Africa Energy Efficiency Policy in Emerging Economies Training Week

Nairobi

18-22 March 2024

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Industry

Nairobi
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International Energy Agency

Introductory roundtable

Patrick Crittenden, Sustainable Business Group & Corine Nsangwebusinge, IEA

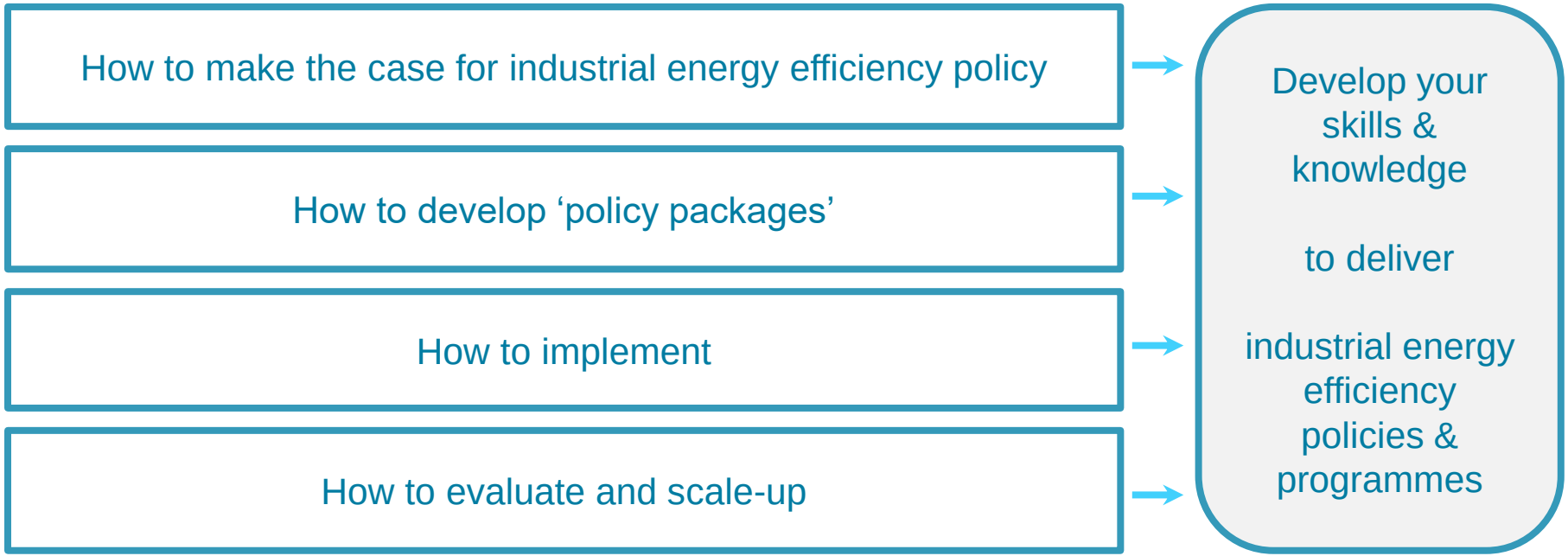
Nairobi, 18 March 2024

Course objective

To enhance your ability to

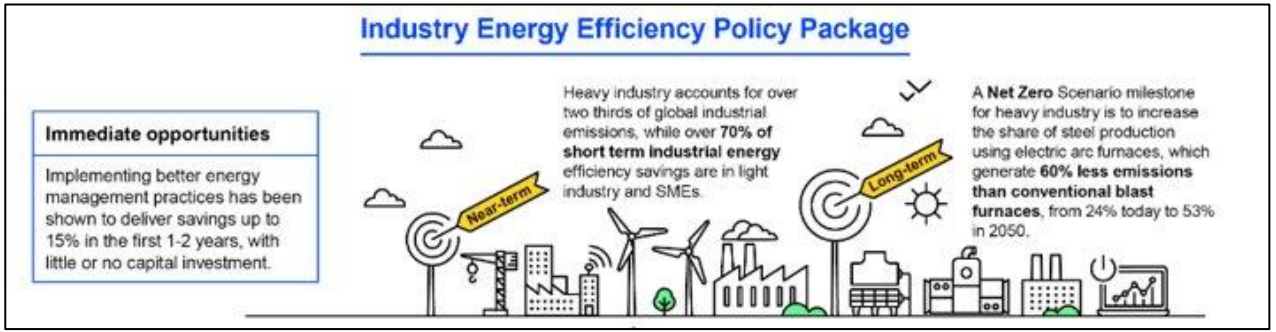
- design
- implement, and
- evaluate energy efficiency policies and programmes for industry.

Course objective



Training approach

- The training is highly interactive and will provide you with an opportunity to share your experiences, to learn from the trainers and to learn from other participants and guest speakers.
- Design features include the use of case studies, a focus on multiple benefits, the application of practical tools and case studies as well as interactive activities.



Continuing your learning after this training

- We can’t cover everything in a few days but we can point you in the direction of further support and resources!

Link

Introductions

Pair up with someone you haven’t met yet. Discuss:

- What is your role in energy efficiency?
- What policies/programmes are working on?
- Describe one key challenge associated with your policies/programmes
- What unique perspective and experience you bring to this training that you can share with others?

Expertise in the room – learning from each other

- Policy design
- Policy development
- Policy implementation
- Energy auditing
- Training and capacity building
- Evaluation
- Energy management
- Other?

Logistics

- Discussions and questions
- Interactive exercises and worksheets
- Your role
- Breaks
- Use of phones and computers
- Wi-fi access
- Emergencies

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Making the case for industrial energy efficiency policy

Patrick Crittenden, Sustainable Business Group & Corine Nsangwebusinge, IEA

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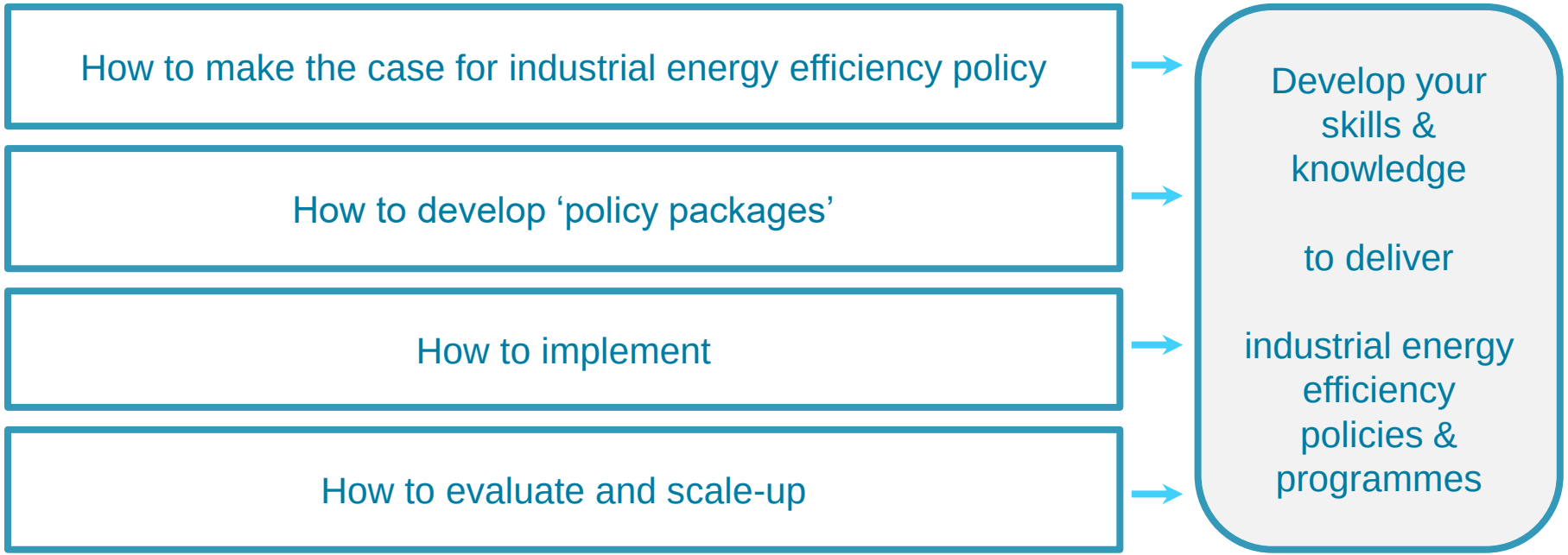
Course objective



Learning outcomes

This session will focus on developing your capabilities to:

- Establish the barriers to energy efficiency in your country context
- Set meaningful programme objectives
- Identify other relevant policies and programmes that can complement your efforts
- These are all important factors that help you to make a compelling case and rationale for an industrial energy efficiency policy or programme.

What is industrial energy efficiency policy?

- A set of strategies, legislation, measures, programmes that together stimulate energy efficiency improvement in the industrial sector.
- The industrial sector includes very large energy users …

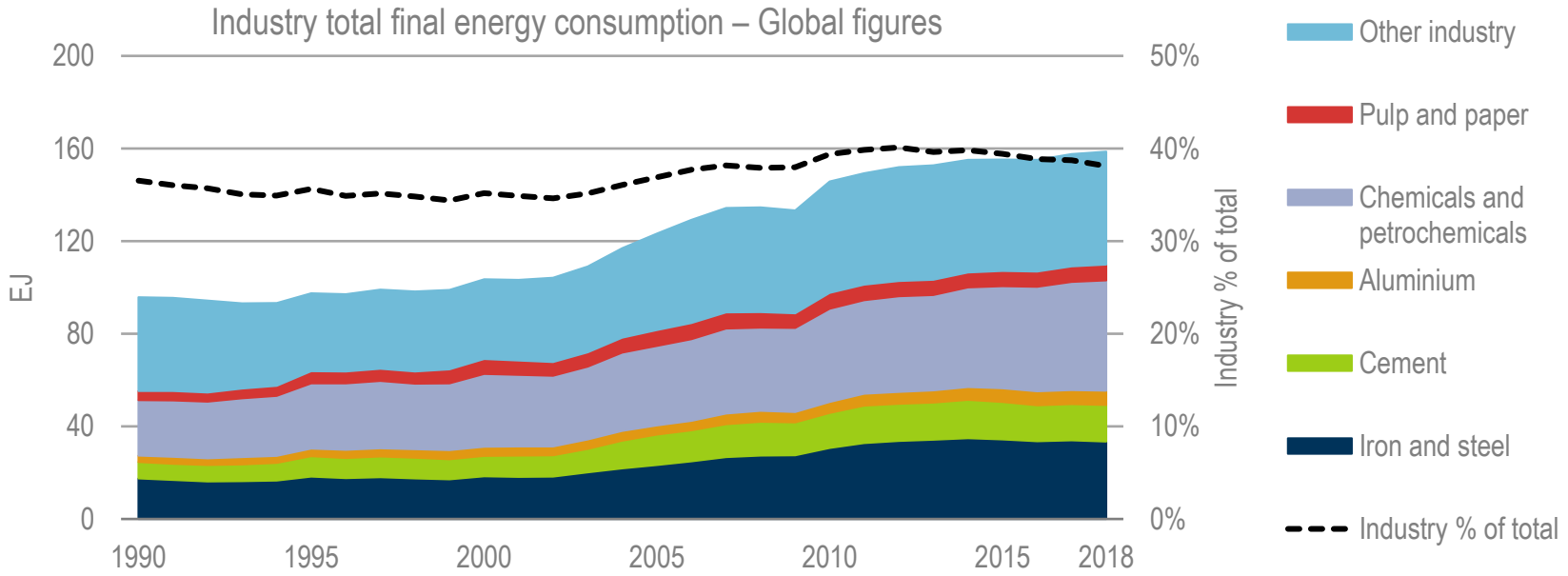
What is industrial energy efficiency policy?

- A set of strategies, legislation, measures, programmes that together stimulate energy efficiency improvement in the industrial sector.
- The industrial sector includes very large energy users …
- And small and medium-sized enterprises in sectors that collectively

consume significant energy.

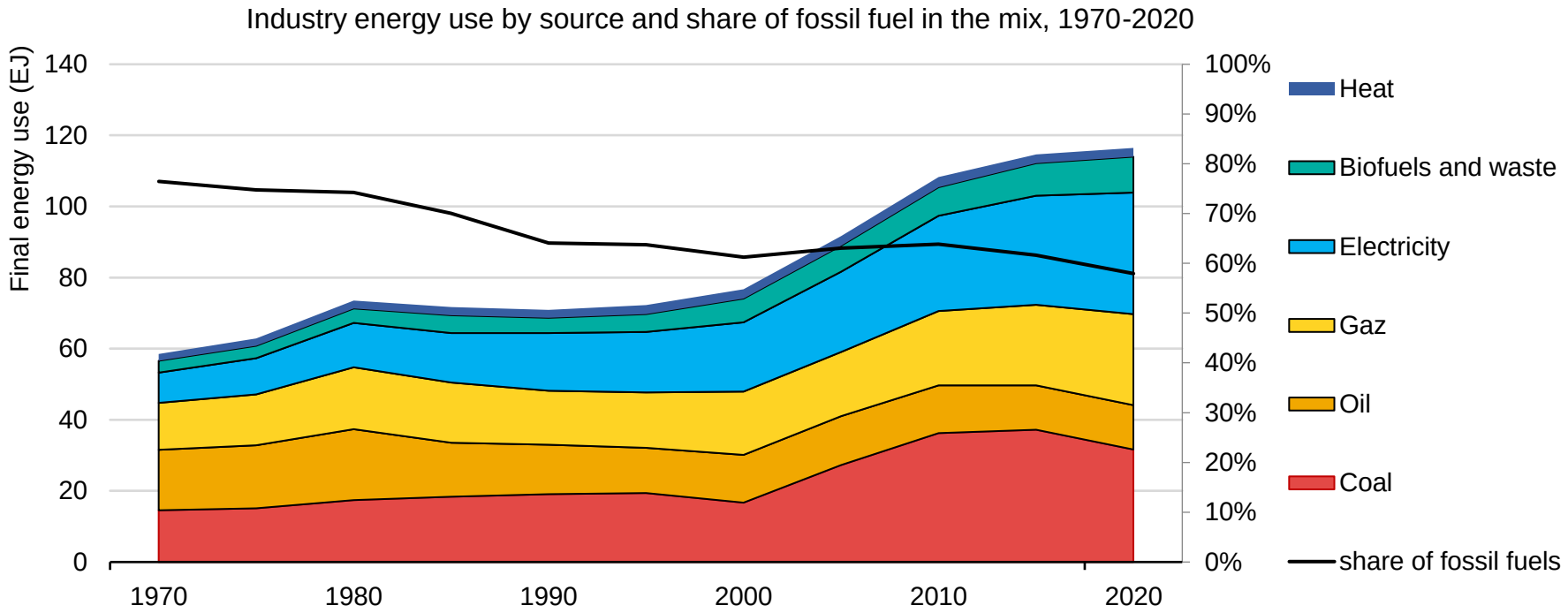
Trends in industry energy use and energy efficiency and challenges

Industry contributes to a large share of global energy use



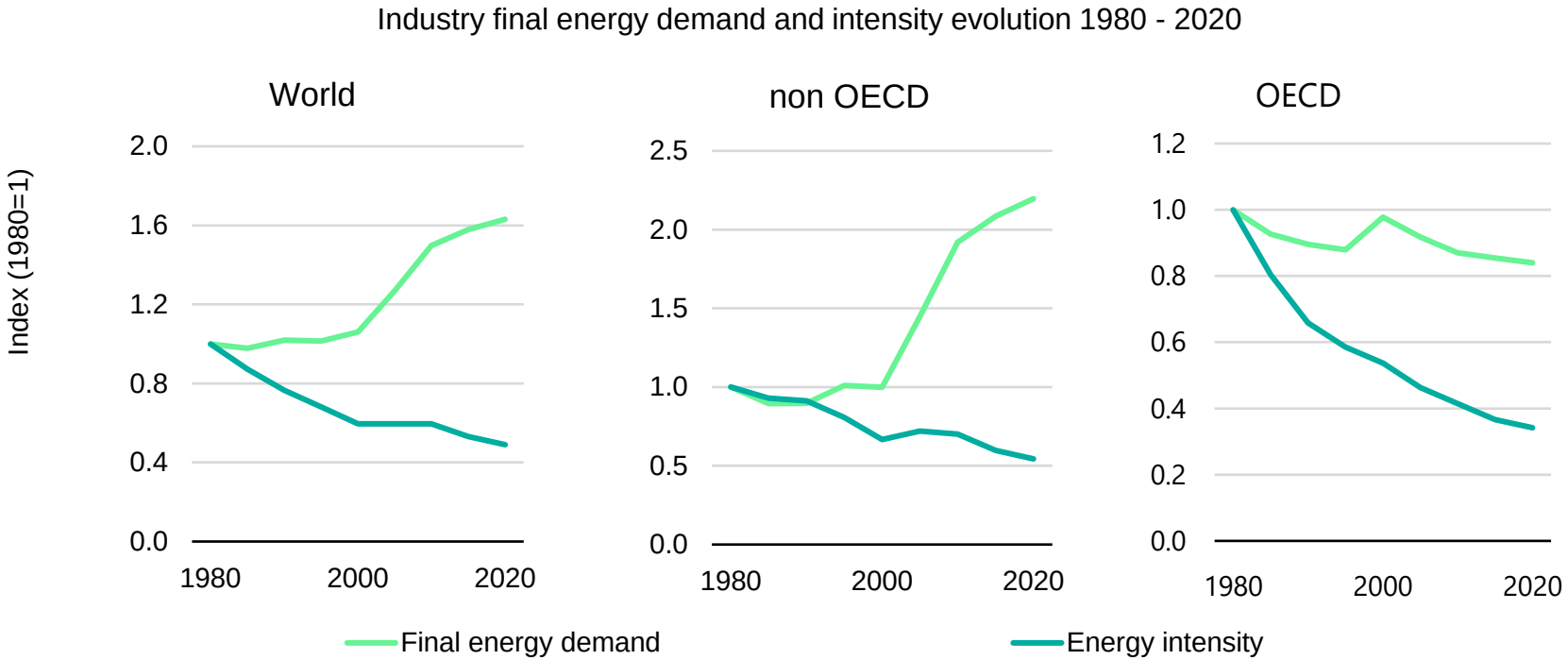
Globally, industry total energy use has grown more than one and a half times over the last 25 years driven by the doubling of energy use from the chemical and petrochemical and iron and steel sectors which represent more than 60% of that growth.

Energy use in the industry relies on fossil fuels



Fossil fuel represent more than 60% of final energy use in industry globally and as much of electricity production.

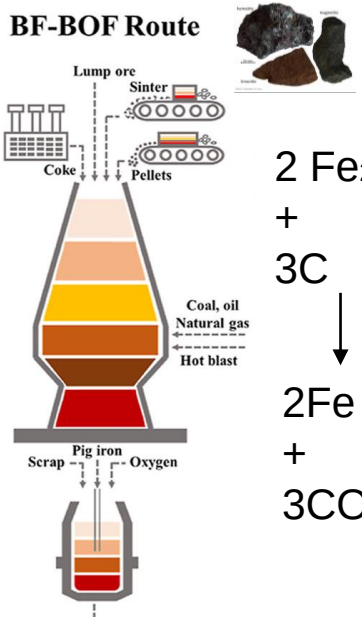
Evolution of industry energy use and intensity



Energy intensity improvements have not offset rises in energy demand from industry in the last 40 years.

Three key industries: challenges from process

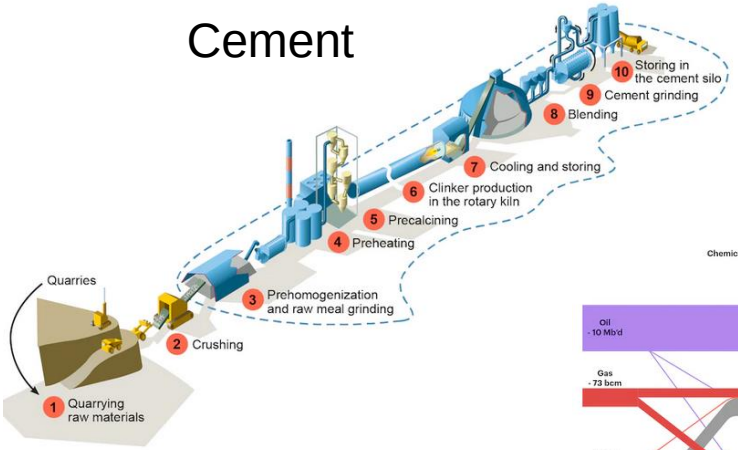
Iron and steel



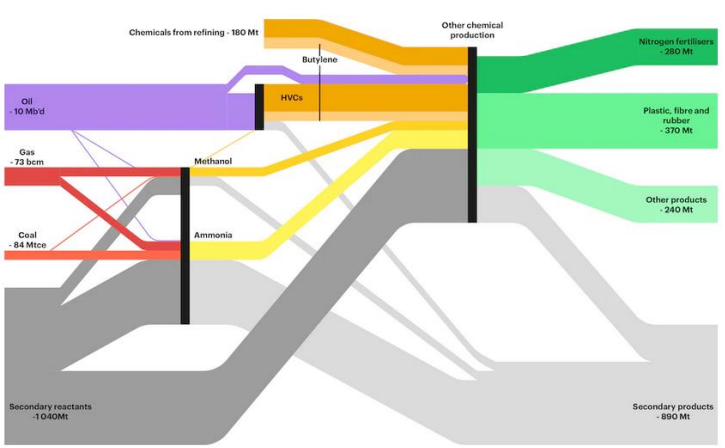
$2\,Fe_2O_3 + 3C \rightarrow 2Fe + 3CO_2$

Crude steel

Cement



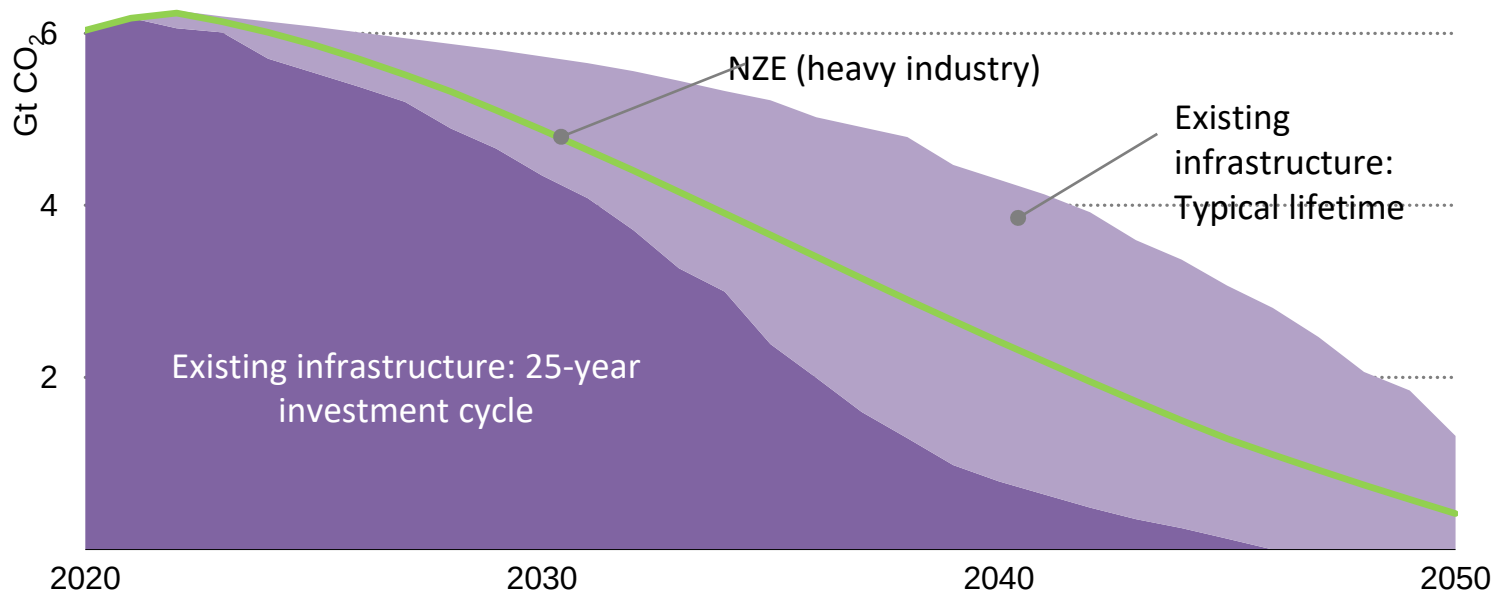
Petrochemicals (plastic, fertilizers)



CO2 emissions and energy are hard to abate in these sectors because of the nature of the physical processes.

Addressing CO_2 emissions from heavy industry

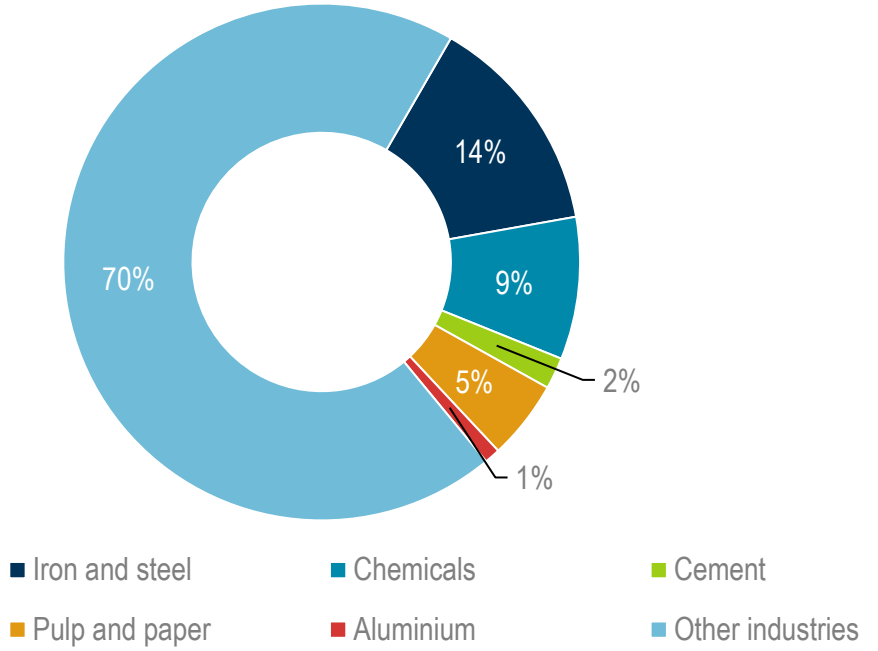
CO_2 emissions from existing heavy industrial assets in the NZE



Intervening at the end of the next 25-year investment cycle could help unlock 60 Gt CO_2, around 40% of projected emissions from existing heavy industry assets

Efficiency can improve across all industry sub-sectors

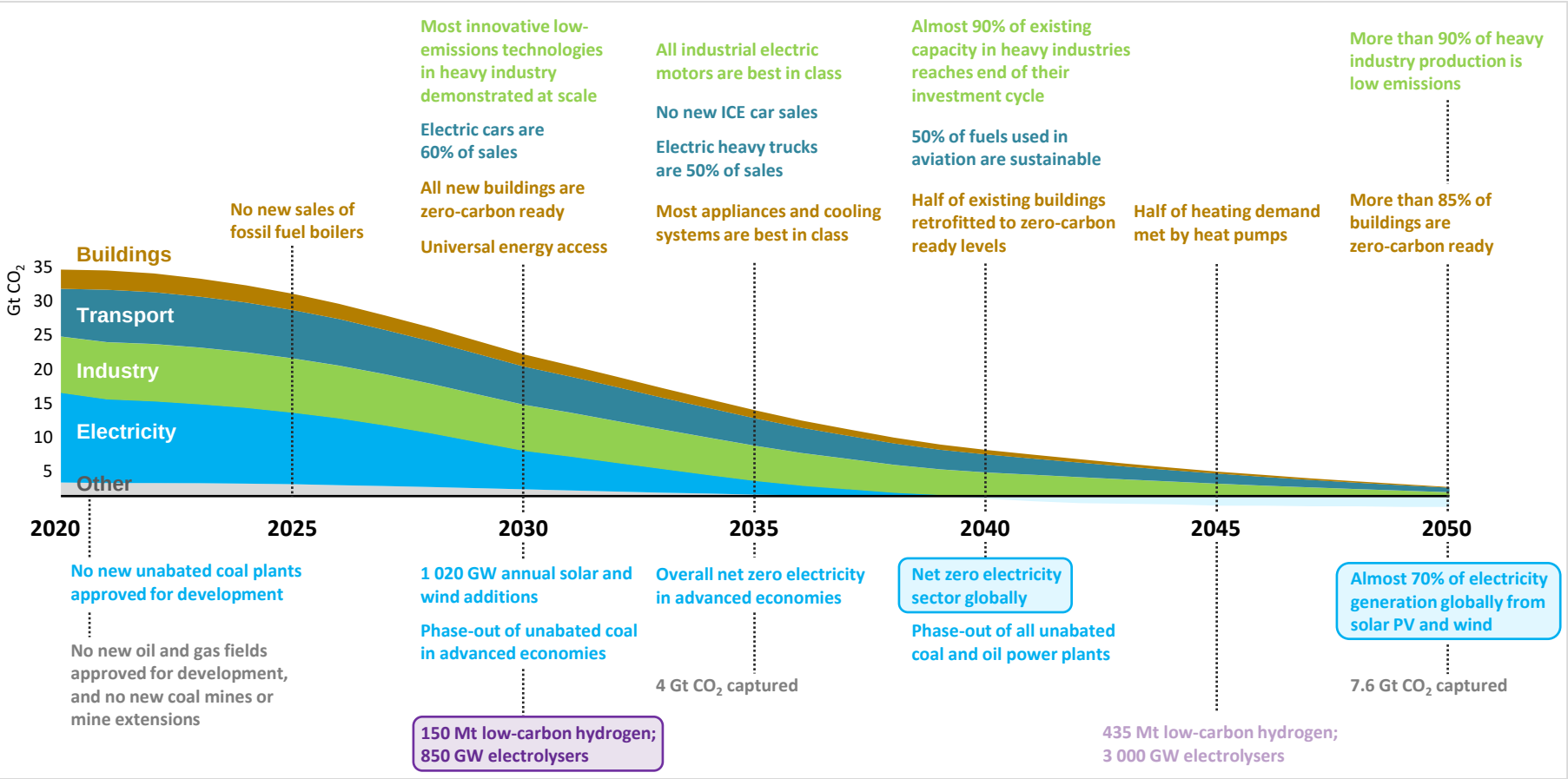
Percentage improvement in energy intensity by industry sub-sector (left) contribution to total energy savings in 2040 (right)



Energy efficiency improvements are possible across all sub-sectors
Light industry (e.g. food beverage and textile manufacturing) represent the bulk (70%) of savings.

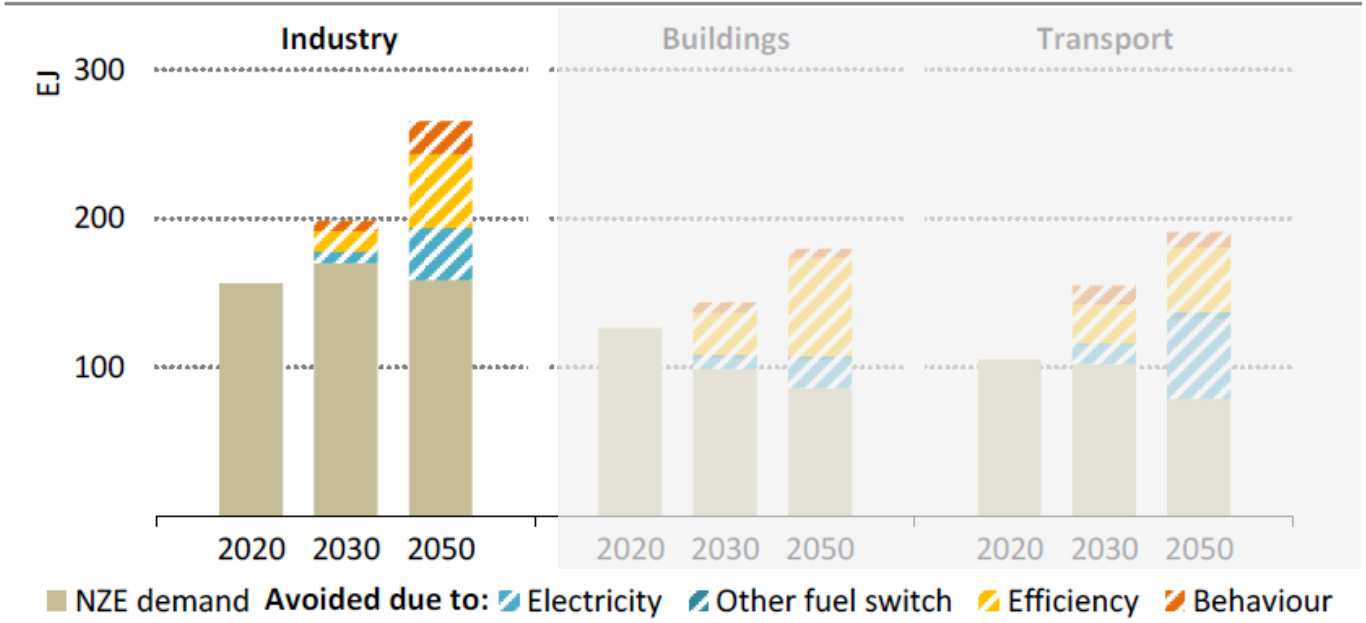
Decarbonisation of industry pathways and the role of energy efficiency

Milestones on the path to Net Zero by 2050



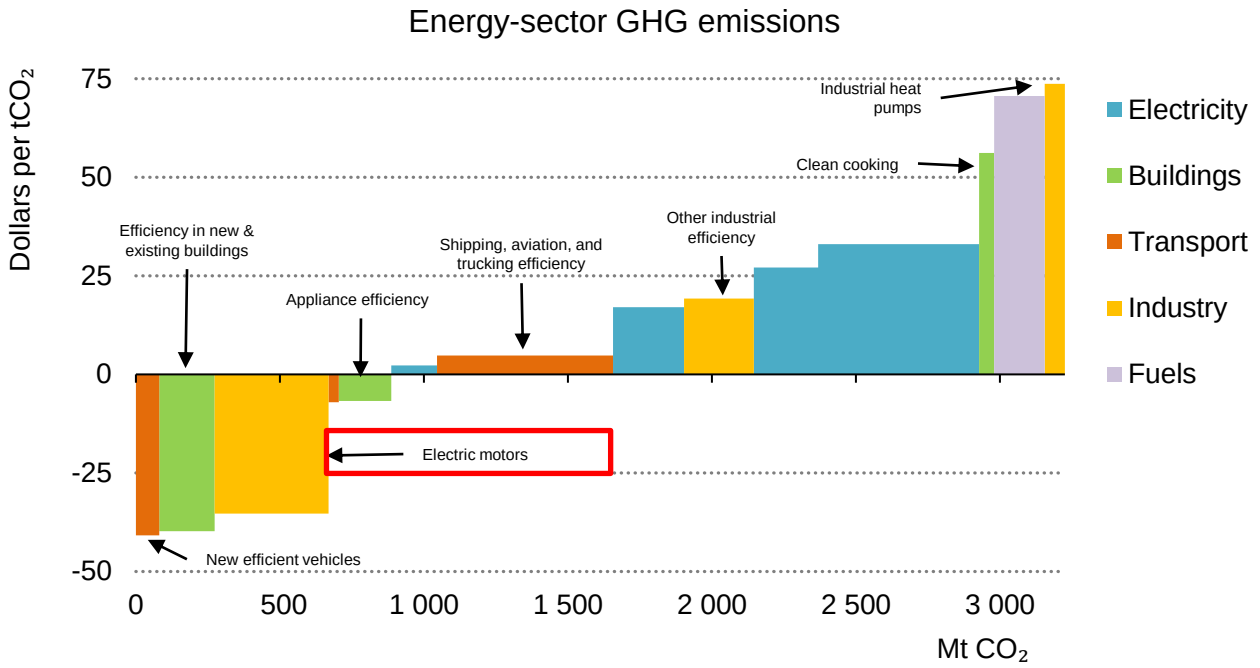
Energy efficiency plays a key role in reducing energy consumption across end-use sectors

Total final consumption and demand avoided by mitigation measure in the NZE



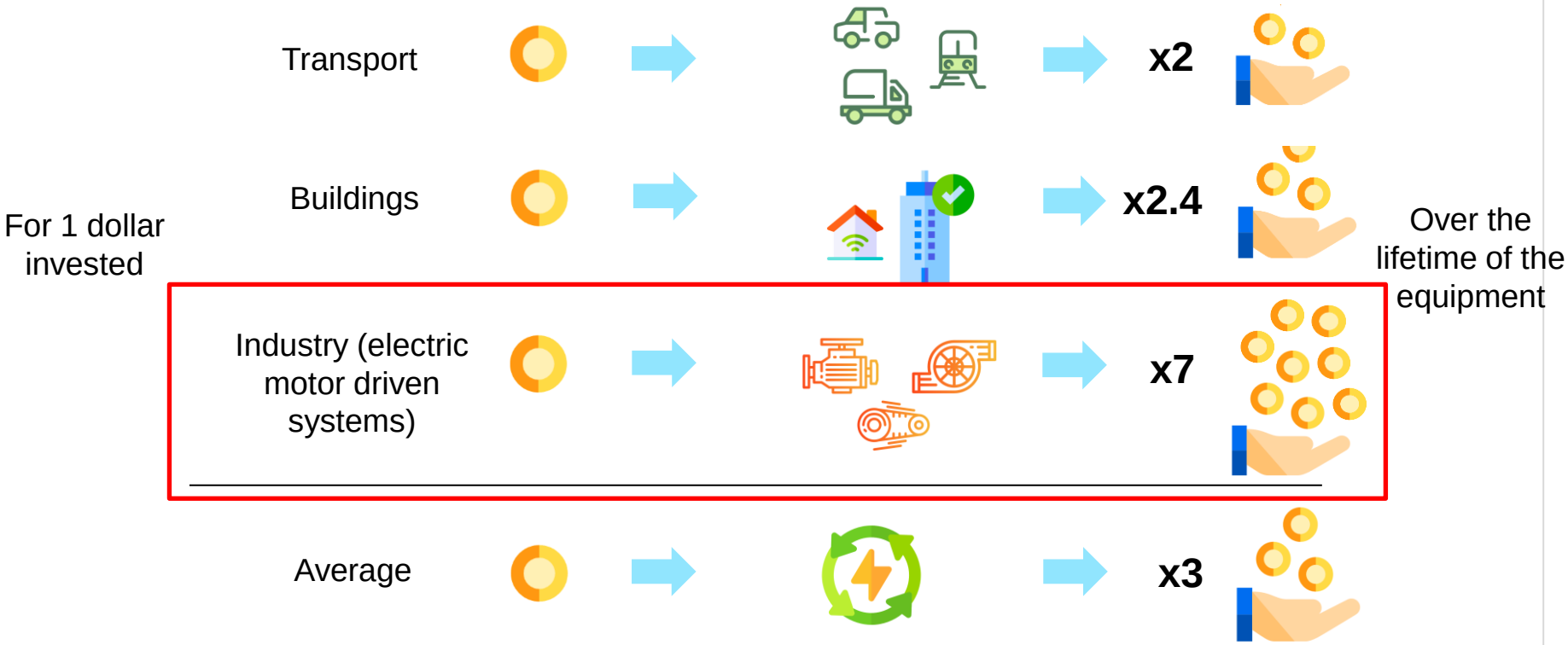
Energy efficiency plays a major role immediately across all sectors and in particular in industry. In industry energy savings are from very well-known measures : motors efficiency, energy management systems, low heat temperature from heat pumps.

Efficiency contributes the most emissions and cost reductions



Improving electric motors efficiency represent one of the most cost effective ways to reduce CO2 emissions in the short term.

Investment payback for energy efficiency



On average, one dollar invested in energy efficiency will payback three times in energy saved over the lifetime of the equipment

Light Industry

Overview | Tracking

What is light industry?

Light industry refers to a diverse range of industrial sub-sectors in areas like food processing, textiles, consumer goods, vehicles and machinery which have less demanding energy needs than heavy industries such as steelmaking and chemicals.

What is the role of light industry in clean energy transitions?

Compared to heavier industries, emissions reductions in light industry are easier to achieve with existing, proven technologies because they do not generally require high-temperature heat or fossil fuel feedstocks. However, deploying these technologies at scale is more complex since these industries are spread over more sites and companies, while heavy industry tends to be concentrated in fewer, larger facilities.

Where do we need to go?

Accelerated deployment of low-emissions heating technologies and energy efficiency measures will be needed to put light industry on track with the Net Zero Emissions by 2050 Scenario.

Steel

Why is iron and steel important?

Driven by population and economic growth, global demand for steel has been growing strongly in recent years and is expected to continue to increase, especially because of economic expansion in India, ASEAN countries and Africa, even as demand in China gradually declines.

What is the role of iron and steel in clean energy transitions?

Steel production is highly reliant on coal, which is primarily used as a reducing agent to extract iron from iron ore and to provide the carbon content needed in steel. Over the past decade, total CO2 emissions from the iron and steel sector have risen, largely owning to increases in steel demand. The direct CO2 intensity of crude steel production has decreased slightly in the past few years, but efforts need to be accelerated to get on track with the pathway in the Net Zero Emissions by 2050 Scenario.

Where do we need to go?

Iron and steel is one of the last sectors in the IEA's Net Zero pathway that will still be using coal in 2050, because of its importance as a reducing agent. But in the meantime, numerous technologies, including carbon capture and hydrogen-based production, need to be perfected and developed at scale, along with continued efforts to improve the efficiency of iron and steel production and the electrification of ancillary services.

Chemicals

Why is the chemical sector important?

The chemical sector is the largest industrial energy consumer and the third largest industry subsector in terms of direct CO_2 emissions. This is largely because around half of the chemical subsector's energy input is consumed as feedstock – fuel used as a raw material input rather than as a source of energy. There is growing demand for a vast array of chemical products, including plastics, and demand for primary chemicals – an indication of activity in the sector overall – has increased strongly.

What is the role of the chemicals sector in clean energy transitions?

Material efficiency measures – including increased plastics recycling, using ammonia fertilisers more efficiently, and reducing the use of single-use plastics – are important to reduce chemicals demand. Recycling offsets the need for primary production, but globally only about 10% of plastic is recycled. While the share is increasing, progress needs to accelerate.

Where do we need to go?

Chemical sector emissions need to peak in the next few years and decline towards 2030 to get on track with the Net Zero Scenario, despite strong growth in demand for its outputs. To get on track, government and industry efforts need to address CO_2 emissions from chemical production, as well those generated during the use and disposal of chemical products.

Cement

Why is cement important?

Reducing CO2 emissions while producing enough cement to meet demand will be challenging. Demand growth is expected to resume as the slowdown in Chinese activity is offset by expansion in other markets. Moreover, the emissions intensity of production has increased since 2015, largely due to a higher global clinker-to-cement ratio – although the rate of increase has been slowing more recently.

What is the role of cement in clean energy transitions?

Key strategies to cut carbon emissions in cement production include improving energy efficiency, switching to lower-carbon fuels, promoting material efficiency (to reduce the clinker-to-cement ratio and total demand), and advancing innovative near zero emission production routes. The latter two contribute the most to direct emission reductions in the Net Zero Scenario. Aligning with that scenario will require the development and deployment of technology that is not currently available.

Where do we need to go?

In the Net Zero Emissions by 2050 scenario, global cement production stays relatively flat to 2030. Adopting material efficiency strategies to optimise the use of cement can help reduce demand along the entire construction value chain, helping to cut CO2 emissions from cement production. CCS is also likely to play a critical role in decarbonising cement; alternatives might involve making clinkers from non-carbonate sources to avoid these emissions altogether.

The Benefits of energy efficiency for industrial businesses

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
- Make environmental improvements
- Improve energy security
- Avoid need for new energy capacity
- Improve security of supply
- Improve competitiveness
- Stimulate innovation
- Stimulate development of service and technology markets
- Create new jobs

Case Study: Multiple Benefits

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

SUSTAINABLE DEVELOPMENT GOAL 9
INDUSTRY, INNOVATION AND INFRASTRUCTURE

Iron and Steel – South Africa

Arcelormittal Saldanha Works

ArcelorMittal

- ✓ Electricity demand : 160 MW
- ✓ Manpower: 548 permanent employees
- ✓ Sales output: 1,2 million ton HRC/annum

Adjustments/optimization of production operations, energy systems optimization, fuels switching, etc..... driven by EnMS!

2012 Energy Savings (Norm.) > 100 GWh

Energy Efficiency Achievements 2011	
Energy Management System Implemented	
No. of Projects/Measures	11
Total Capital Investment (USD)	**0**
2011 Gross Financial Savings (USD)	**9,076,000**
Overall Payback Period (in years)	0
2011 Energy Savings Norm. (GWh)	**79.95**
2011 GHG Reductions (tons CO_2)	77,000

CASE STUDY

Source: Presentation by Marco Matteini (UNIDO) in May 2019 (IEA Training Week)

Case Study: Multiple Benefits

- 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 2000) and increased extraction of lead by 34.7 tonnes per year (value almost USD 17000)

CASE STUDY

Industrial energy efficiency barriers

What are the key barriers to energy efficiency in your industries – at the business level?

Industrial energy efficiency barriers

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)

Barriers to action

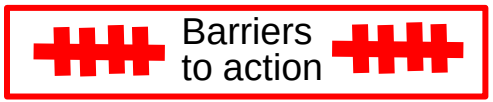
Industrial energy efficiency barriers

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



Energy efficiency policy toolkit – 10 principles

1. Prioritise cross-cutting energy efficiency action for its economic, social and environmental benefits
2. Act to unlock efficiency's job creation potential
3. Create greater demand for energy efficiency solutions
4. Focus on finance in the wider context of scaling up action
5. Leverage digital innovation to enhance system-wide efficiency
6. The public sector should lead by example
7. Engage all parts of society
8. Leverage behavioural insights for more effective policy
9. Strengthen international collaboration
10. Raise global energy efficiency ambition

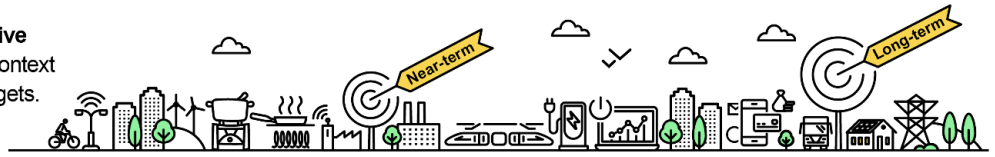
Policy package approach to energy efficiency

Policy Packages for Energy Efficiency

In all sectors the greatest efficiency gains are achieved by a package of policies that combine three main types of mechanisms: Regulation, information and incentives. Careful design and implementation will deliver efficiency's full potential to enhance energy security, create jobs, increase living standards, cut energy bills and reduce emissions.

Targets

Policies are more effective when they are set in the context of clear strategies and targets.

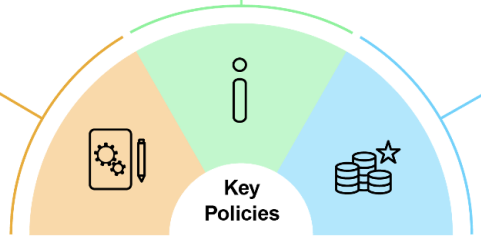


Essential elements

Regulation is essential to exclude the worst performing equipment and practices from the market, to drive average efficiency levels up, and to set rules for measurement of performance.

Information helps people make more efficient choices in what they buy and how they use energy.

Incentives make efficient options more attractive and speed up the upgrade and replacement of appliances, buildings and vehicles. They also encourage the use of new technologies and practices.



Implementation is as important as policy design.

Ensuring that the **resources** are in place to put policies into action.

Address **vital elements** such as capacity building, enforcement, monitoring.

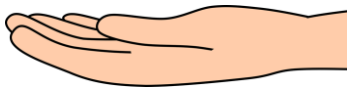
It is important to continually assess **policies and programmes** so as to keep up to date with technology developments.

Obtaining support for energy efficiency policy

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

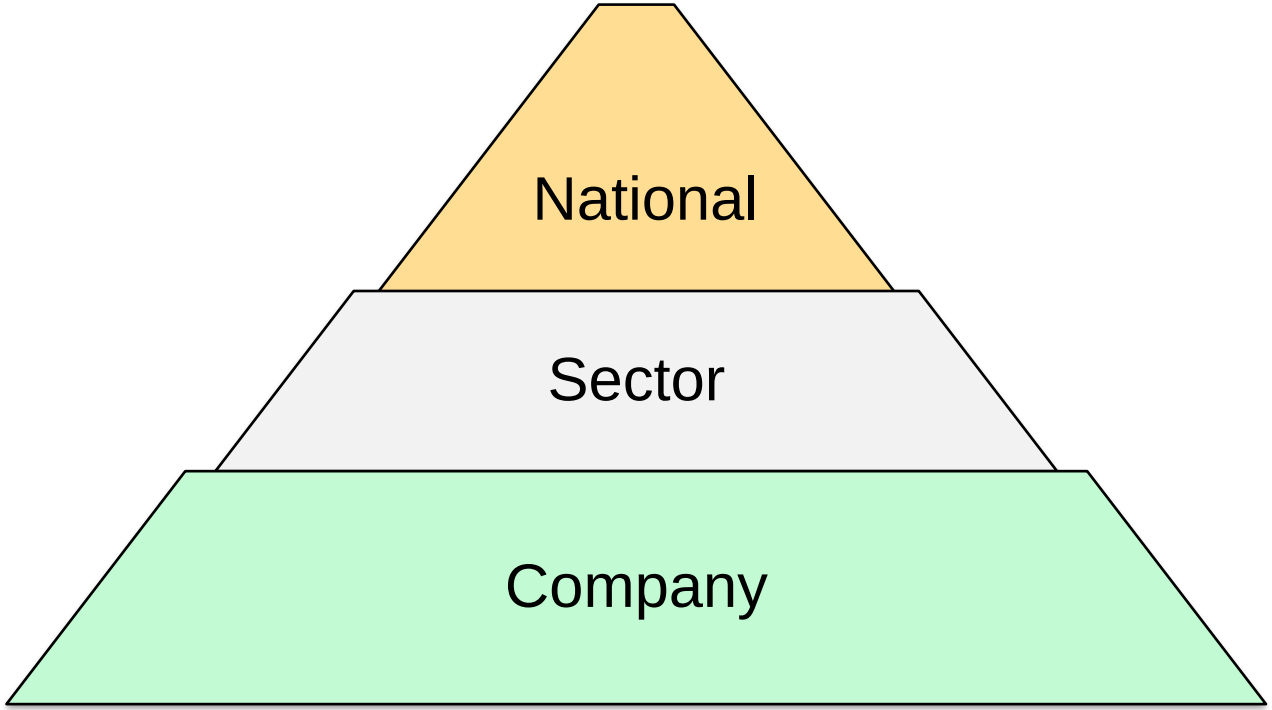
Minister of finance

Energy efficiency is good



Energy Efficiency Agency

Benefits occur at different economic levels



The multiple benefits of energy efficiency

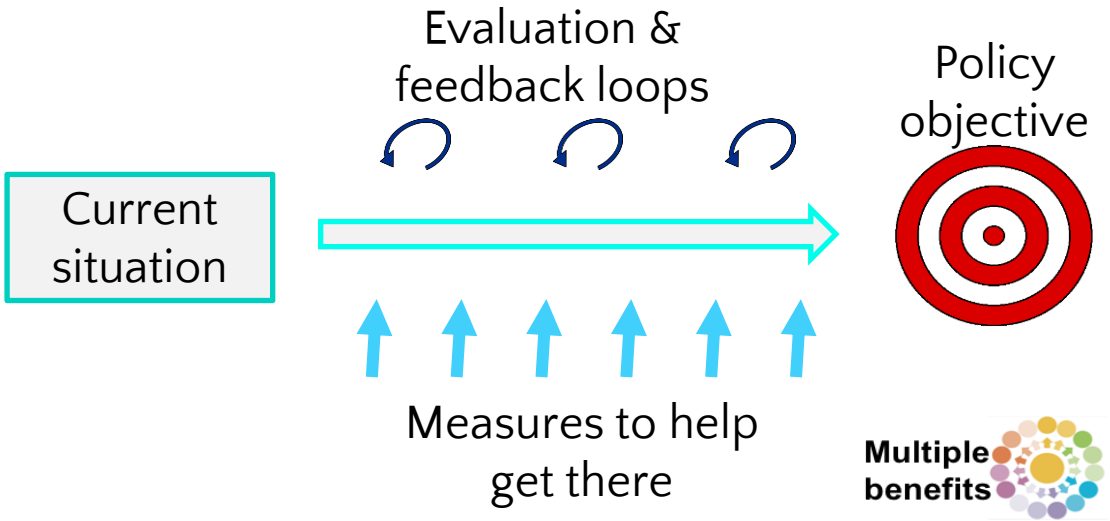
What are the most important benefits from industrial energy efficiency in your countries?

Discuss in small groups and top 3 priorities for each of your countries

Industrial energy efficiency barriers

Policy makers need to answer fundamental questions including:

- How can policy overcome barriers to deliver benefits?
- What is the best way to do this?



Data that can be useful to justify policy intervention

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

Map other policies and programmes

Identify existing policies and programmes

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

Analyse those policies and programmes

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

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

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

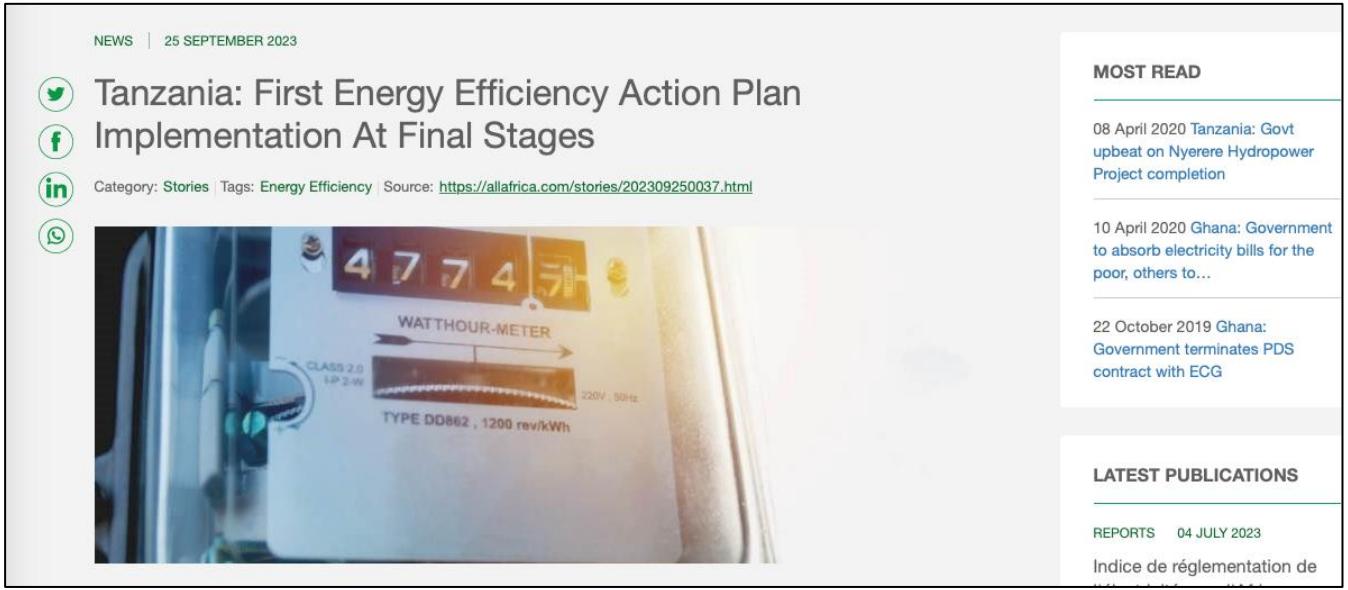
What else could be included?

What would convince your stakeholders?

Towards an integrated strategy

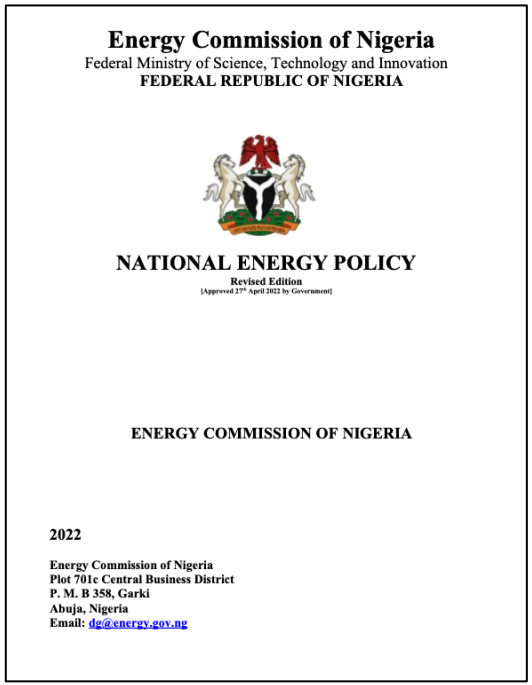
https://unepccc.org/wp-content/uploads/2020/09/kenya-national-energy-efficiency-and-conservation-strategy-2020-1.pdf

Towards an integrated strategy



https://africa-energy-portal.org/news/tanzania-first-energy-efficiency-action-plan-implementation-final-stages

Towards an integrated strategy



Energy Commission of Nigeria
Federal Ministry of Science, Technology and Innovation
FEDERAL REPUBLIC OF NIGERIA

NATIONAL ENERGY POLICY
Revised Edition
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ENERGY COMMISSION OF NIGERIA

2022

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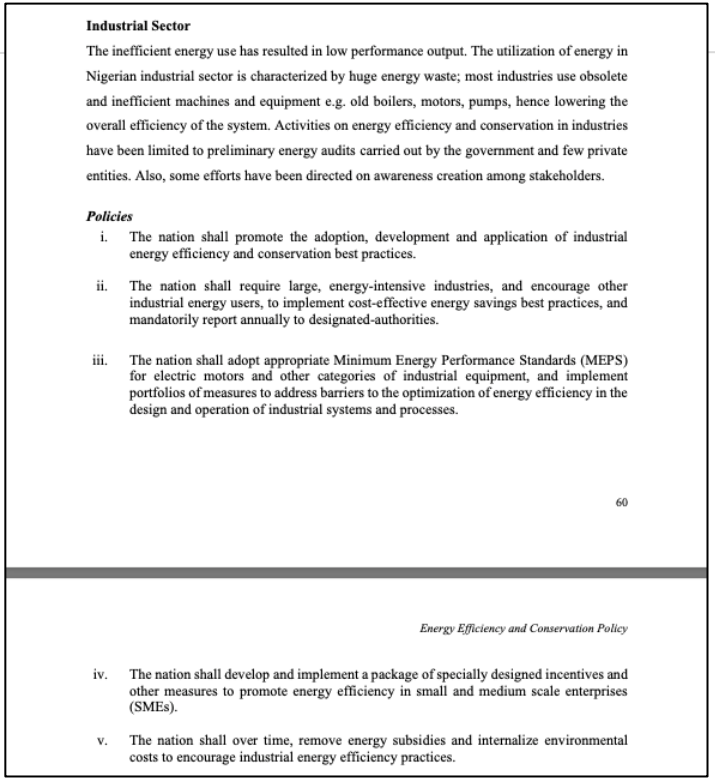


Industrial Sector

The inefficient energy use has resulted in low performance output. The utilization of energy in Nigerian industrial sector is characterized by huge energy waste; most industries use obsolete and inefficient machines and equipment e.g. old boilers, motors, pumps, hence lowering the overall efficiency of the system. Activities on energy efficiency and conservation in industries have been limited to preliminary energy audits carried out by the government and few private entities. Also, some efforts have been directed on awareness creation among stakeholders.

Policies

i. The nation shall promote the adoption, development and application of industrial energy efficiency and conservation best practices.

ii. The nation shall require large, energy-intensive industries, and encourage other industrial energy users, to implement cost-effective energy savings best practices, and mandatorily report annually to designated-authorities.

iii. The nation shall adopt appropriate Minimum Energy Performance Standards (MEPS) for electric motors and other categories of industrial equipment, and implement portfolios of measures to address barriers to the optimization of energy efficiency in the design and operation of industrial systems and processes.

60

Energy Efficiency and Conservation Policy

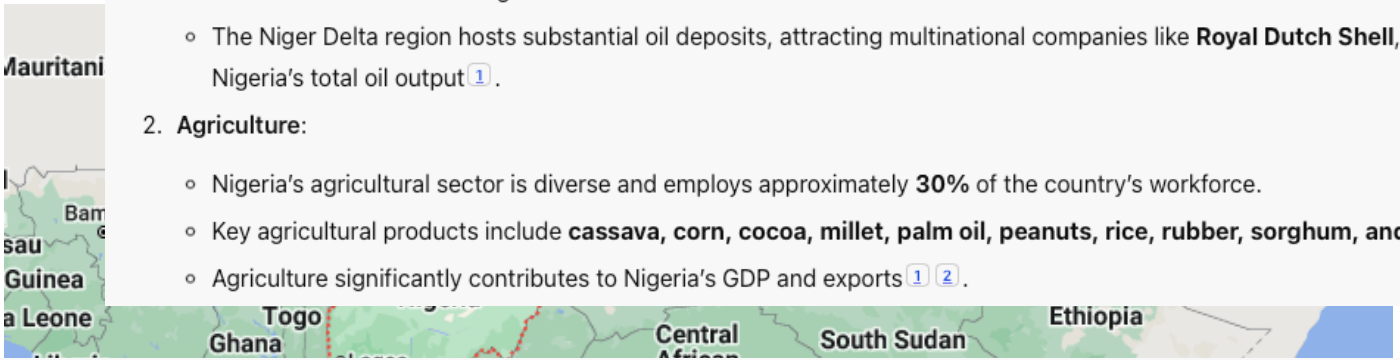
iv. The nation shall develop and implement a package of specially designed incentives and other measures to promote energy efficiency in small and medium scale enterprises (SMEs).

v. The nation shall over time, remove energy subsidies and internalize environmental costs to encourage industrial energy efficiency practices.

https://energy.gov.ng/Energy_Policies_Plan/APPROVED_REVISED_NEP_2022.pdf

Nigeria

1. **Petroleum Industry**:
   - Nigeria is a major player in the global petroleum industry. It ranks among the top ten oil producers worldwide and has the largest oil production in Africa.
   - Crude oil and petroleum products constitute over **98%** of Nigeria's annual exports. These exports contribute to **14%** of the country's GDP and account for about **83%** of government revenue.
   - The Niger Delta region hosts substantial oil deposits, attracting multinational companies like **Royal Dutch Shell**, which alone produces **50%** of Nigeria's total oil output [1].
2. **Agriculture**:
   - Nigeria's agricultural sector is diverse and employs approximately **30%** of the country's workforce.
   - Key agricultural products include **cassava, corn, cocoa, millet, palm oil, peanuts, rice, rubber, sorghum, and yams**.
   - Agriculture significantly contributes to Nigeria's GDP and exports [1] [2].



4. **Mining**:
   - Nigeria possesses abundant mineral resources, including **solid minerals like coal, limestone, tin, and iron ore**.
   - The mining industry plays a crucial role in economic diversification and job creation.
5. **Manufacturing and Textiles**:
   - Industries involved in **cement, textile, food processing, brewing, rubber, wood, and cement manufacturing** contribute significantly to Nigeria's economy [3] [4].

Zimbabwe – program design

- https://www.afdb.org/en/documents/eoi-zimbabwe-design-energy-efficiency-ee-programme-public-sector-esrsp

- The Government of the Republic of Zimbabwe has received Grant funding from the African Development Fund and intends to apply part of the agreed amount of the Grant for payments under the contract for the p amme Design under the Energy S vices are expected to be executed fo

REQUEST FOR EXPRESSIONS OF INTEREST (REOI)
CONSULTING SERVICES
COUNTRY: ZIMBABWE
ENERGY SECTOR REFORM SUPPORT PROJECT (ESRSP)
Grant Agreement No. 2100155041168
Project ID No. P-ZW-F00-006
Notice Reference No. EOI-ESRSP A002/1

RECRUITMENT OF A CONSULTING FIRM

1. The Government of the Republic of Zimbabwe has received Grant funding from the African Development Fund and intends to apply part of the agreed amount of the Grant for payments under the contract for the provision of Consultancy Services for Energy Efficiency Programme Design under the Energy Sector reform Support Project (ESRSP). The consultancy services are expected to be executed for a duration of twelve (12) calendar months.

2. The objective of this assignment is to design an Energy Efficiency (EE) programme for the public sector (including hospitals, schools, public buildings, municipalities, street lighting and other public facilities), which is a major energy consumer that can significantly contribute to achieving the country targets on GHG emission reduction.

- http://www.scielo.org

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ARTICLES

The adoption of energy efficiency and a policy framework for Zimbabwe

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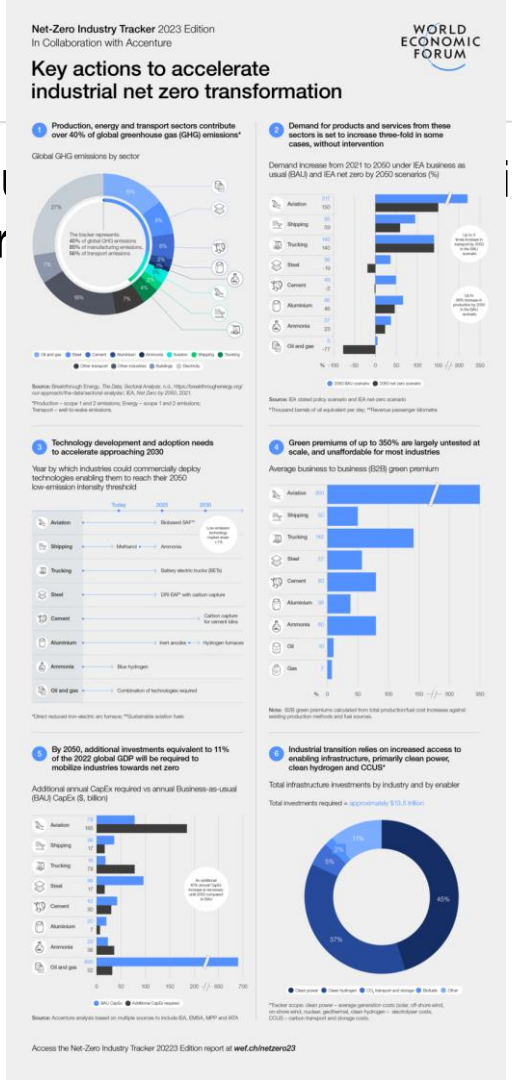

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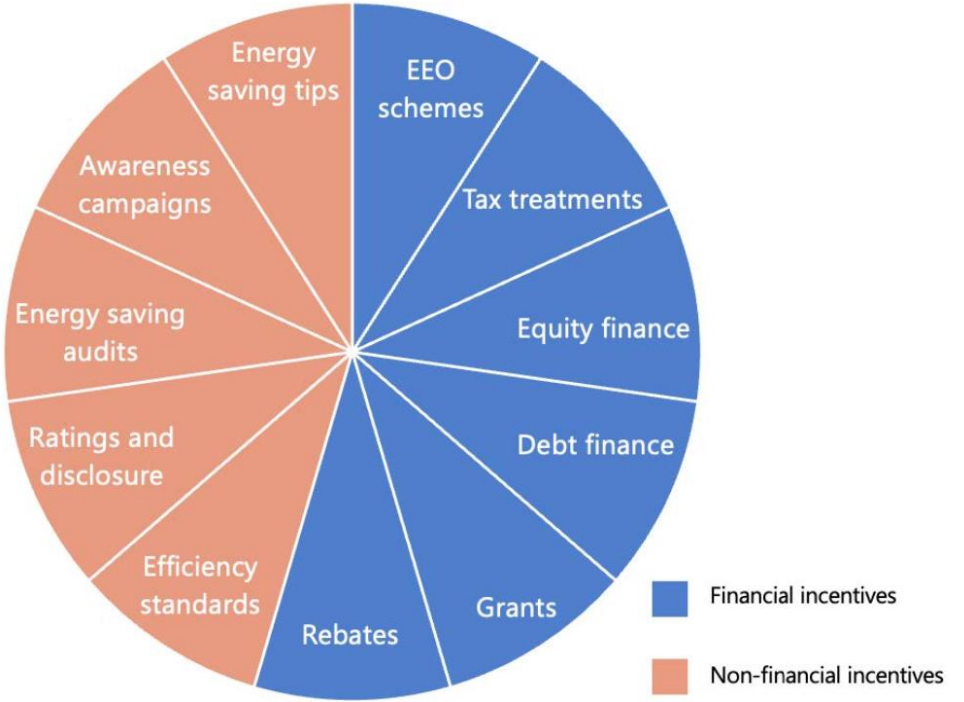
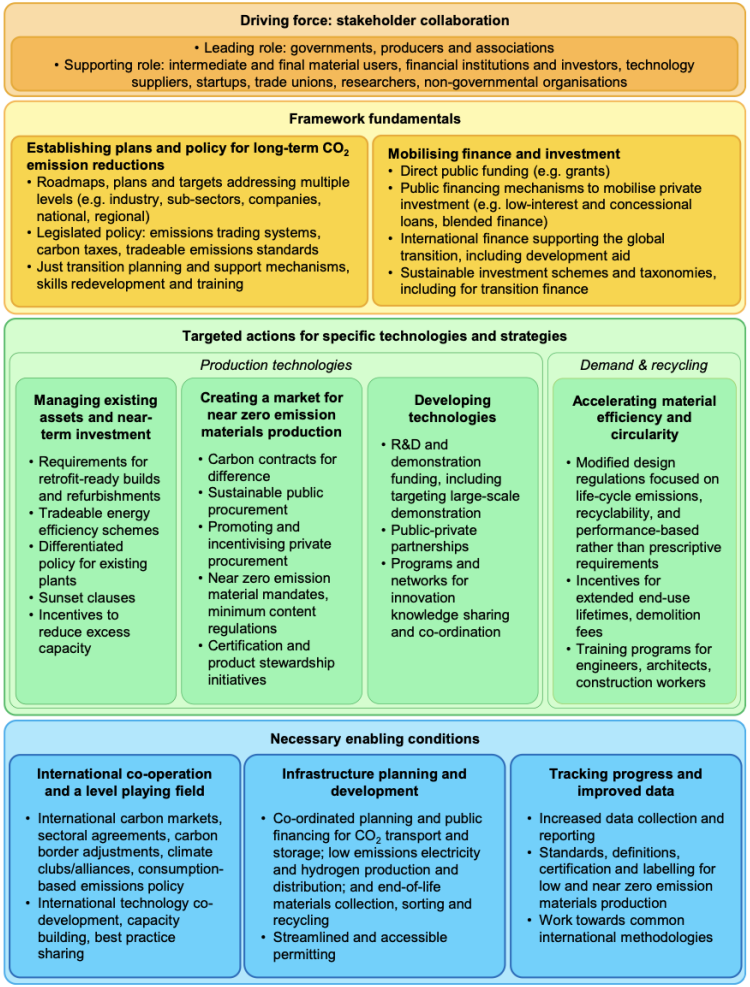


Figure 2: The energy efficiency policy mix (adapted from: Common Capital[7])

Source:. dfghgfdhgfdhgdfhgf

Figure 2.1 A policy toolbox for accelerating the transition to net zero heavy industries



Where would you start?

Strategies

Short-Term

i. Mandating industries to provide information on equipment energy perfor training initiatives, audits, technical advice and documentation, and system-asse protocols.

ii. Encouraging effective operational use of information flow in power factor, re peak load management and the use of energy efficient equipment and machiner

iii. Setting up and promoting Minimum Energy Performance Standards (MEP Labels for electric motors and other categories of industrial equipment s distribution transformers, compressors, pumps and boilers, etc.

iv. Strengthening the existing testing laboratories to support national and regional L and Standards (S&L) programmes.

v. Setting up guidelines for implementing energy efficiency projects in the indu well as, guidelines for consumers and manufacturers.

vi. Strengthening institutional framework to promote energy conservation and effici of energy in industries.

vii. Providing high-quality and relevant information on proven practices for efficiency in industries.

viii. Making available energy performance benchmarking information that can be

x. Fostering public-private financing of energy efficiency upgrades in in risk-sharing or loan guarantees with private financial institutions an market for energy performance contracting.

xi. Reducing specific energy consumption of key industrial outfits withi international best practices.

Medium-Term

xii. Reviewing, improving and continuation of short-term strategies.

xiii. Identifying and assessing energy saving opportunities by benchmarking, documenting energy consumption in industries.

xiv. Implementing actions to capture identified energy-saving opportunities.

xv. Reporting publicly the energy-saving opportunities identified and the a capture them.

xvi. Ensuring that energy audits are carried out by qualified personnel in in audit reports are widely promoted and easily accessible.

Long-Term

Ghana case study

https://w -energy-efficiency-in-ghana-1

Global Efficiency Intelligence

Publications

Publications Overview

Green Public Procurement of Steel and Cement in China

What are Green Cement and Concrete?

Electrifying Industrial Heating in China

Industrial Electrification in the Southwest States

Corporates, Electricity, and Renewables

Alternative Fuels Combustion in the Cement Industry

Embodied CO2 Emissions in Steel Imports to the U.S.

Deep Decarbonization Roadmap for PVC Industry in U.S.

Carbon Voyage Tool:

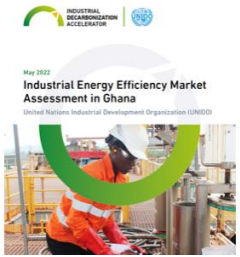
Industrial Energy Efficiency Market Assessment in Ghana

A report for United Nations Industrial Development Organization (UNIDO)

Authors: Ali Hasanbeigi, et al.

DOWNLOAD REPORT

Industry sector in Ghana contributes to around 30% of its GDP and employs about 21% of the population. Ghana is a developing country and industrialization is part of a rapid development goal, like many other developing countries. The industry value added in Ghana (in Billion 2015 US$) more than doubled between 2010 and 2020. Industry sector energy use will continue to increase in Ghana which will pose a challenge to both energy security as well as meeting its Paris Agreement goals stated in Ghana's Nationally



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8. Energy efficiency

Key data (2021)

Total final consumption (TFC): 17 Mtoe, 665 PJ (electricity 2%), +22% since 2015

Uganda 2023
Energy Policy Review
International Energy Agency

Consumption by sector: residential 61%, industry 22%, commercial and public services 9%, transport 7%, agriculture and forestry 1%

Energy consumption (TFC) per capita: 0.37 toe/capita (IEA average: 2.9), -0.5% since 2015

Energy intensity (TFC/GDP): 155 toe/USD million PPP (IEA average: 75 toe/USD million PPP), -4% since 2015

Ghana exercise – strengths and limitations of the policy proposal

8.7. Policy Proposal: Top-100 Energy-Consuming Enterprise Program in Ghana

This proposed Top-100 Energy-Consuming Enterprise Program in Ghana is modeled on international target-setting programs (also called voluntary or negotiated agreement programs). These types of target-setting programs that focus on energy efficiency improvement and reduction of GHG emissions by industry have been implemented in both developed and developing countries since the 1990s. For example, the Netherlands implemented a successful voluntary agreement program on industrial energy efficiency and China's Top-1,000 and Top-10,000 program has been among the most successful energy efficiency programs in China.

These programs are essentially a contract between the government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties. Such agreement programs typically have a long-term outlook, covering a period

investments can be planned and implemented. A key element is that they focus the attention of all actors on energy efficiency or emission reduction goals. The essential elements of such programs include the assessment of the energy efficiency potential of the industrial facility as well as target-setting through a negotiated process. Participation by industries is motivated through the use of both incentives and disincentives. Supporting programs and policies, such as facility audits, assessments, benchmarking, monitoring, information dissemination, and financial incentives all play an important role in assisting the participants in understanding and managing their energy use and GHG emissions in order to meet the target goals. Some of the more successful voluntary agreement programs are based on the use of a mechanism to reduce environmental regulations or taxes for participants (Price et al. 2008). We are proposing a similar program in Ghana initially

What is the target market?

Economic growth, energy consumption, and GHG in industrial sector

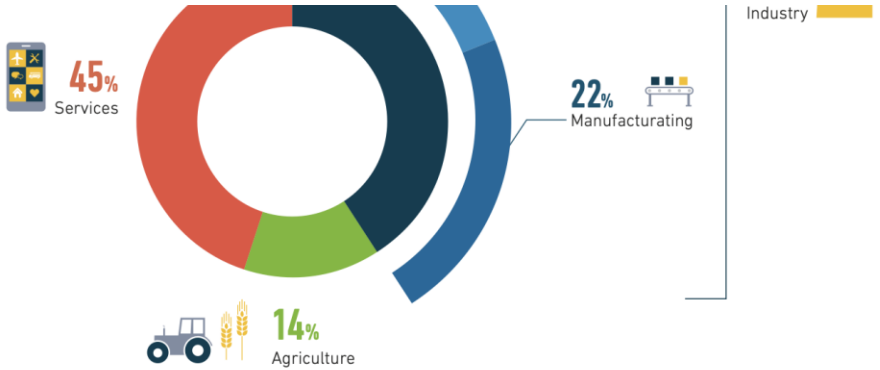
Indonesia, the world's 10th largest economy, and largest in South East Asia, is the world's fifth-largest emitter of greenhouse gases. In the last decade, Indonesia has enjoyed a 5.4 percent increase per year in GDP (World Bank 2018b), and this steep growth has spurred an intensification in CO2 emissions by 3.9 percent per year.

This growth is expected to continue, with the country's real GDP growth is projected to rise from 5.1 percent in 2017 to 5.2 percent in 2018 (World Bank, 2018a) and the Governor of Bank Indonesia having set a target of 6.2% for 2022 (Martowardojo, 2017).

Setting the contex esia

- https://www.industrialen

WATCH: Industrial energy efficiency in Indonesia



Africa Energy Efficiency Policy in Emerging Economies Training Week

Nairobi

18-22 March 2024

Africa Energy Efficiency Policy in Emerging Economies Training Week

Industry

Nairobi
18-22 March 2024

International Energy Agency

Energy Efficiency Policy Packages

Patrick Crittenden, Sustainable Business Group & Corine Nsangwebusinge, IEA

Nairobi, 18 March 2024

Learning outcomes

This session will focus on developing your skills and knowledge to:

- Establish the reasons for and benefits of developing policy packages
- Identify the three broad types of policies that can be incorporated into a policy package and the advantages and disadvantages of each
- Draw on examples of different policy mechanisms to review and strengthen policies in your own countries.

Policy Package – Industry Energy Efficiency

Immediate opportunities

Implementing better energy management practices has been shown to deliver savings up to 15% in the first 1-2 years, with little or no capital investment.

Heavy industry accounts for over two thirds of global industrial emissions, while over 70% of short term industrial energy efficiency savings are in light industry and SMEs.

Electrification is key to the decarbonisaton of industry. In the IEA Net Zero Scenario the share of electricity in total industrial consumption increases from 21% to 46% by 2050.

REGULATION

- **Minimum Energy Performance Standards** for key equipment, such as motors and pumps, can drive up overall industrial efficiency levels.
- **Regulation** extends beyond technology to target areas such as research and development, energy auditing, mandatory consumption reporting, energy management systems, and upskilling of the workforce. Incorporating life cycle impacts into regulation helps promote material efficient choices at the design stage.
- **Regulatory Instruments** yield best results when rooted in a good understanding of local context and include ambitious, regularly updated, standards.
- **Regulations to ensure demand side response capabilities** help provide flexibility to the grid.

INFORMATION

- **Benchmarking, indicators and other forms of detailed data** allow governments to track the progress of policies and allow industries to compare their energy performance with that of their peers.
- **Digital technologies** enable industries to track energy use in real time and help ensure flexible demand side response, resulting in energy optimisation and cost saving opportunities.
- **Sharing information on energy efficiency best practice** through targeted information and industry networking activities helps industries raise ambition and improve energy performance.

INCENTIVES

- **Incentives** such as preferential finance, links to carbon trading, obligations and tax based measures can motivate crucial energy efficient decisions at the process design and equipment selection stage, supporting industry transition to near zero emission technologies.
- **Free or subsidised energy audits**, often targeted at SMEs and other sectors of strategic importance, can help rapidly increase energy efficiency.
- **Policies to foster Energy Service Companies** provide industry with access to significant external energy expertise and attractive structured financial packages.
- **Incentives for the reuse and recycling** of materials reduce the need for higher-emission primary materials production.

As we work through the session, we will ask you to share examples of the policies that are being implemented in your countries.

Country	Regulation	Information	Incentives

Some policy design questions

- What are your objectives?
- **What specific outcomes are expected in the immediate, near and long term?**
- Who is your target market?
- What barriers are you attempting to overcome?
- **What is the best combination of regulatory, information and incentives to address those barriers?**
- What resources will be needed?
- Who are the key stakeholders that need to be involved in the design and delivery of the programmes?

Immediate, near-term and long-term outcomes

Consider a policy that is being implemented in your country.

- What are the immediate opportunities?
- What near-term outcomes are expected to be achieved?
- What long-term outcomes are expected to be achieved?

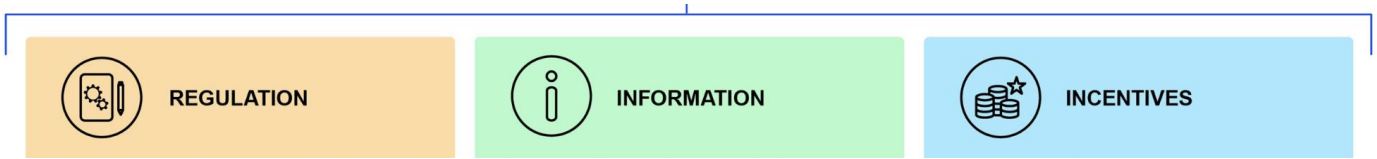
INTERACTIVE ACTIVITY

Immediate opportunities

Implementing better energy management practices has been shown to deliver savings up to 15% in the first 1-2 years, with little or no capital investment.

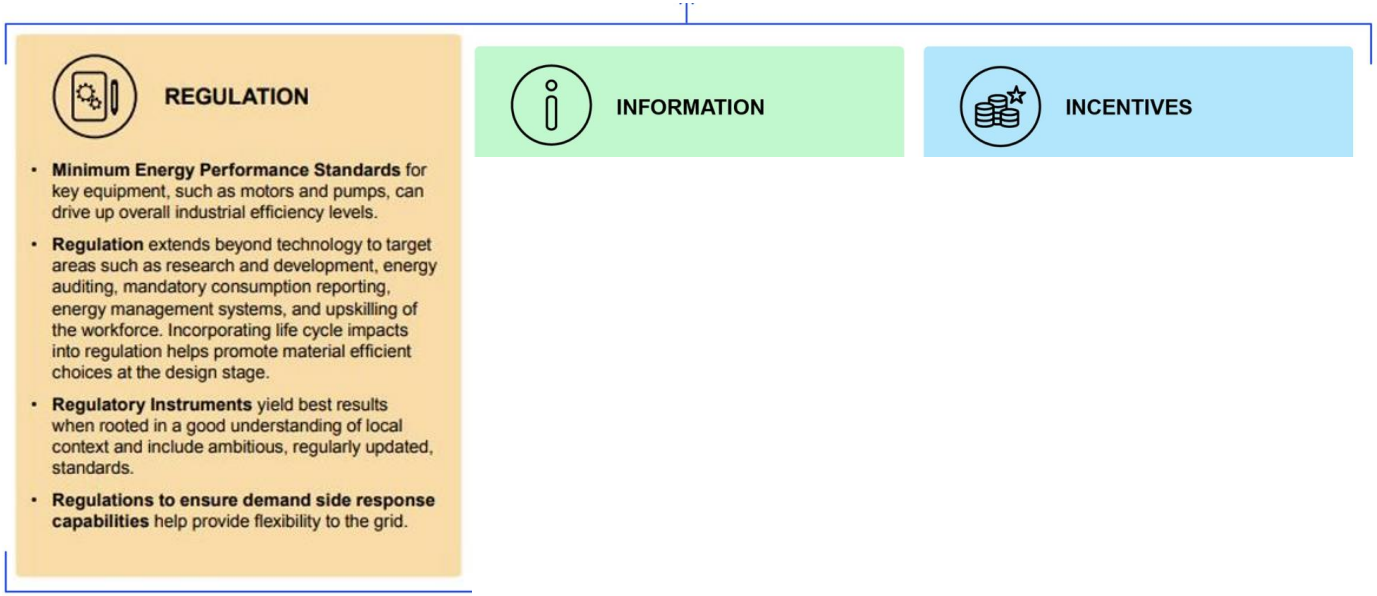
The importance of policy packages

The greatest efficiency gains are achieved by a package of policies that combine three main types of mechanisms. Regulation, information and incentives. Careful design and implementation will deliver efficiency's full potential.



Regulation

Regulation is essential to exclude the worst performing equipment and practices from the market, to drive average efficiency levels up, and to set rules for measurement or performance.

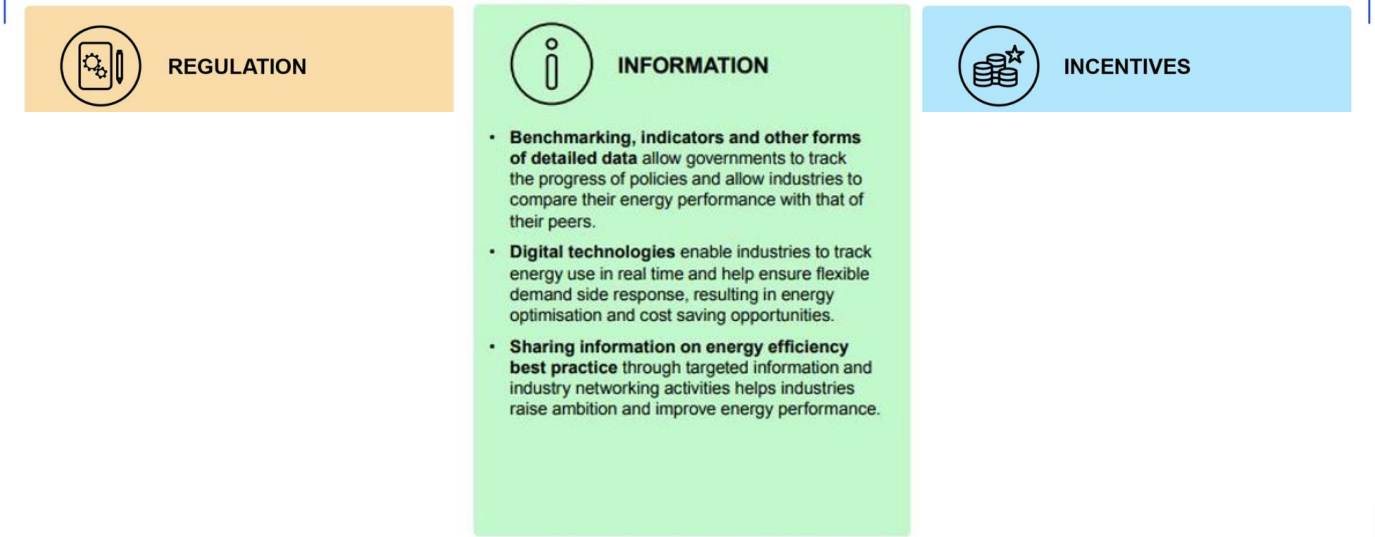


Please share examples of ‘regulation’ for energy efficiency in industry. Take 5 minutes to post them up on the Flip Chart using sticky notes.

Country	Regulation	Information	Incentives

Information

Information helps people make more efficient choices in what they buy and how they use energy



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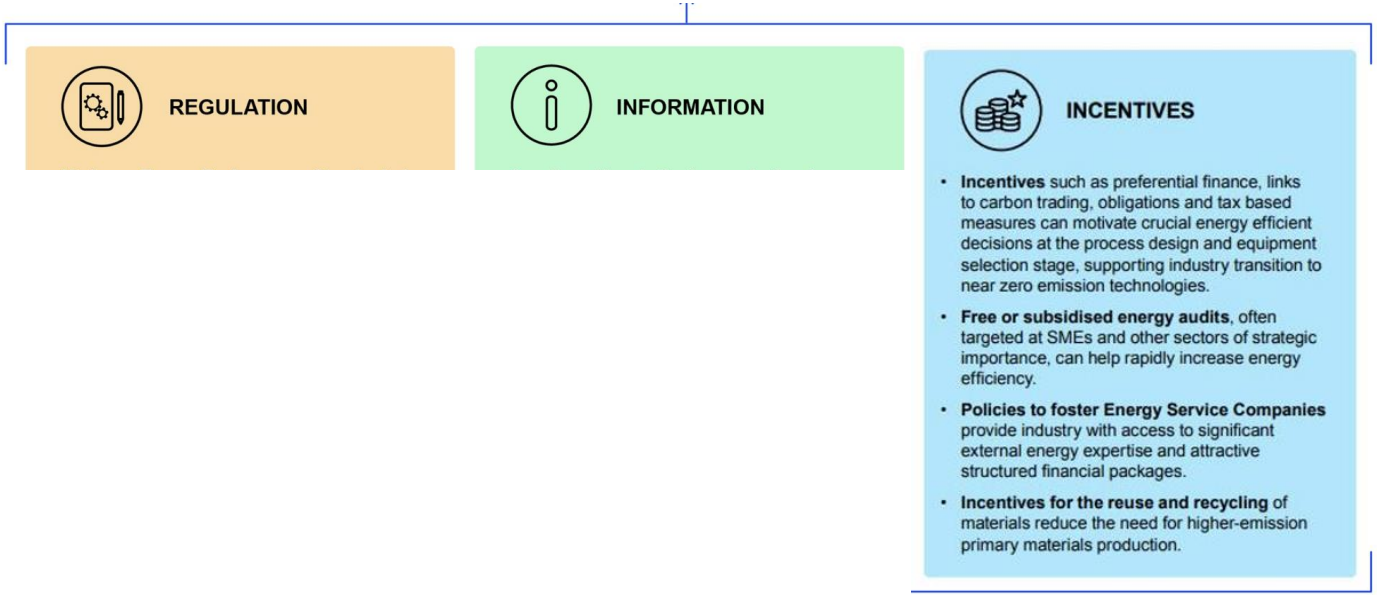
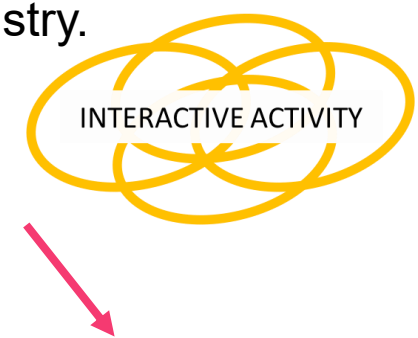
Country	Regulation	Information	Incentives

Incentives

Incentives make efficient options more attractive and speed up the upgrade and replacement of appliances, buildings and vehicles. They also encourage the use of new technologies and practices.



Please share examples of ‘incentives’ for energy efficiency in industry. Take 5 minutes to post them up on the Flip Chart using sticky notes.



Country	Regulation	Information	Incentives

Bringing it all together

Policy Package – Industry Energy Efficiency

Immediate opportunities

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