategies, legislation, measures and programmes that together stimulate energy efficiency improvement in the industrial sector.

Collectively - industrial energy consumption is significant



- One third of global energy consumption
- One quarter of global CO₂ emissions
- Consumption has grown by about 1.3% annually since 2010 (industrial sector value-added has grown by 2.9%)
- Highest energy demand growth in 2010 to 2016 period occurred in India (4.7%), South Korea (2.7%), China (2.6%), and the Middle East (2.5%)

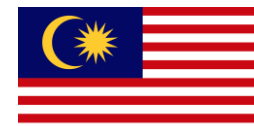
Energy efficiency potential is high – Malaysia example

Potential energy and cost saving identified from energy audits conducted under the Malaysian Industrial Energy Efficiency Improvement Project

Sectors	Food	Wood	Ceramic	Cement	Glass	Rubber	Pulp & Paper	Iron & Steel	Total
Annual Energy Consumption (GJ/year)	1,835,430	1,031,528	774,061	21,556,595	4,000,370	611,307	5,080,208	4,223,247	39,112,746
Annual Energy Costs (Th. RM/year)	42,233	13,512	24,061	204,149	97,830	16,908	84,201	160,131	643,026
No Cost Energy Savings (GJ/year)	24,361	7,996	38,566	1,375	31,449	57,010	51,559	64,194	276,510
Low Cost Energy Savings (GJ/year)	111,087	131,702	75,229	6,866	13,732	21,171	69,100	56,985	485,872
High Cost Energy Savings (GJ/year)	238,139	220,863	41,561	337,266	58,913	84,292	690,889	148,874	1,820,796
Total Energy Savings (Total GJ/year)	373,587	360,561	155,356	345,508	104,095	162,472	811,547	270,053	2,583,178
Total Cost Saving (Th. RM/year)	8,515	5,201	5,992	33,752	2,485	4,313	19,767	5,247	85,272
CO ₂ Emissions Reduction Potential (Tons/year)	27,988	30,378	14,463	444,667	8,069	18,931	194,403	22,836	761,734



Malaysia



Significant energy, financial and greenhouse gas reduction benefits

Energy efficiency potential is high - Southeast Asian countries

Final energy demand savings by country and sector, 2030 (based on the 3rd ASEAN Energy Outlook analysis)

Sector	Cambodia		Lao PDR		Myanmar		Thailand		Viet Nam	
	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%
Industry	0.3	18.8	0.1	9.1	0.5	10.0	12.3	20.0	7.4	10.9
Transport	0.2	11.8	0.0	0.0	0.4	4.7	20.0	40.1	0.0	0.0
Other (residential and commercial)	1.2	15.8	0.2	7.7	1.4	7.8	8.9	21.2	3.1	7.7
Non-energy	0.0	...	0.0	...	0.1	9.1	0.0	...	0.0	...
Total	1.6	14.7	0.3	5.0	2.4	7.4	41.2	23.4	10.5	6.9

Source: ADB 2015. Energy efficiency developments and potential energy savings in the greater Mekong subregion

The Industrial sector includes large, energy intensive businesses

- Businesses in the industrial sector may be very big, energy intensive and consume a significant proportion of a country's total energy.



- Focusing on a relatively small number of businesses can yield sizable energy savings.

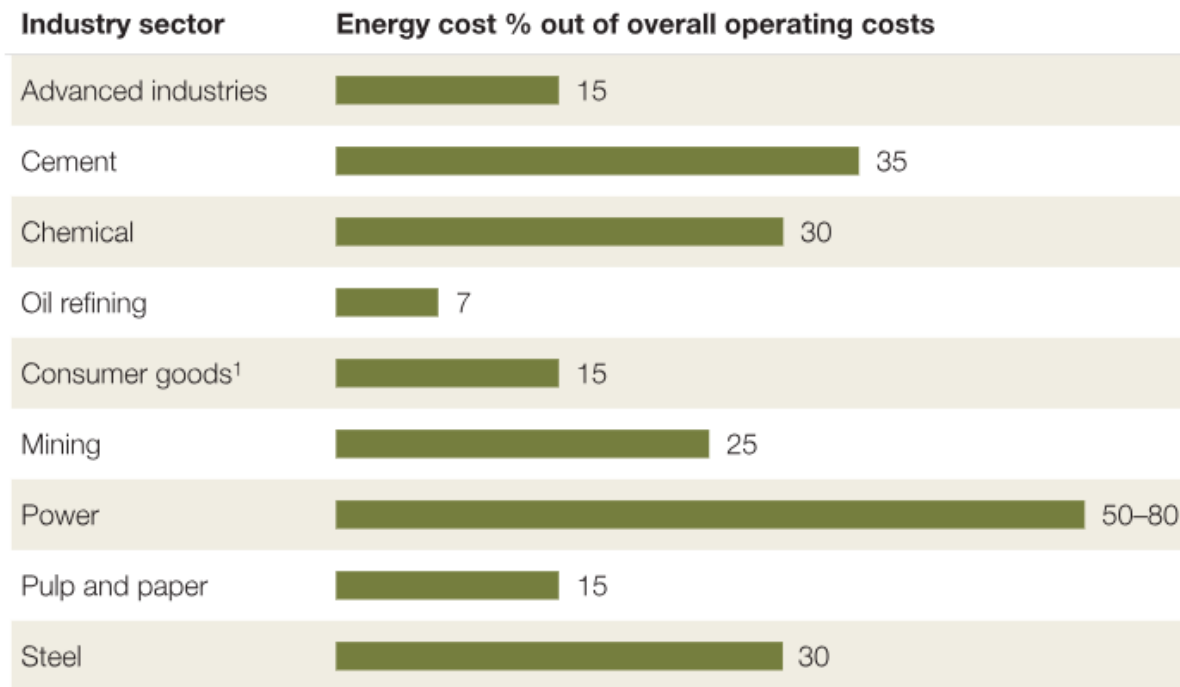
The industrial sector also includes many small businesses

- Businesses in the industrial sector may also be very small but energy intensive.
- Collectively, these businesses may consume a significant proportion of a country's total energy.



- For example the Indian foundry industry is the third largest in the world after China and the United States. It employs 700,000 people. Out of 4,500 foundries, just 250 are large-scale.

Energy is typically a substantial share of operating costs



¹Including cosmetics, food and beverage, and pharmaceuticals.

Source: McKinsey&Company 2015. Technologies that could transform how industries use energy.

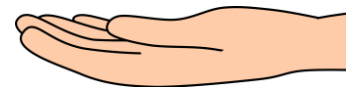
Energy efficiency is good... but there are many demands on government funding



Minister of finance

Image: Cartoonsmix

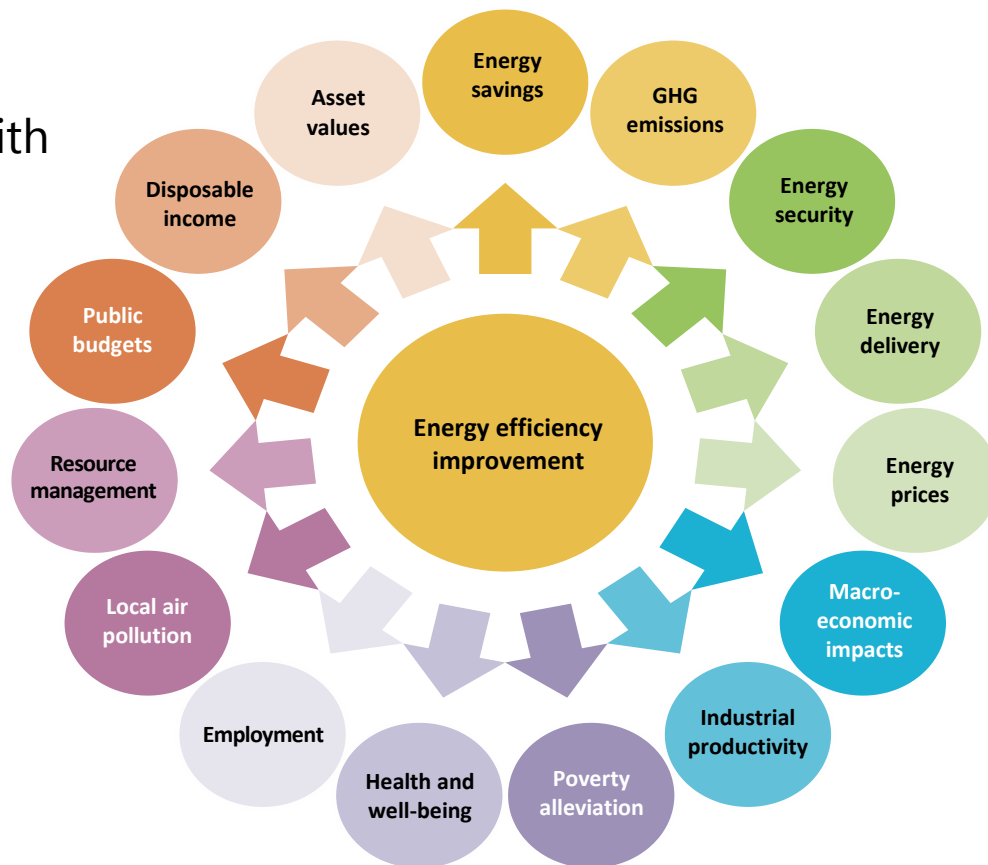
Energy
efficiency is
good



Energy Efficiency
Agency

Identify all of the benefits

Build support by aligning your
Industrial energy efficiency policy with
national priorities!



- Established energy management systems in 250 designated enterprises
- Certified 350 energy managers and 60 energy auditors
- Energy audits have been carried out in more than 240 enterprises with energy efficiency measures implemented in 50 enterprises.
- The total energy saving (across all sectors) is estimated at 4,900 kilotonnes of oil equivalent (ktoe), corresponding to 3-4% of energy usage for the participating enterprises.



Vietnam



- Australian aluminum producer – system optimisation to reduce energy demand – increased production by 3000 tonnes per year (value USD 6 million)



Australia



- Peruvian smelting company (secondary lead)
- Implemented suite of energy efficiency measures including new burner, fuel mix optimisation, upgraded refractory bricks and furnace hood
- Reduced energy (value less than USD 2,000) and increased extraction of lead by 34.7 tonnes per year (value almost USD 17,000)



Before



After



Peru



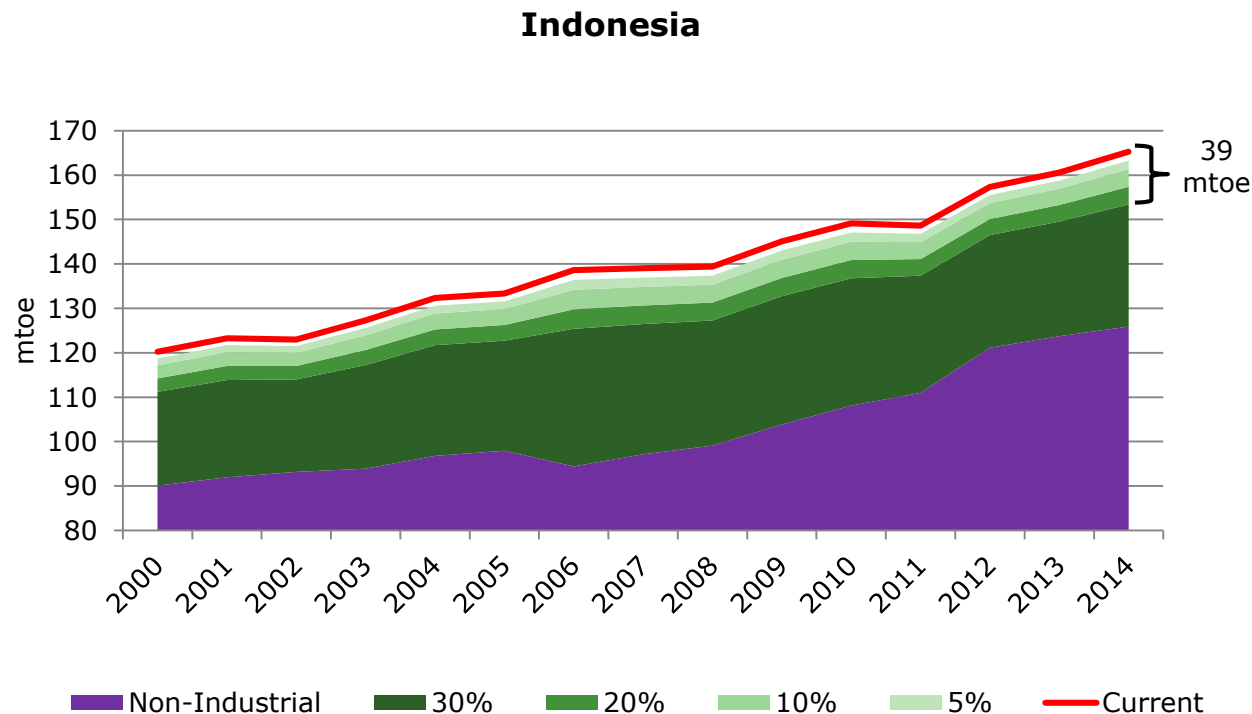
Benefits for companies

- Enhanced production
- Improved product quality
- Reduced liability
- Improved work environment
- Improved working conditions
- Reduced need for maintenance
- Improved environmental performance
- Improved profit margins
- Improved reputation

Benefits for economies

- Reduced pollution
- Reduced environmental impacts
- Improved energy security
- Deferred need for new power plants and grid
- Lower need for energy imports
- Improved competitiveness of industry

Energy efficiency in the context of energy supply



Indonesia



A 30% reduction of total final industrial energy consumption is equivalent to more than half the energy that is imported

Select objectives that align with national priorities

Energy efficiency

- Reduce energy use (all types, specific fuels)
- Improve efficiency (not necessarily the same as reducing use)
- Reduce GHG emissions – counteract climate change

Multiple benefits

- Reduce air pollution
- Improve environmental outcomes
- Improve energy security
- Avoid need for new energy capacity
- Improve security of supply
- Improve competitiveness of industry
- Stimulate innovation
- Stimulate development of service and technology markets
- Create new jobs



Why is policy needed?



- If energy efficiency has so many benefits however, why is policy needed?

Information

- lack of access
- too much information
- no time, not a priority
- perception that energy efficiency measures could have a negative impact on production



Capacity

- no internal expertise
- equipment vendors lack skills and incentives
- low external consultant quality (or no consultants)

Economic and finance

- lack of internal finance – how return on investment is calculated
- energy efficiency projects not seen as competitive
- no capacity to write bankable projects
- local financial institutions not supportive
- low energy prices

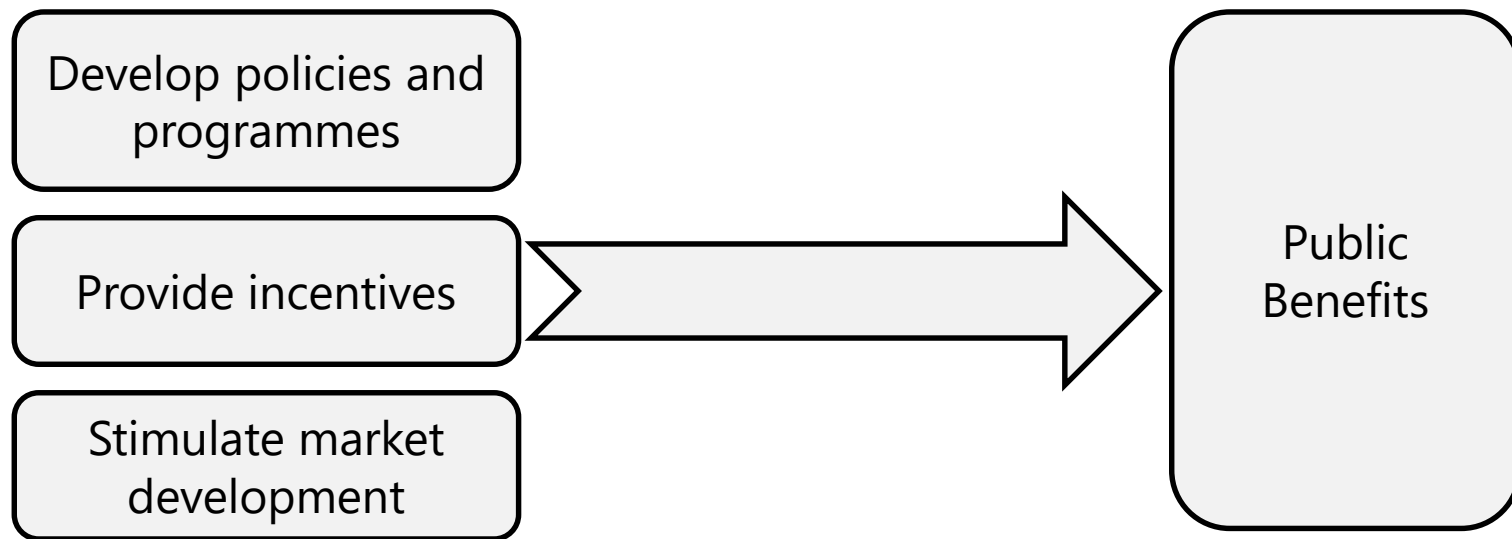


Regulatory barriers

- utility business model
- fossil fuel subsidies

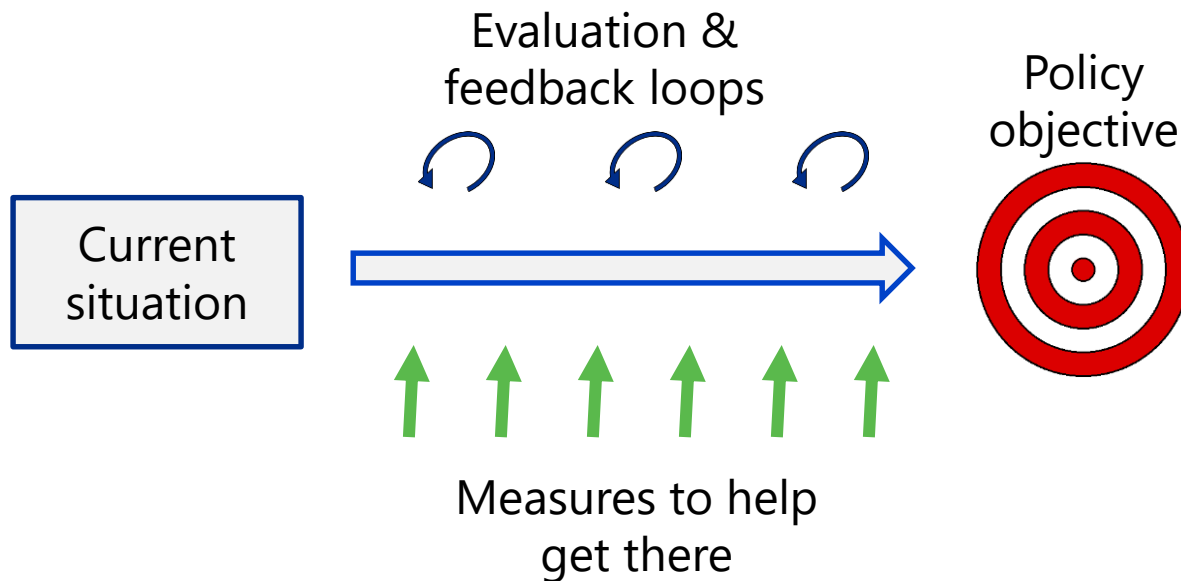
What are the key barriers in your country context?





*"Policy mechanisms including energy management programmes, minimum performance standards for industrial equipment (esp. electric motors) and other policies have **contributed** to a 20% fall in industrial energy **intensity** between 2000 and 2016... "*

- Policy makers need to answer a fundamental question ... How can policy overcome barriers to deliver benefits?



Types of data:

- Data on industrial energy use
- Data on fuel mix
- Data on sector specific use (e.g. energy used by textile industry)
- Data on specific energy use (e.g. energy per ton of clinker)
- Data to assess potentials

Data sources:

- National statistics
- Data from energy utilities
- Reports from companies (perhaps part of environmental reporting?)
- Samples, surveys
- Data from international organisations and other countries

- What other types of data are useful?
- What other sources are available?



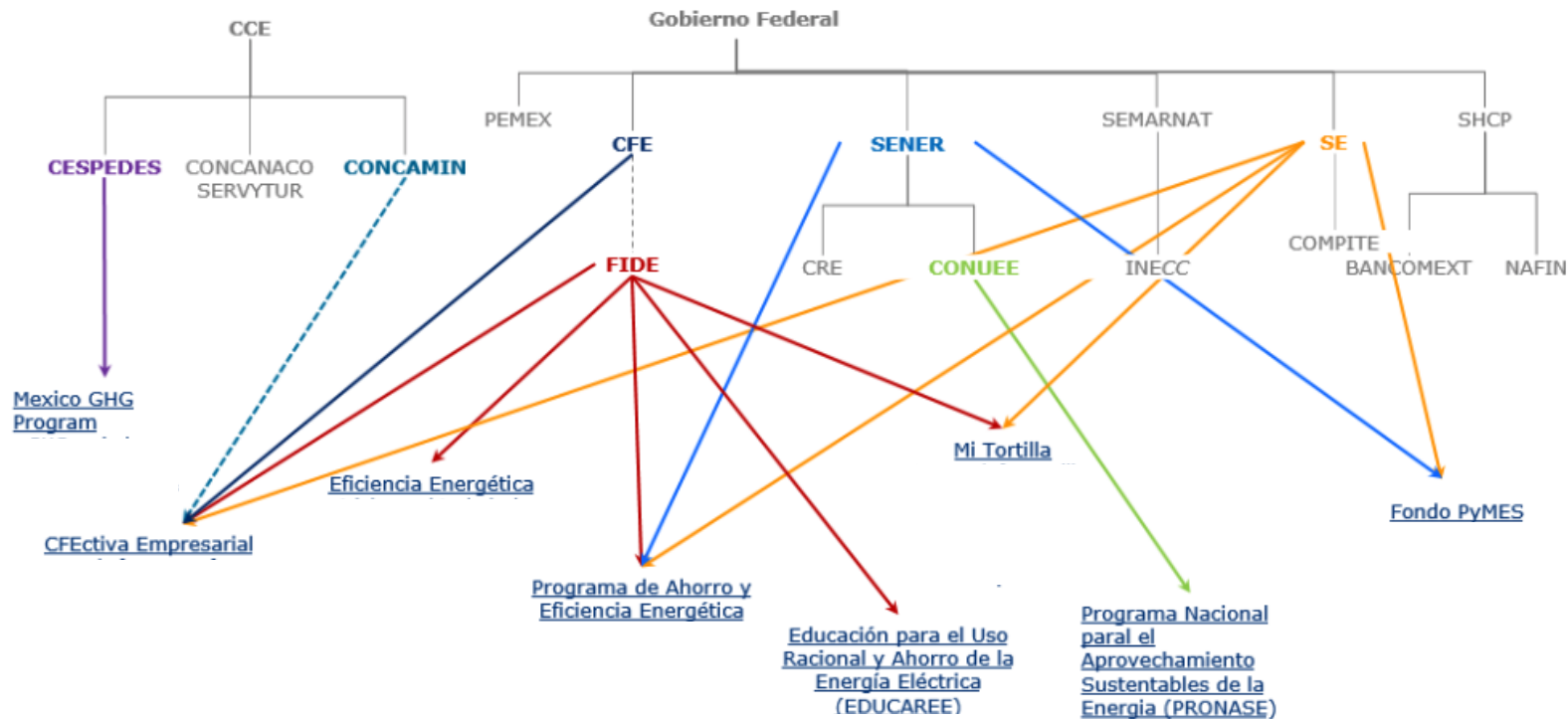
Identify existing policies and programmes

- National policies and programmes (climate, environment, business development, trade development, buildings energy efficiency, equipment energy efficiency)
- Municipal or regional programmes
- Donor-led initiatives

Analyse existing policies and programmes

- Scope and scale
- Successes & failures
- Possible synergies
- Possible negative impacts
- Duplication risk

Mapping policies in Mexico



CASE STUDY



Source: Carbon Trust 2012. A transformational energy efficiency SME energy advice and loans program for Mexico.



What could the rationale include?

- ✓ Energy use trends
- ✓ Importance of energy efficiency
- ✓ Objectives
- ✓ Defined target group
- ✓ Energy efficiency potentials
- ✓ Barriers
- ✓ Multiple benefits
- ✓ Measures and mechanisms
- ✓ Mapping of policies and programmes

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What else could
be included?

What would
convince your
stakeholders?

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