



# INDUSTRIAL DECARBONIZATION THROUGH ENERGY MANAGEMENT SYSTEMS IMPLEMENTATION

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ACCELERATING  
INDUSTRIES'  
**CLIMATE  
RESPONSE**

SRI LANKA



European Union Funded Project Implemented by the United Nations  
Industrial Development Organization with the Ministry of Environment, the  
Ministry of Industries, the Ministry of Power and Energy

# UNIDO and Energy Management Program

## Industrial Energy Efficiency - A Global Programme

Implemented in 29 countries



GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

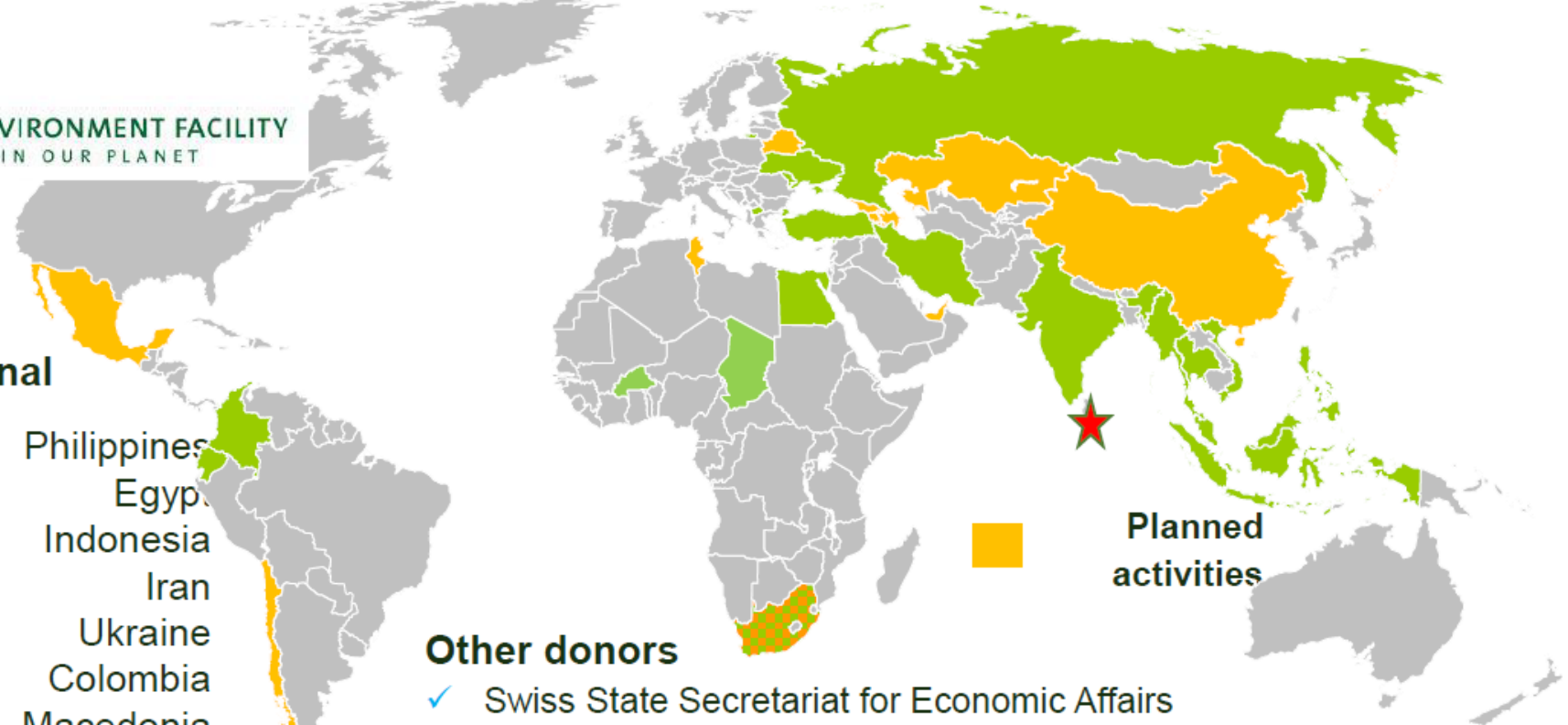
### Operational

South Africa	Philippines
Moldova	Egypt
Russia	Indonesia
Turkey	Iran
Ecuador	Ukraine
Malaysia	Colombia
Thailand	Macedonia
Vietnam	Myanmar
India	

### Other donors

- ✓ Swiss State Secretariat for Economic Affairs
- ✓ UK Department for International Development
- ✓ Government of South Africa

Planned activities



# UNIDO Global EnMS-ESO Program

- Operational in 29 countries (as of Dec 2020)

- ✓ 11 Countries at the end of 2012
- ✓ 18 Countries at the end of 2016

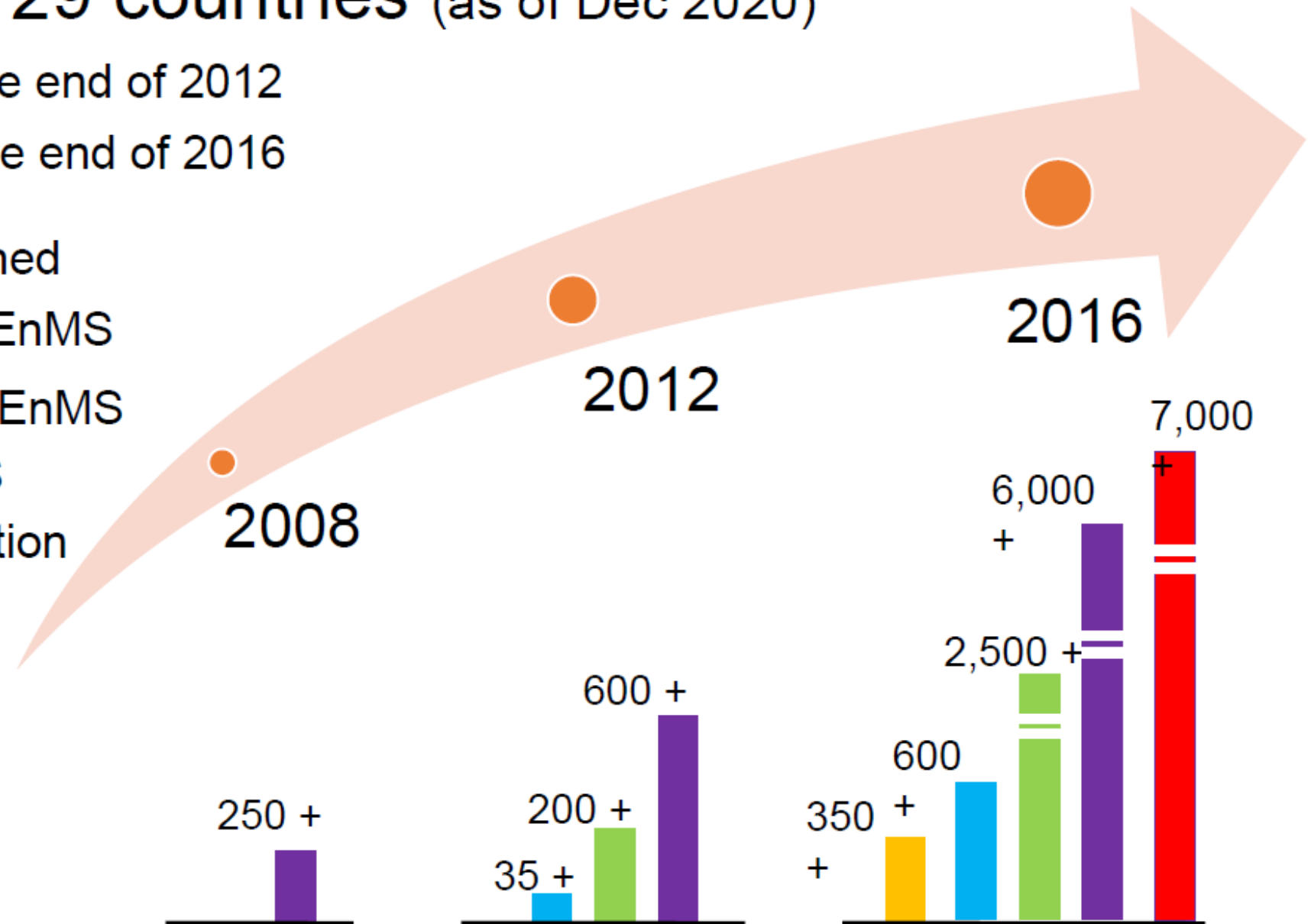
Decision-makers reached

Enterprises trained in EnMS

Consultants trained in EnMS

Enterprises with EnMS

Final energy consumption savings (GWh)



## ACHIEVEMENTS



**650+**

**EnMS EXPERTS  
QUALIFIED**



**OVER  
3500**

**COMPANIES TRAINED  
in EnMS**



**MORE THAN  
500  
COMPANIES**

**directly supported  
throughout EnMS  
IMPLEMENTATION**

**MORE THAN  
1,000**

**DECISION MAKERS, POLICY MAKERS,  
FINANCIAL AUTHORITIES, SERVICE  
PROVIDERS AND TOP MANAGEMENT  
directly engaged in training and related  
initiatives**



**4-15%**

**OF ENERGY SAVED**

**per company in the first year of  
EnMS implementation with little  
or no capital investment**



**CUMULATIVE  
PRIMARY ENERGY  
savings exceed  
25,000 GWh**



**MORE THAN  
\$400 MILLION USD  
saved in CUMULATIVE  
ENERGY COST  
SAVINGS**



**MORE THAN  
10 MILLION TONS of  
CO<sub>2</sub> EMISSIONS avoided,  
roughly equivalent to the  
carbon sequestered by  
150 million 10-year-old  
trees<sup>5</sup>**

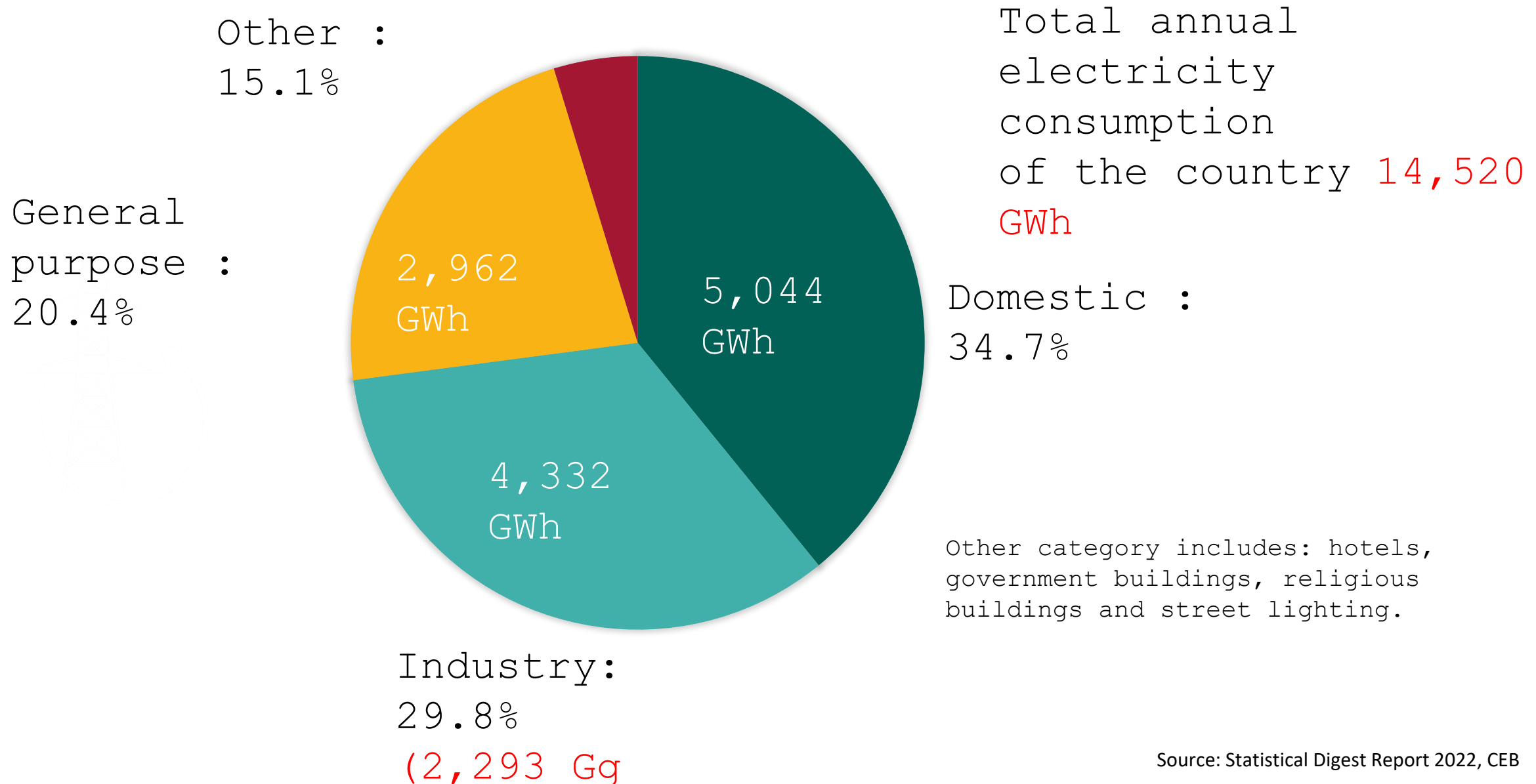
# Industrial decarbonization pillars for Sri Lanka

Note: Technologies listed under each pillar are just examples and not selected technologies.

Material Efficiency/circular economy (near-mid term)	Energy Efficiency (near-term)	Electrification of Industrial Heat (near-mid term)	Low-carbon fuels, feedstocks, and energy sources (LCFFES) (mid-long term)	Carbon Capture, Utilization, and Storage (CCUS) (long term)
<ul style="list-style-type: none"> <li>Higher quality products and materials</li> <li>Circular economy</li> <li>Material efficiency</li> <li>By-product synergy/waste reduction</li> <li>Low carbon material substitution</li> </ul>	<ul style="list-style-type: none"> <li>Energy-efficient technologies</li> <li>Energy management</li> <li>WHR / CHP</li> <li>Systems optimization</li> <li>Many commercially available technologies</li> </ul>	<ul style="list-style-type: none"> <li>Electric boilers</li> <li>Heat pumps</li> <li>Electric heaters and dryers</li> </ul>	<ul style="list-style-type: none"> <li>H<sub>2</sub>-DRI ironmaking</li> <li>Green H<sub>2</sub> ammonia and methanol</li> <li>Alternative feedstock for cement production</li> <li>Biofuels and bio feedstocks</li> <li>Solar PV, Solar thermal</li> </ul>	<ul style="list-style-type: none"> <li>Carbon capture and storage</li> <li>Carbon utilization</li> </ul>

- **Near term:** Fully commercial and ready for adoption now
- **Mid term:** Fully commercial but low adoption by 2030
- **Long term:** Mostly emerging techs with adoption after 2030

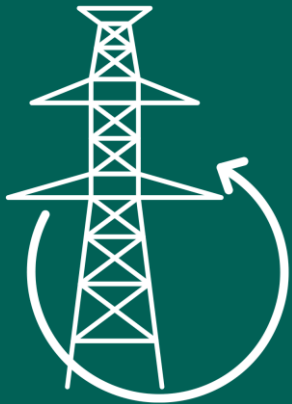
# Industry Sector Electricity Consumption



# Industry Sector Electricity Consumption contd.

**8.7%**

of industrial  
customers account

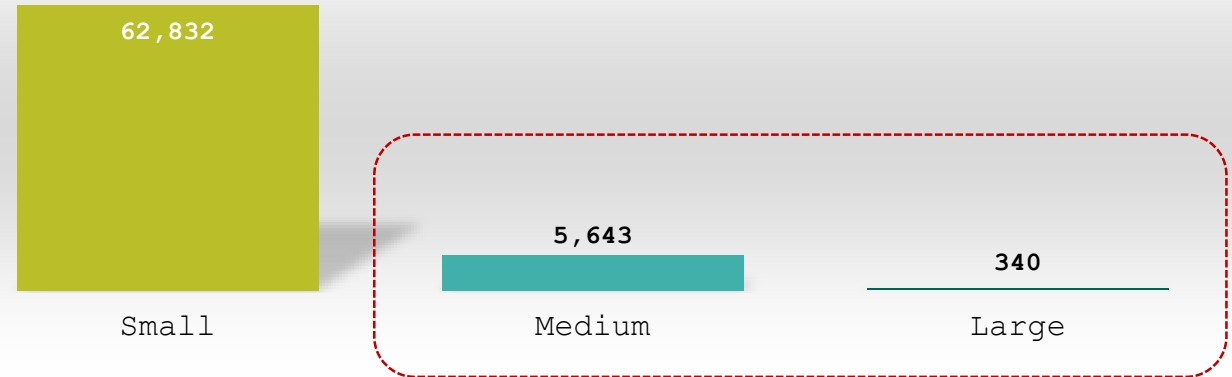


for more than

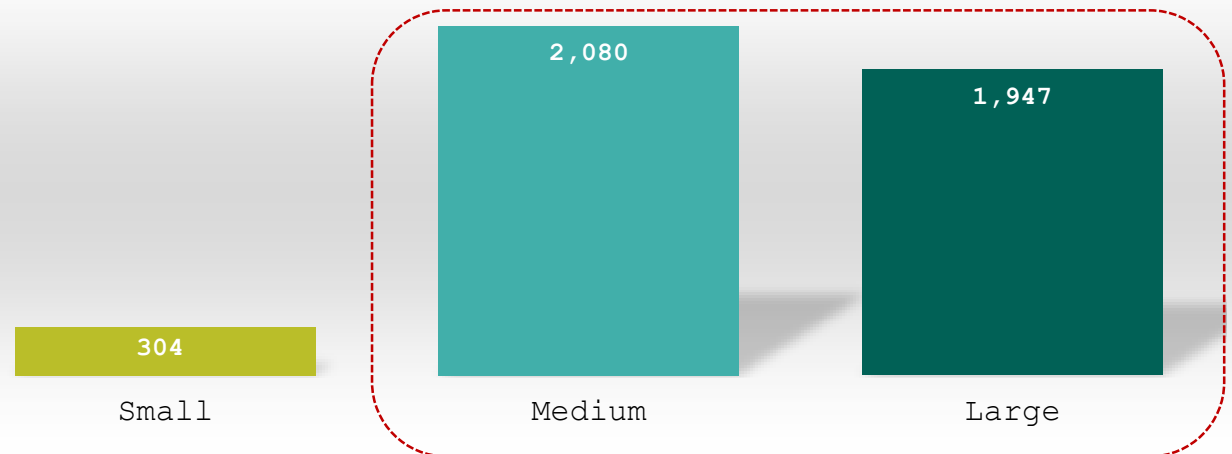
**93%**

of total  
industrial  
electricity  
consumption.

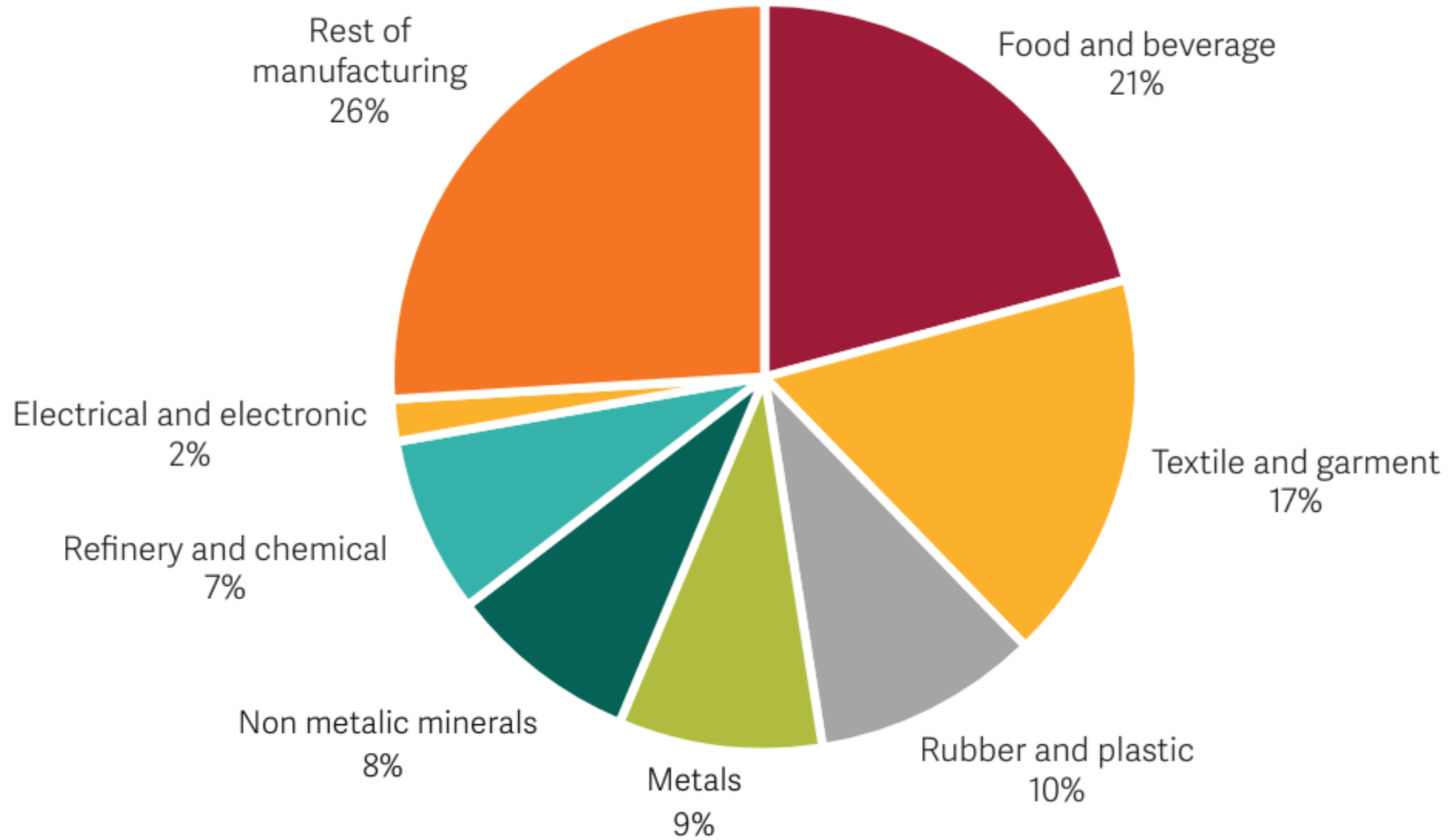
Number of consumers



Electricity usage (GWh)



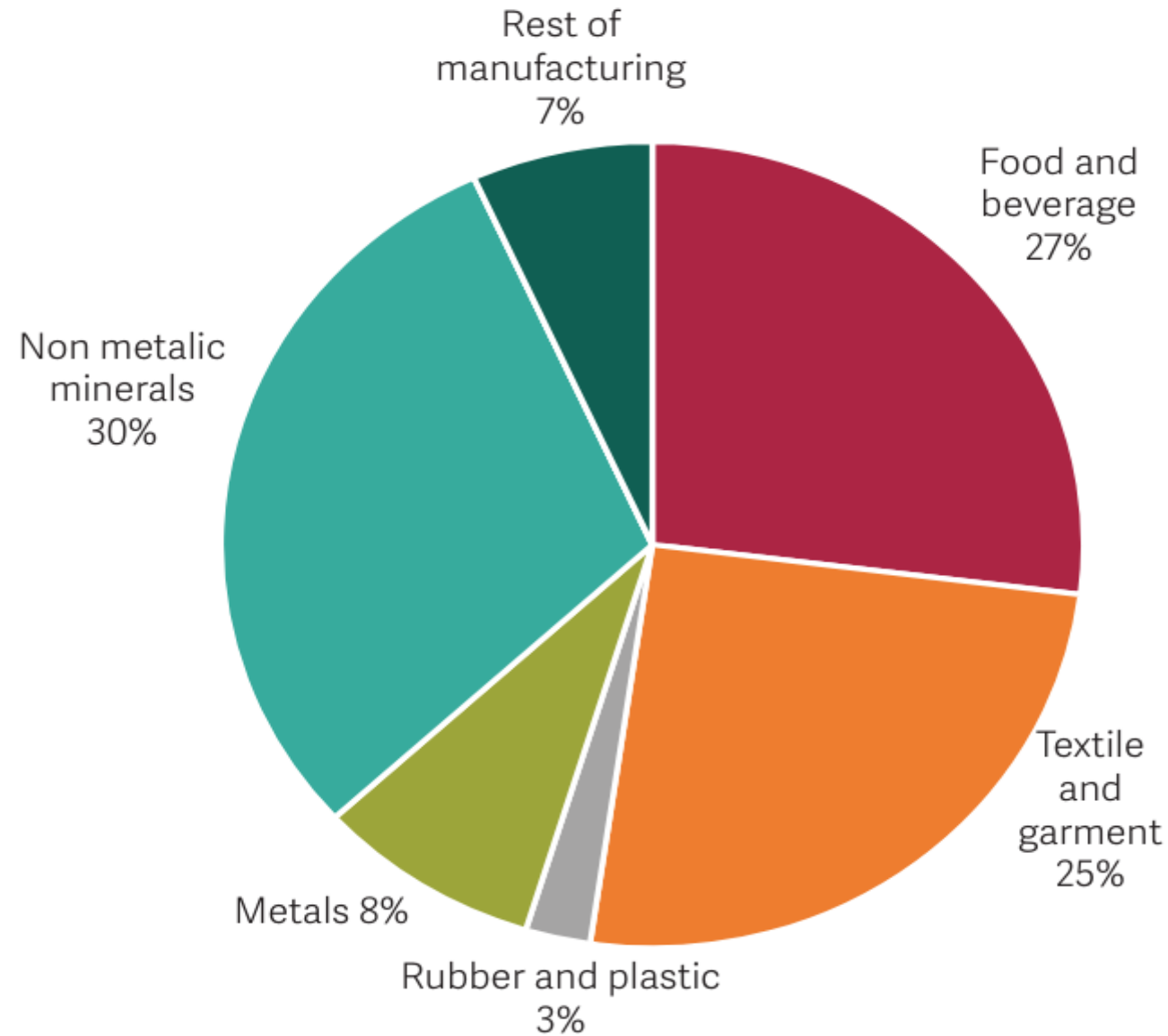
# The share of major electricity consuming sectors



(Source: Ceylon Electricity Board, 2023)

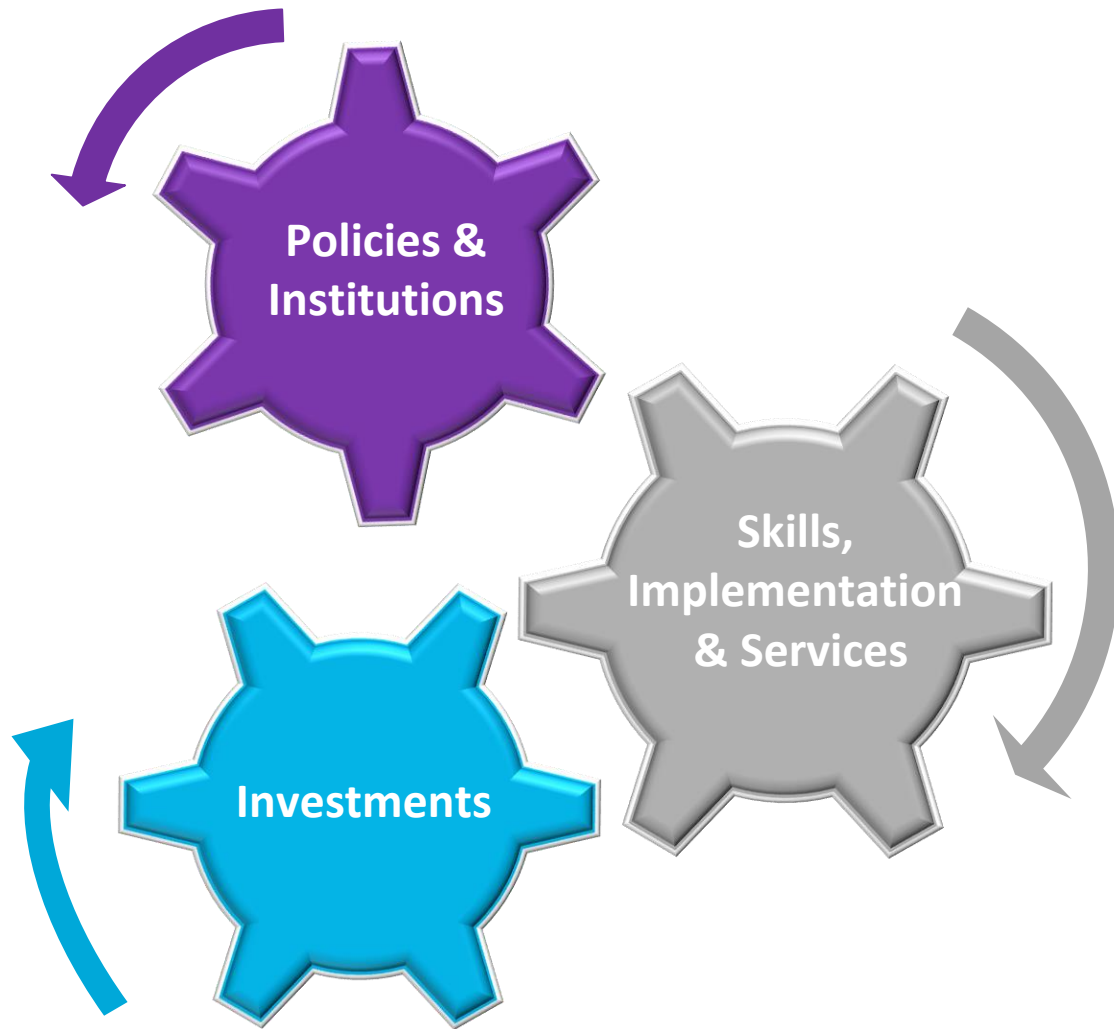


# The share of petroleum products used in manufacturing subsectors



(GEI analysis based on data from CPC 2023; Litro Gas 2023)

# INDUSTRIAL ENERGY EFFICIENCY TAKES...



# THE ENERGY MANAGEMENT RATIONALE

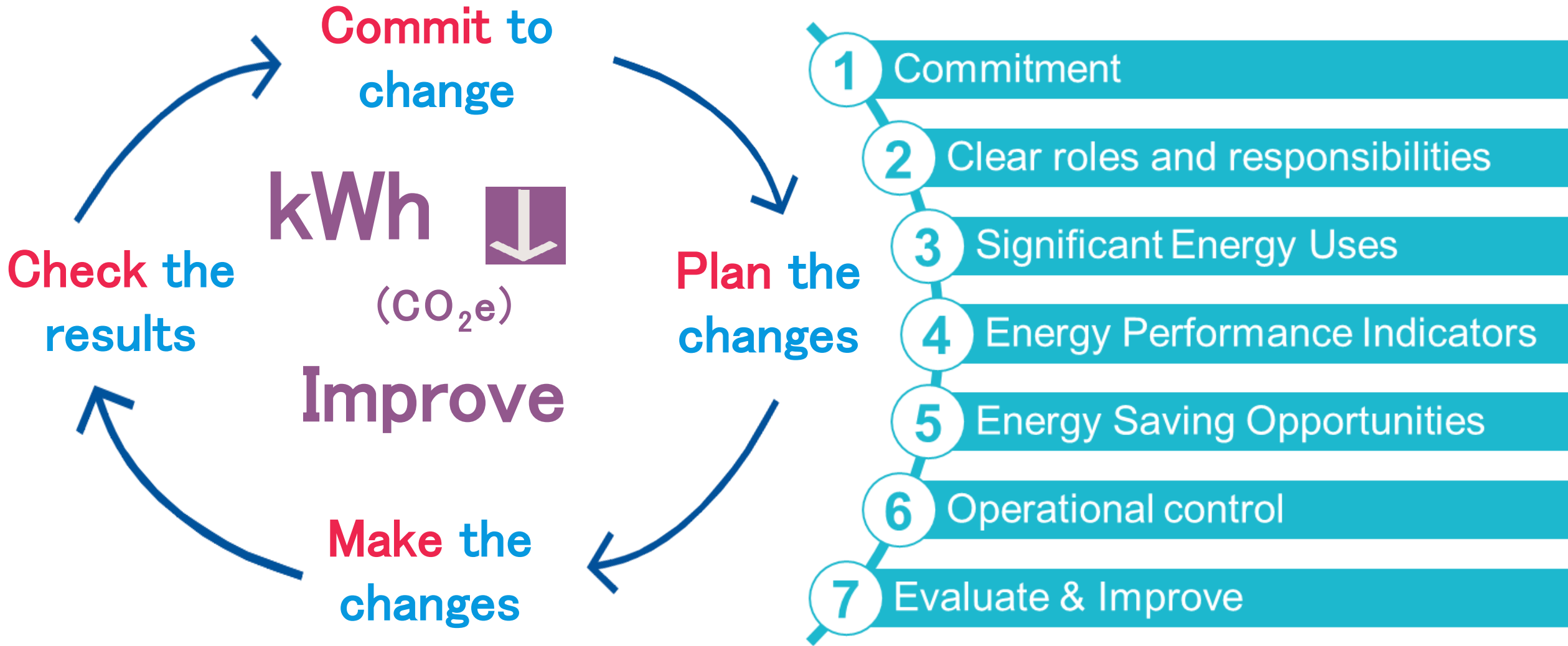
**The evidence:** Most energy efficiency in industry is achieved through changes in **how energy is managed** rather than through installation of new technologies

***The problem:*** *Energy efficiency is not integrated into daily management practices*

***The solution:*** *A systematic approach is required and top management must be engaged in the management of energy*



# EnMS METHODOLOGY AND KEY CONCEPTS



# THE EnMS EXPERT TRAINING PROGRAMME

**Course duration: 300 hours over 9 months comprising:**

- **13 classroom days**
- Candidate plant site visits
- **8 monthly webinar** reporting sessions
- Development of the Energy Manual, Energy Performance and Case Study Reports
- Implementation team meetings
- **4 class tests** and a
- **3.5-hour open-book final examination.**



# SNAPSHOT OF THE CANDIDATES AND THEIR INDUSTRIES

- **67 candidates** representing **26 industrial plants** started the programme
- **12 sub-sectors** represented viz. tea, apparel & textile, rubber, food, tile, energy services, metal, printing, electronics, plastics & chemicals
- 11 candidate plants supported to implement EnMS
- **84% completed** the course



# THE OUTPUTS AND OUTCOMES

- **57 candidates** wrote the final exam with an **80% pass rate!**
- **43 energy saving measures** implemented at a cost of **460,000 USD**, yielding **6.9 GWh** savings and mitigating **5,400 tons CO<sub>2</sub>e** emissions
- 2 Graduates **promoted to senior management** roles after implementing successful EnMSs.
- 9 plants identified a further **34 projects** for implementation with a potential savings of 92 GWh and 760,000 USD.

# www.industriesclimateresponse.com

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## For more information visit:

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