

# MODULE 5: ENERGY MANAGEMENT SYSTEM (ENMS)- ISO 50001: 2018



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# INTRODUCTION

- Energy management makes good business sense as energy costs is a significant portion in an organisation's budget.
- A systematic focus on energy management, through optimum use of resources and reduction in wastes, is expected to reduce cost. It can also lead to increased production, improved energy performance, higher profits, and reduced impacts due to rising energy prices.
- In order to manage energy well, an organization requires an effective Energy Management System (EnMS) to be established, implemented, maintained and continually improved.
- Two ways to manage energy are:
  - By developing and implementing their own Energy Management System.
  - By implementing Energy Management System conforming to ISO 50001.



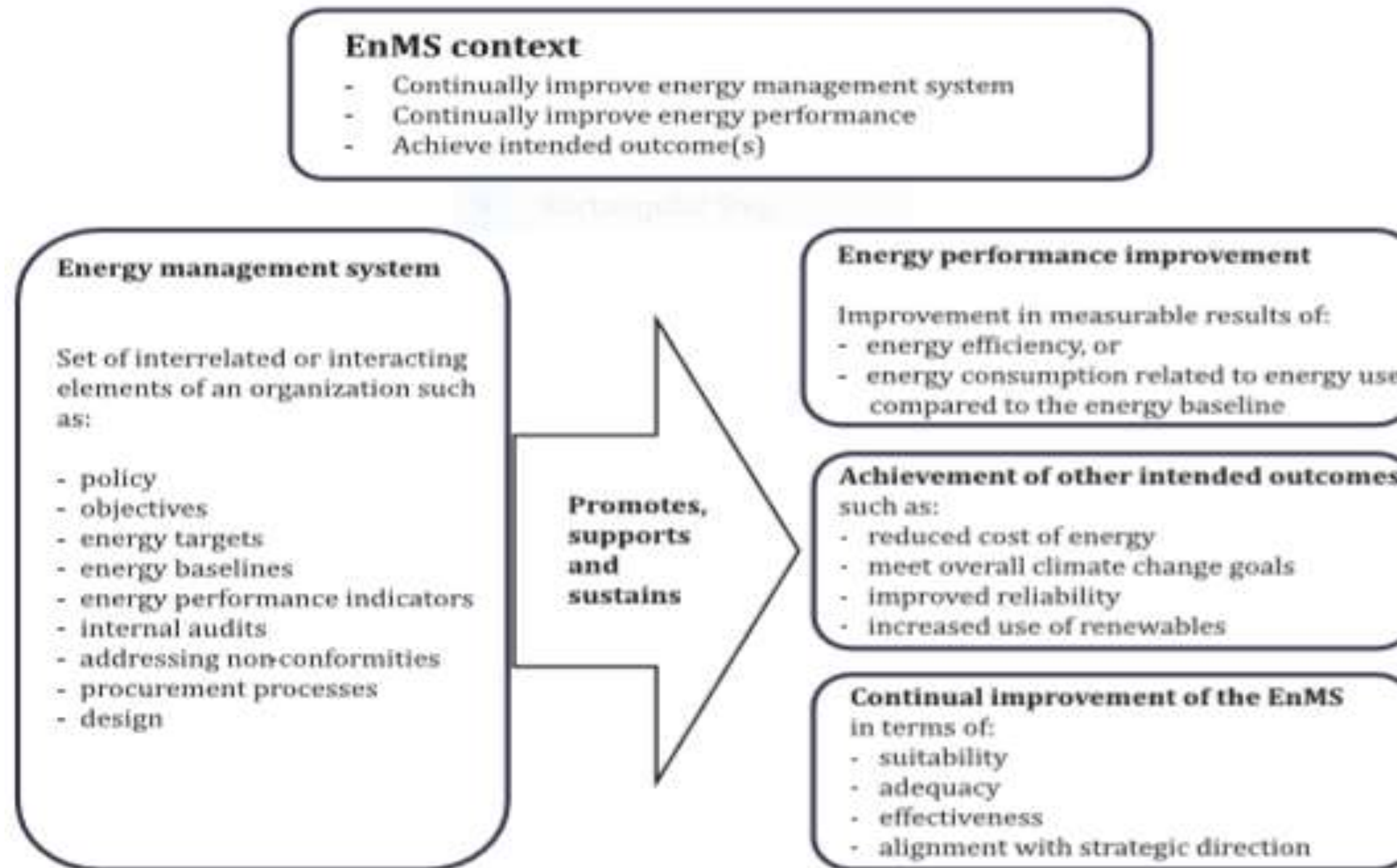
# ISO 50001 ENERGY MANAGEMENT SYSTEMS (ENMS)

## 1

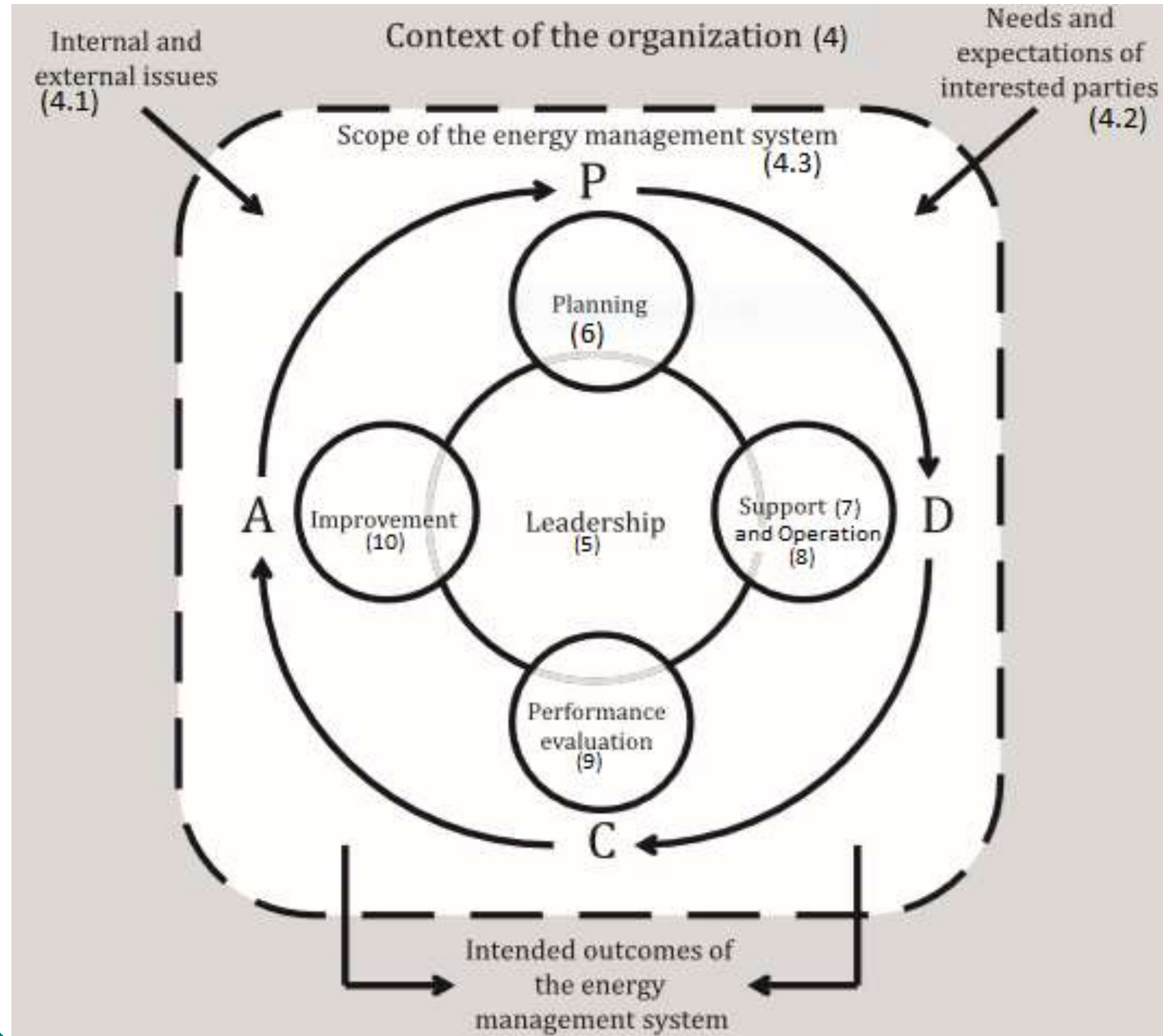
## Introduction

- ISO 50001 is based on the Management System Model.
- To support longer term efforts for capital intensive energy-efficient technologies.
- International Organisation for Standardisation (ISO) had released the first version of 'ISO 50001 Energy Management Systems (EnMS)–Requirements with guidance for use' in June 2011 and revised version of ISO 50001:2018 in August, 2018.

## Relationship between Energy Performance and the EnMS



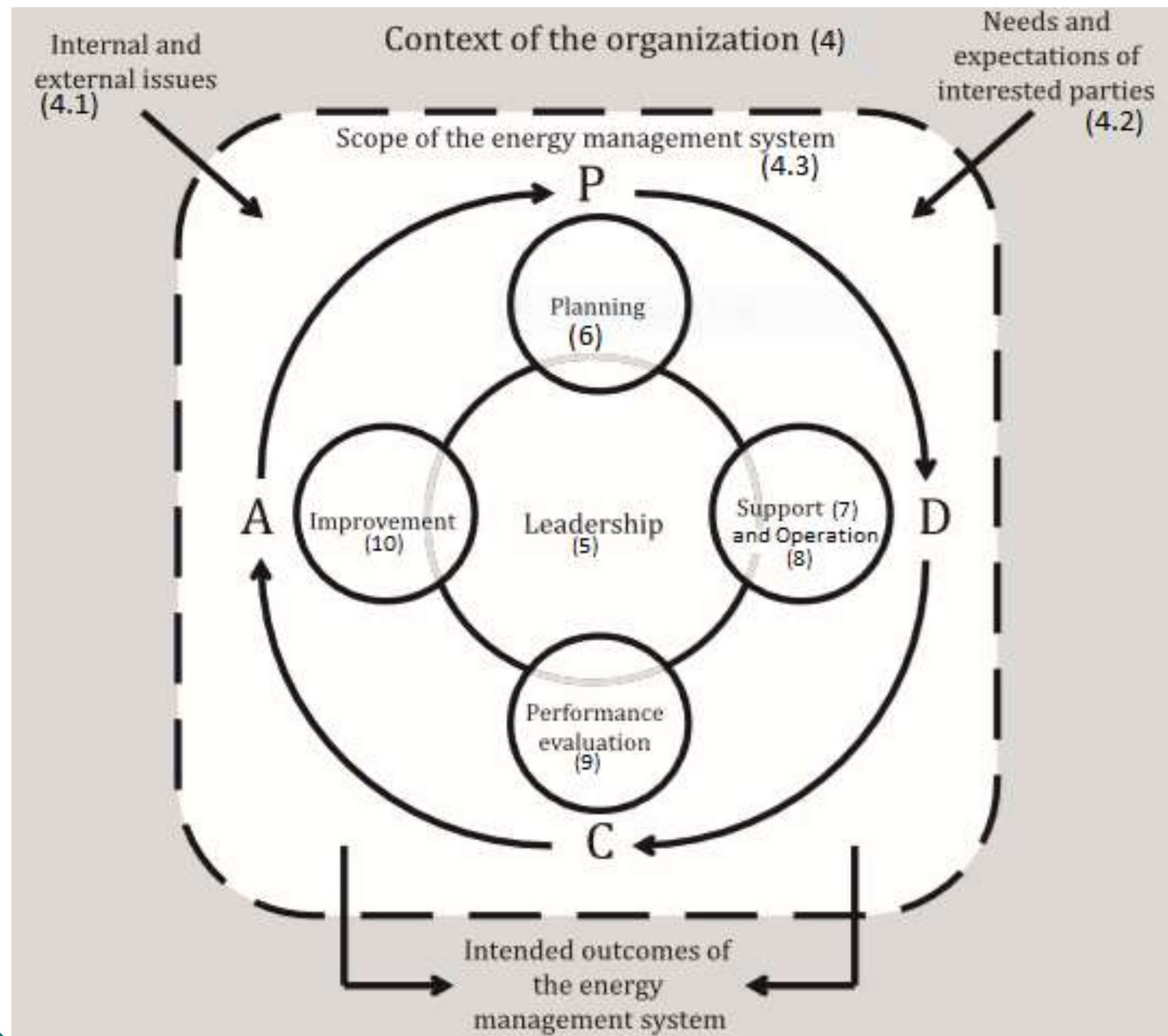




### The PDCA Approach to EnMS

**Plan:** Understand the context of the organization, establish an energy policy and an energy management team, consider actions to address risks and opportunities, conduct an energy review, identify significant energy uses (SEUs) and establish energy performance indicators (EnPIs), energy baseline(s) (EnBs), objectives and energy targets, and action plans necessary to deliver results that will improve energy performance in accordance with the organization's energy policy.





### The PDCA Approach to EnMS

- **Do:** Implement the action plans, operational and maintenance controls, and communication, ensure competence and consider energy performance in design and procurement.
- **Check:** Monitor, measure, analyse, evaluate, audit and conduct management review(s) of energy performance and the EnMS.
- **Act:** Take actions to address nonconformities and continually improve energy performance and the EnMS.

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### Benefits of Implementing ISO 50001

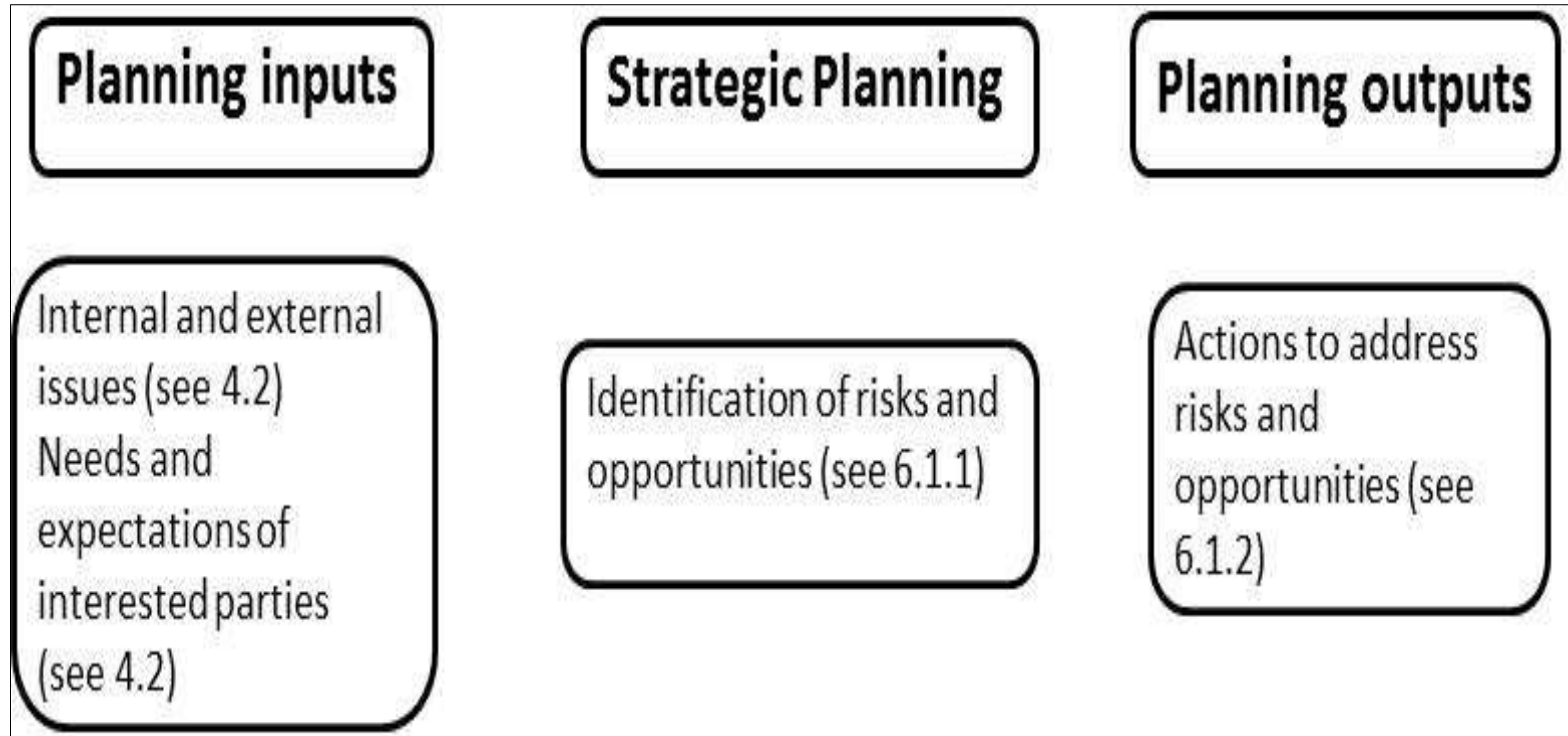
- Provide organizations with a well-recognized framework for integrating energy efficiency into their management/business practices.
- Provide a logical and consistent methodology for identifying and implementing improvements that can contribute to a continual increase in energy efficiency across the facilities.
- Assist organizations to better utilize existing energy consuming assets, thus reducing costs and/or avoiding expanding capacity.
- Offer guidance on benchmarking, measuring, documenting, and reporting energy efficiency improvements.
- Lead organizations to meet overall climate change mitigations goals by reducing their energy related greenhouse gas emissions.
- Assist facilities in evaluating and prioritizing implementation of state-of-the-art energy-efficient technologies.

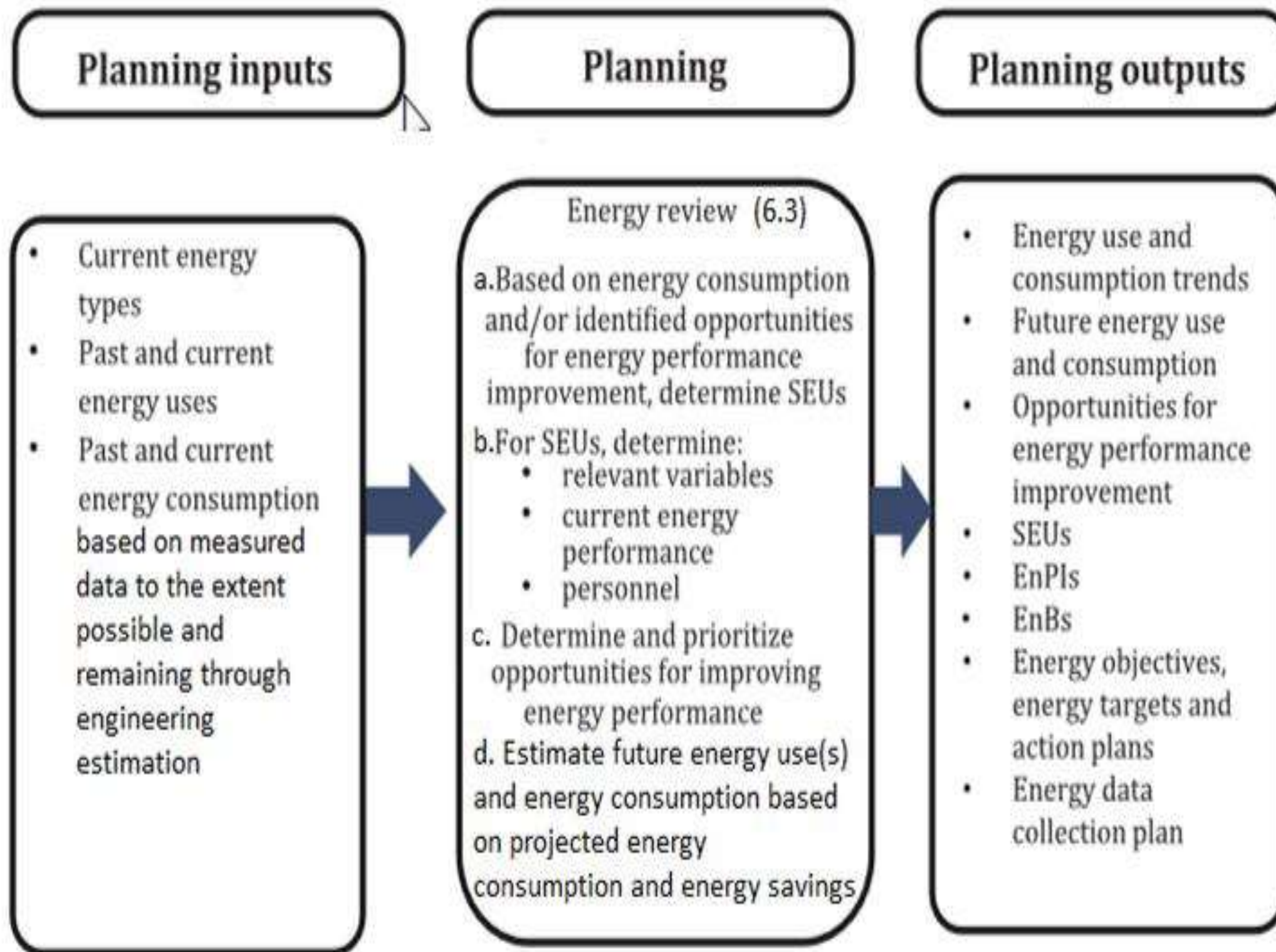
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## Energy Policy

- The Energy Policy should clearly state organisation's energy priorities.
- ISO 50001 requires that the energy policy must demonstrate the commitments at least for
  - Continual improvement of energy performance and the EnMS.
  - Availability of information necessary resources to achieve its objectives and energy targets.
  - Satisfy applicable legal and other requirements related to energy efficiency, energy use and energy consumption.
- An Energy Policy is the foundation for developing an organization's EnMS through all phases of planning, implementation, operation, performance evaluation and improvement.





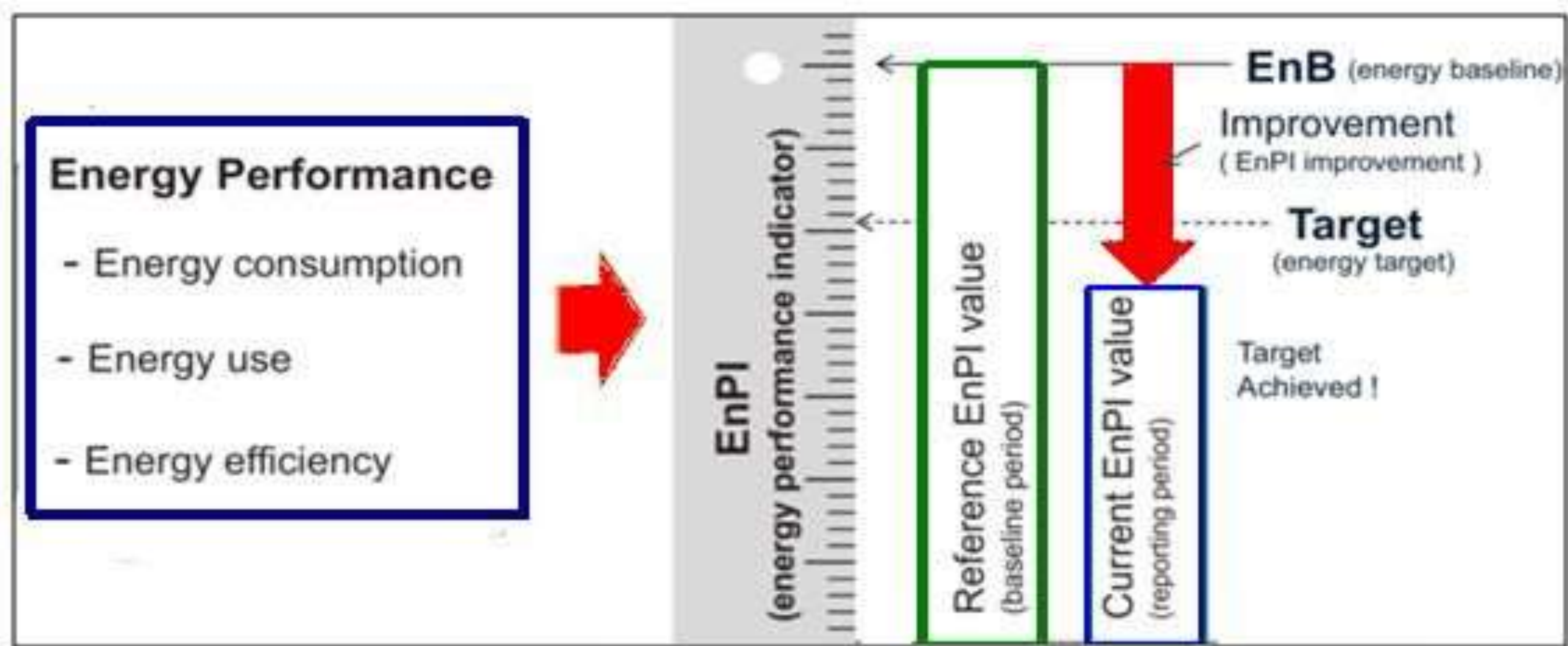


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## Energy Review

- To improve energy performance, it is necessary to understand how, why, and where energy is being consumed and to identify where opportunities to improve exist.
- The energy review is the analytical part of tactical energy planning process.
- Its purpose to obtain an overall picture of an organisation's energy use.





- Energy Baseline is defined as the quantitative reference or references providing a basis of comparison of energy performance.
- The Energy Baseline is the reference for measuring energy performance over time.
- Baseline is always pertaining to a period which is known as baseline period This period should be representative of one complete cycle of the variations in the organizational operation



# DOCUMENTED INFORMATION

- Documented Information is defined as the information required to be controlled and maintained by an organization and the medium on which it is contained.
- It can be in any format and media, and from any source.
- Certain amount of documented information is required in the EnMS.

### Clauses

- Scope and Boundaries of the EnMS (4.3)
- Energy Policy (5.2)
- Objective and Targets (6.2.2)
- Action Plans for achieving energy objectives and targets (6.2.3)
- Methodology and criteria used to develop the energy review (6.3)
- Energy review results (6.3)
- Method for determining and updating EnPIs (6.4)
- EnPIs Values (6.4)
- EnB(s), relevant variable data and modifications to EnB(s) (6.5)
- Data to be collected and retained (6.6)



### Clauses

- Details on measurement, monitoring and other means of establishing accuracy and repeatability (6.6)
- Evidence of competence (7.2)
- External origin (7.5.3)
- Operational planning and control (8.1)
- Design activities (8.2)
- Results of the investigation and response to significant deviation (9.1.1)
- Results from monitoring and measurements (9.1.1)
- Results of the evaluation of compliance and any action taken (9.1.2)
- Evidence of the implementation of the audit programs and the audit results (9.2.2)
- Evidence of the results of management reviews (9.3.4); and
- Nature of nonconformities and subsequent action taken as well as on results of any corrective action (10.1)

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