MODULE 4:
ENERGY EFFICIENCY DATA ANALYTICS

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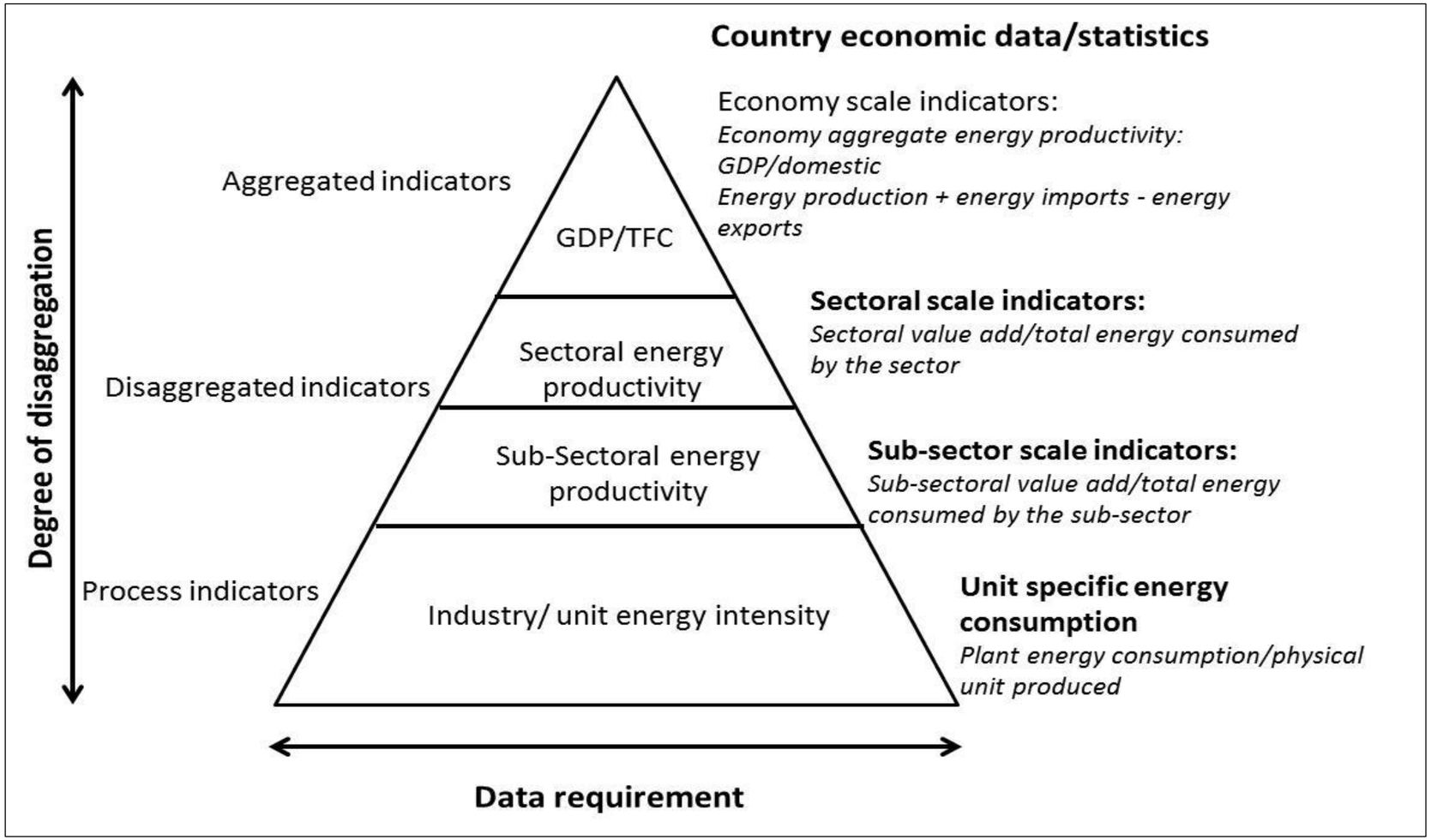
CONTENTS

ENERGY PRODUCTIVITY INDICATORS

ENERGY PRODUCTIVITY INDICATORS

1 EE Performance Indicators



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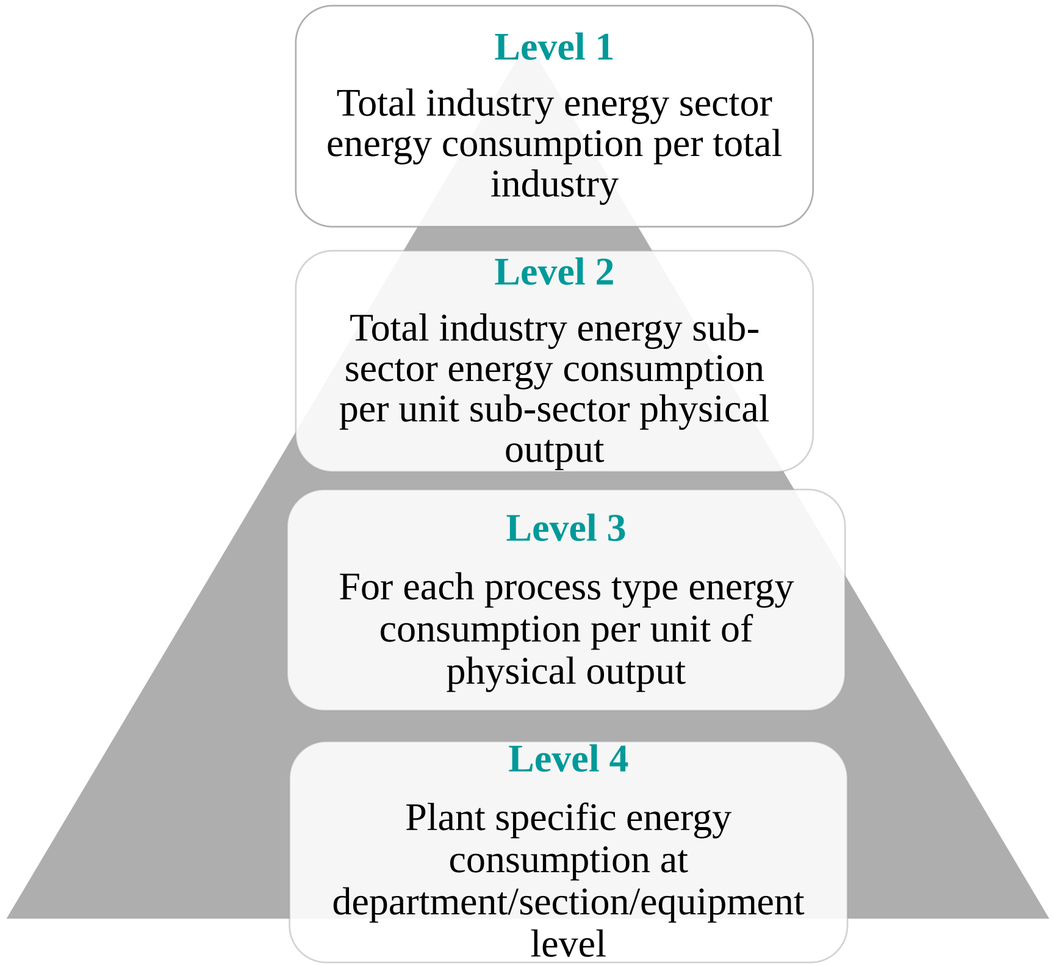
ENERGY PRODUCTIVITY INDICATORS

2 EE Performance Indicators for Industries



GAP ANALYSIS

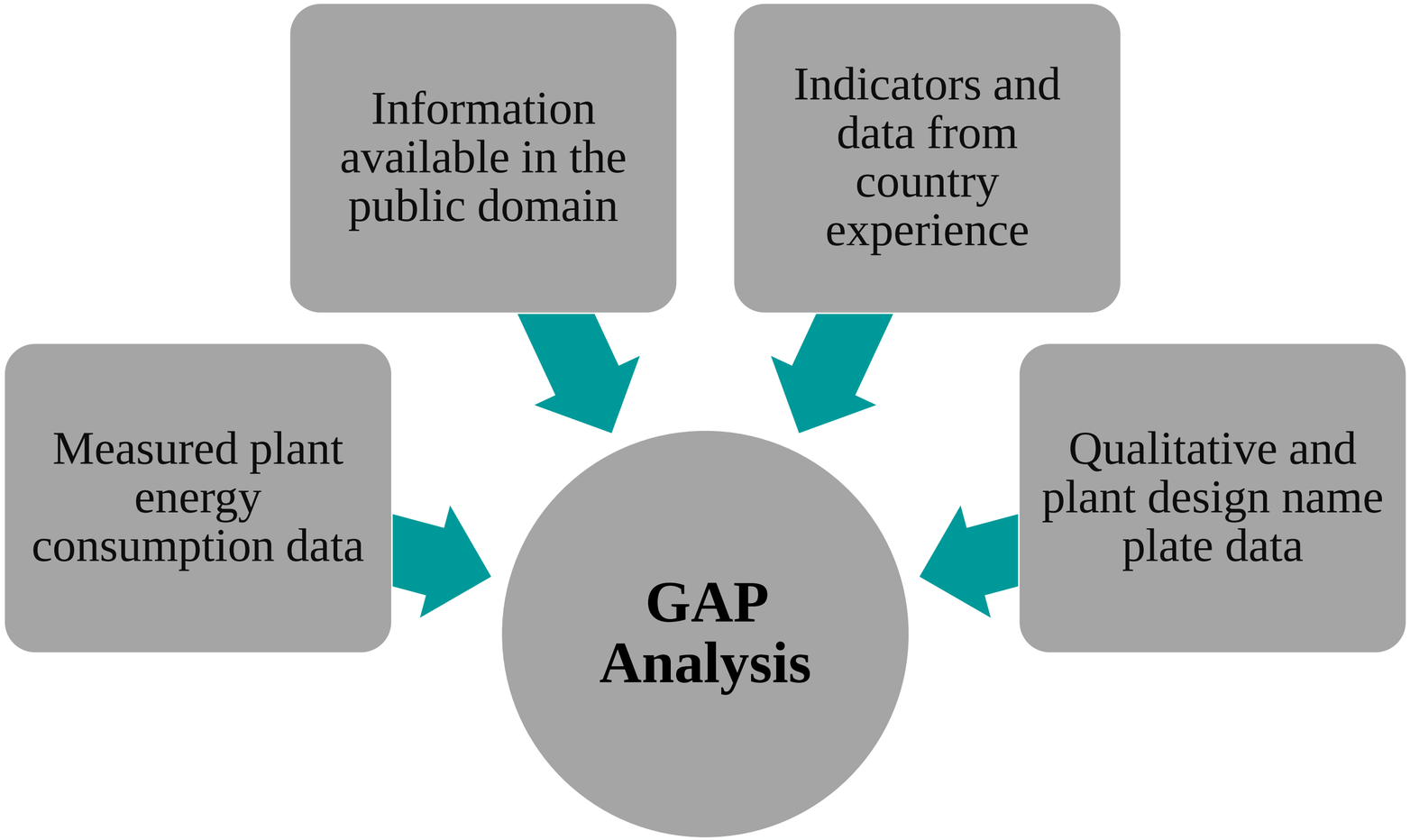
GAP ANALYSIS

1 Prioritisation through GAP analysis

- The priorities should be to focus on improving the performance of inefficient and large energy consuming industries.
- Gap analysis is a benchmarking process that accounts for and compares a plant’s current energy performance with that deploying Best Available Technologies (BAT).
- GAP analysis begins with first collating information from public sources on the pattern of sub-sectoral energy consumption at the regional, country and local levels.

GAP ANALYSIS

1 Data Sources GAP analysis



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GAP ANALYSIS

1 GAP Analysis Steps

Step 1

Indexing industry units on SEC; high-low analysis to identify GAPs

Step 2

Application of sensitivity analysis to contrast units from BAT performance

Step 3

Determining overall potential for improvement

GAP ANALYSIS

1 Target Setting

Historic SEC reduction trend	• Past trends in SEC reduction within industrial units as well as the average performance of the sub-sector as a whole as a result of implementation of energy efficiency measures. This acts as a reference for future phase wise reduction targets.
Target setting with respect to relative performance	• Unit specifc targets to be provided relative to the current positioning of the unit within the sub-sector. Unit with highest SEC gets largest target and vice-versa. SECs need to be normalized to address extraneous factors, if applicable.
Timelines for energy reduction targets	• Based on historic data on SEC reductions and gap analysis (ie.SEC deviation from SEC- BAT) realistic timeline for achievement of energy reduction targets could be taken.

GAP ANALYSIS

1 Setting Realistic Targets

Past Energy Efficiency Investments (Industry Trends)

GAP in respect to Best Available Technologies

Realistic Target Setting

Phase wise reduction targets timelines, instead of annual targets.

Maturity and cost of deployment of Best Available Technology (Process and Equipment's); Normalization factors

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GAP ANALYSIS

1 Normalization

Primary Energy Input	Secondary Energy Input	Capacity Utilization Factor	Raw material and product output	Environmental Standards
• Fuel quality • Use of biomass as fuel • Use of byproducts as fuel • Non-availability of fuel	• Grid power purchase • Captive power generated • Waste heat recovered • Export to grid • Use of renewable energy	• Impact of market demand • Non-availability of raw materials • Quality of power supply	• Quality of raw materials • Change in output product mix • Change in inputs	• Change in product standards • Change in Government Policy • Force Majeure issues

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ENERGY INFORMATION MANAGEMENT AND ANALYTICAL SYSTEMS

1 Introduction

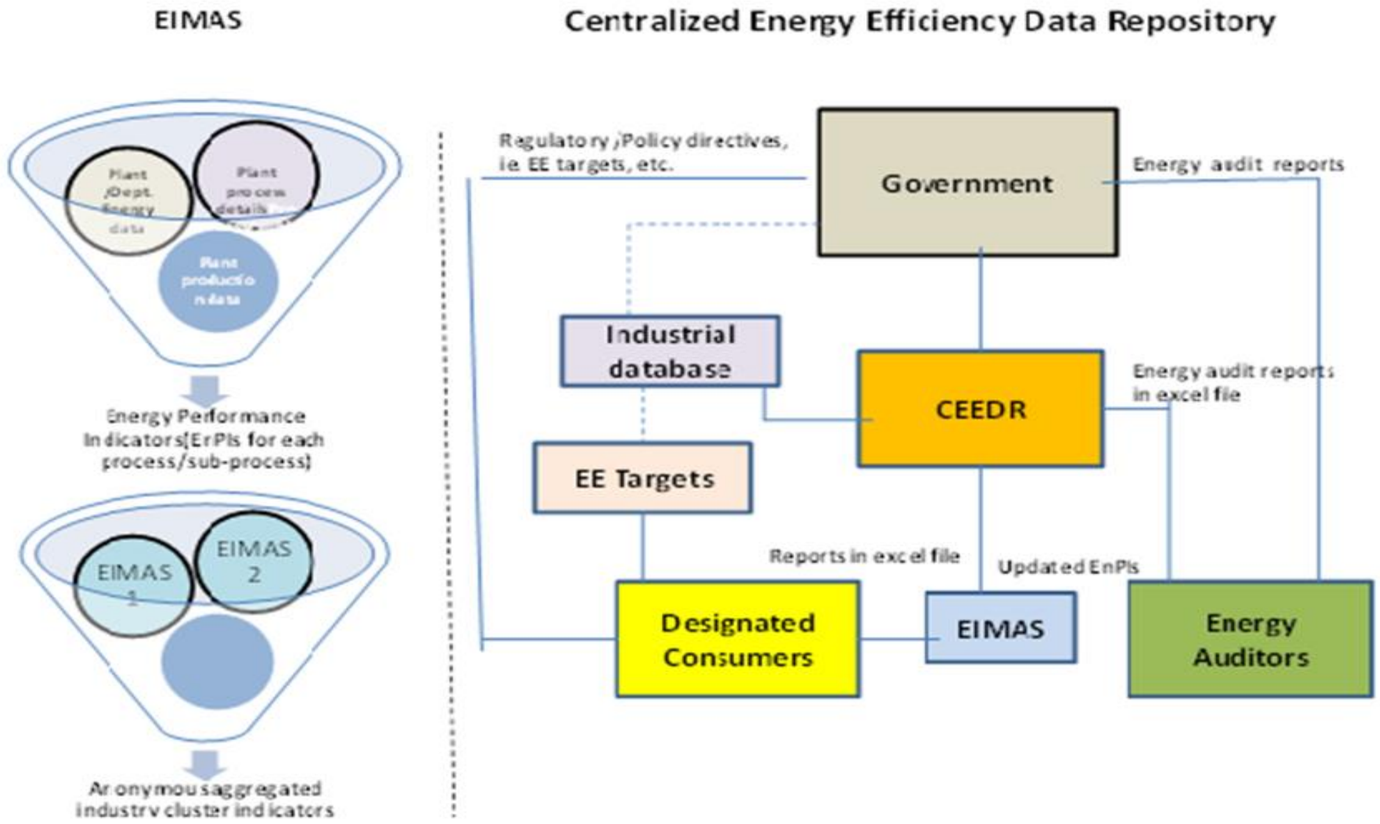
- EIMAS could be a powerful tool to measure and compute energy performance indicators (EnPIs) that drive industrial energy efficiency projects and programs and should be a key focus area for industrial companies to establish.
- **The EIMAS offers the following benefits to its users:**
  - Access to centralized data, and strengthened and effective management information system.
  - EnPI-driven information and performance analysis.
  - Useful insights and predictive analysis to serve as metrics that improve shop floor energy performance and productivity.
  - Real-time management and optimized use and control of end-use energy in utilities and process departments.
  - Easy, quick, and timely reporting of energy performance.

2 Centralized Energy Efficiency Data Repository

Benefit

- An integrated assessment of the energy performance of the sector.
- An effective tool for monitoring and verification of energy performance trends (for example, a specific energy consumption metric, such as a unit (kilowatt-hour) per kilogram of production) at the sector, subsector, unit, department, process, and equipment levels.
- Based on normalized EnPIs, different units are ranked and compared, and gaps in specific energy consumption are identified.
- Useful in planning future policies to improve the energy efficiency of the sector as a whole.

2 Centralized Energy Efficiency Data Repository



EnMS at the Organisational level and Centralized EE benchmarking at the Industry sub-sector level

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