FLEMING

Flexible **m**onitoring and control systems in the distribution grid by using artificial **in**telli**g**ence

A Target System for the Introduction of IT-based Sustainability Management in Companies

Mathis Niederau

Project management

ABB

Research partners

fir an der RWTH Aachen

KIT Karlsruher Institut für Technologie

SICP

Industrial partners

SÜC Energie Und mehr.

HEIMANN Sensor GMBH

Associated industrial partners

WestfalenWIND

Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

ptj Projektträger Jülich Forschungszentrum Jülich

Agenda

1 Introduction

2 State of the art

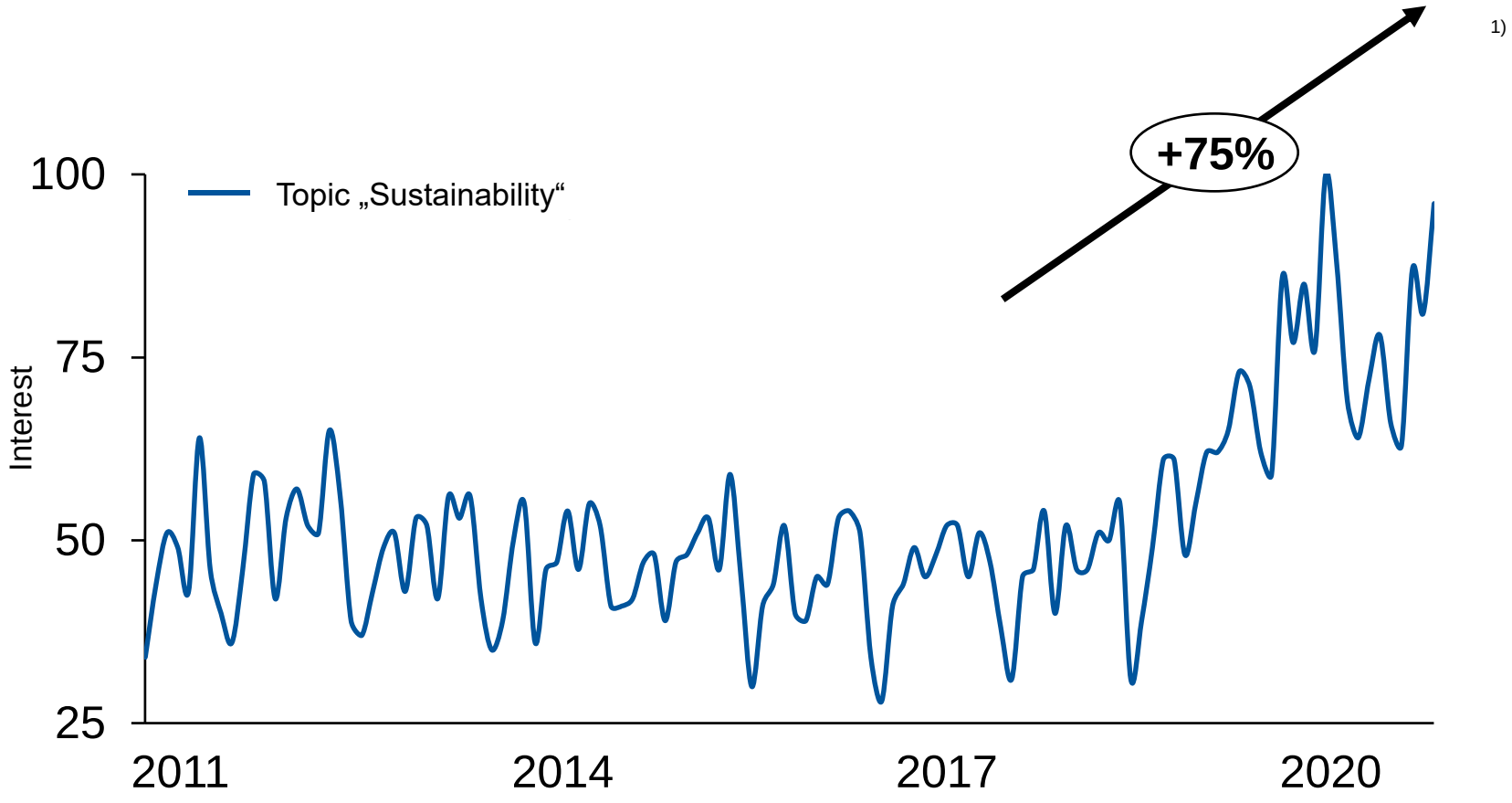
3 Methodology

4 Results

5 Conclusion & Outlook

Agenda

The interest in the topic "Sustainability" is increasing

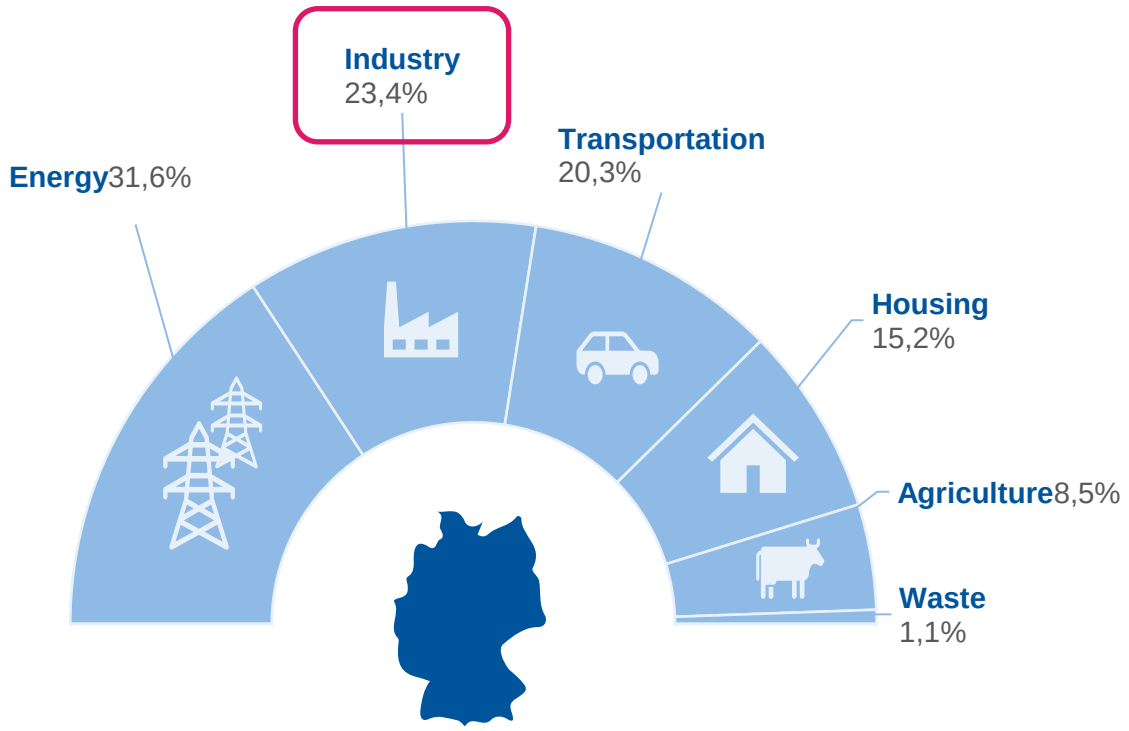


1)

1) Goggle Trends

The industry is a significant contributor to the annual CO_2 emissions in Germany

CO_2 emissions in Germany by sector



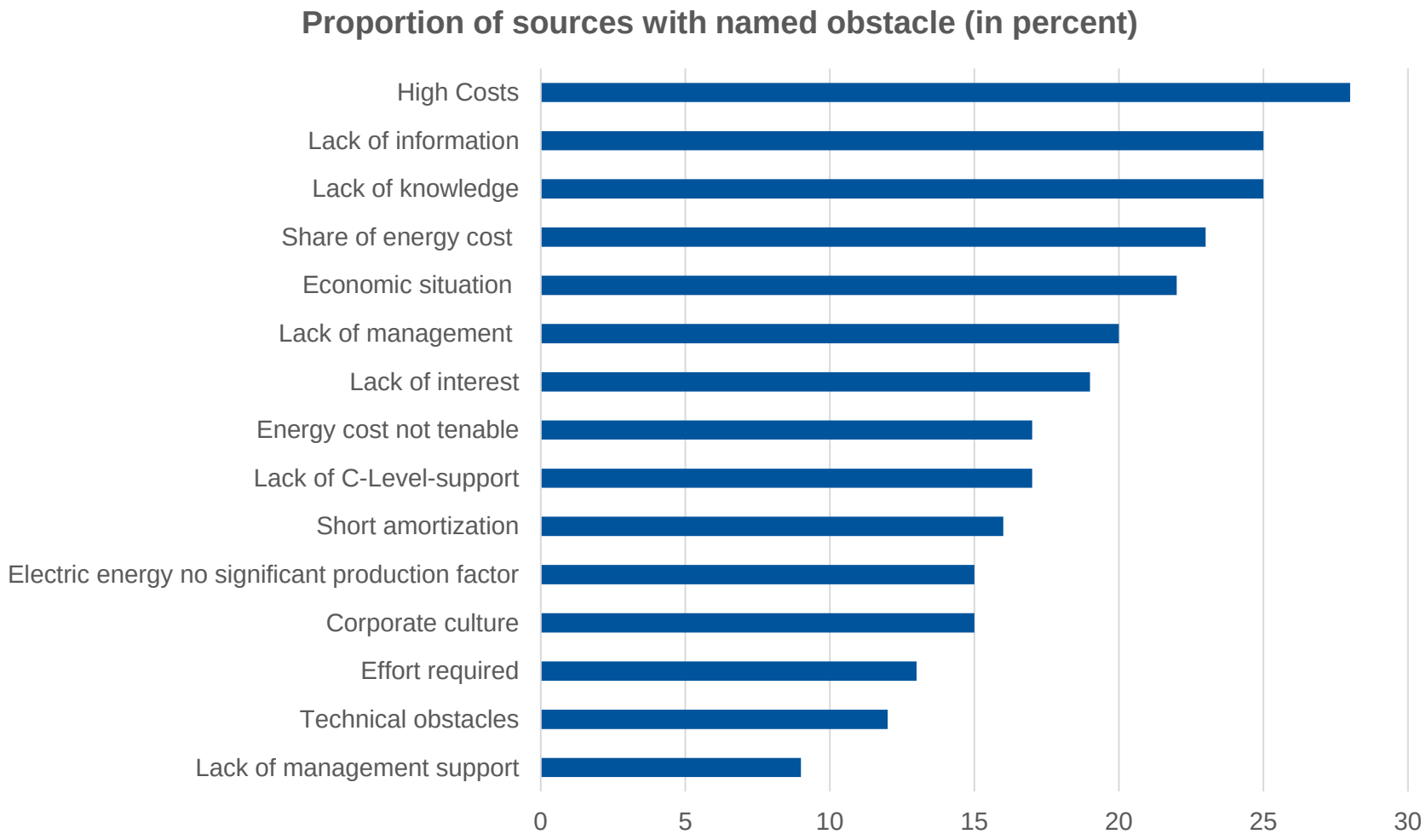
Some companies address sustainability, but especially SMEs struggle by addressing it systematically

Survey on the existence of systematic measures for sustainability management in companies.

	Yes	No	No Answer
Average	12,95 %	66,24 %	20,80 %
Certification such as ISO 50001, ISO 14001, EMAS	15,41 %	65,37 %	19,22 %
Sustainability management (ISO 26000)	7,72 %	71,12 %	21,16 %
Other	15,73 %	62,24 %	22,03 %

1) Koch und Belmann 2019, S. 12

Obstacles while implementing Energy management systems



Hubbuch u. Jäschke-Brülhart 2014, S. 35

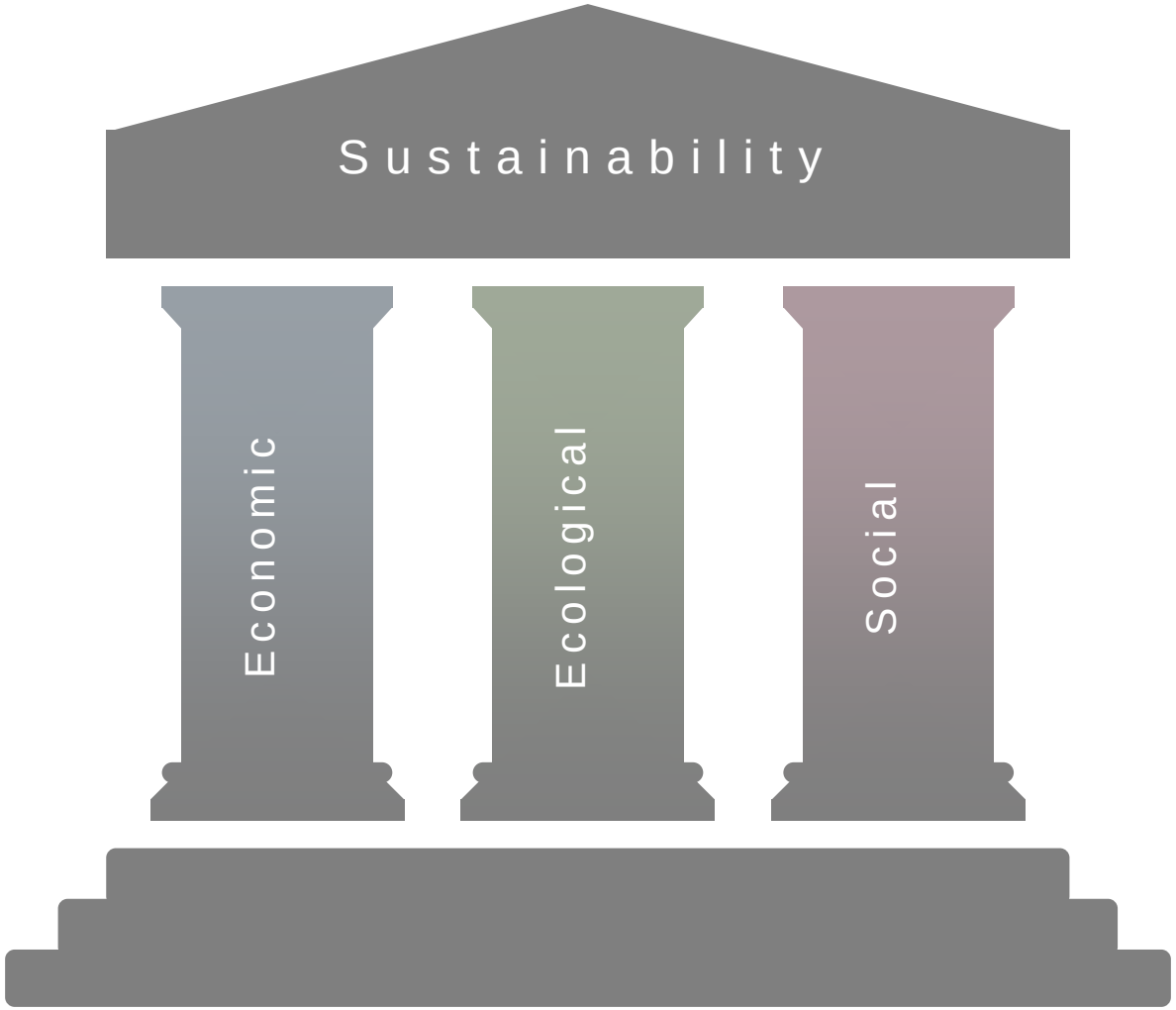
Research question

How can the structuring of the topic of sustainability supported by the introduction of a target system for sustainability in SMEs?

Agenda

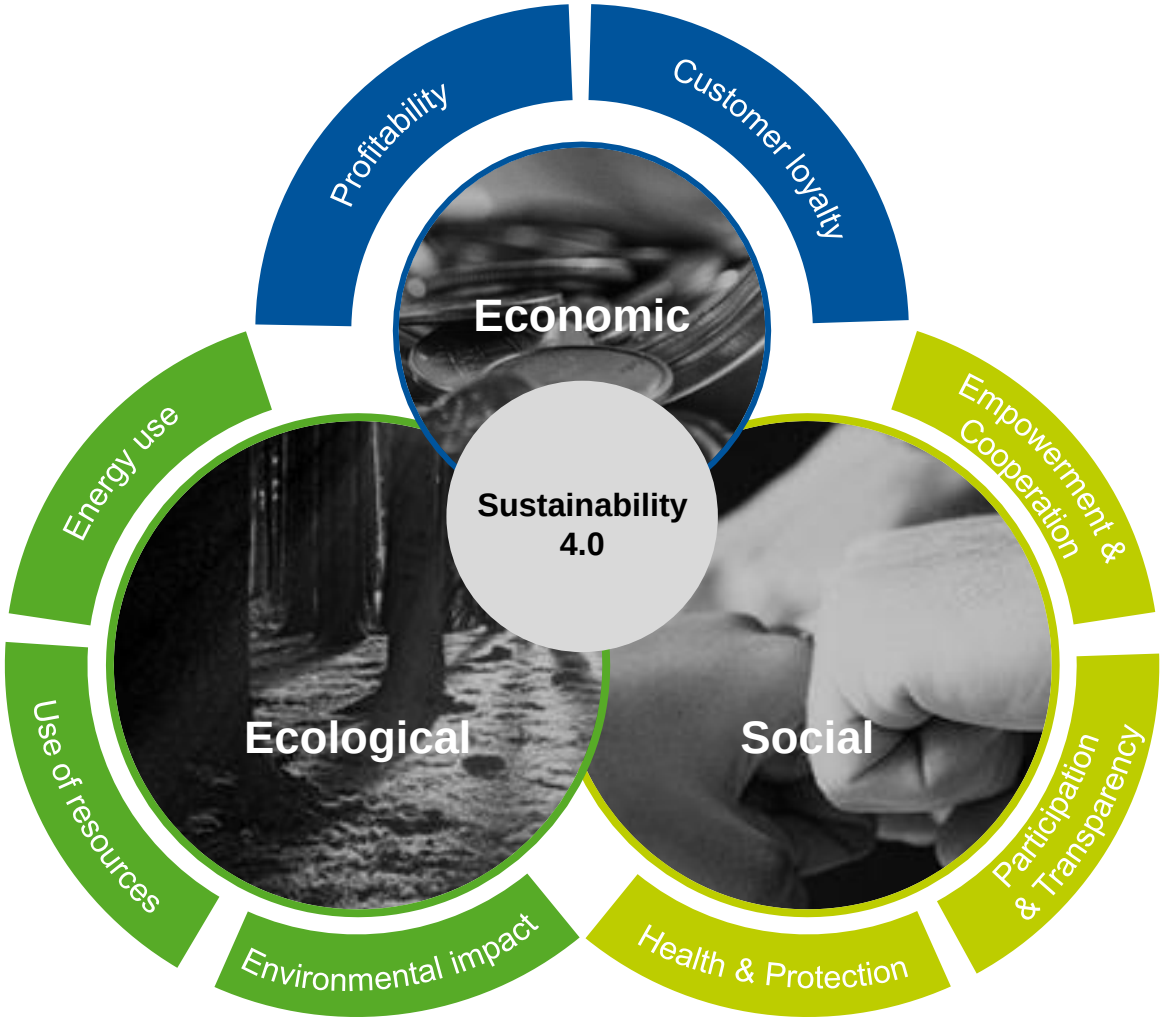
The United Nations provide 17 goals for the world‘s sustainable development

The most popular classification for sustainability is provided by Elkington and divides sustainability into an economic, ecological and social dimension



ELKINGTON 1997, p. 34

Hicking provided a framework for a modern sustainability approach for manufacturing companies



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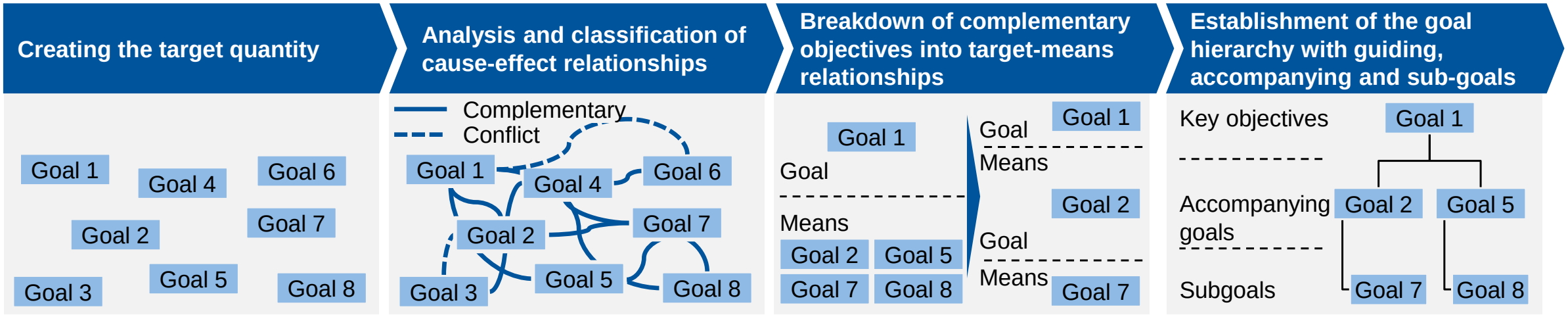
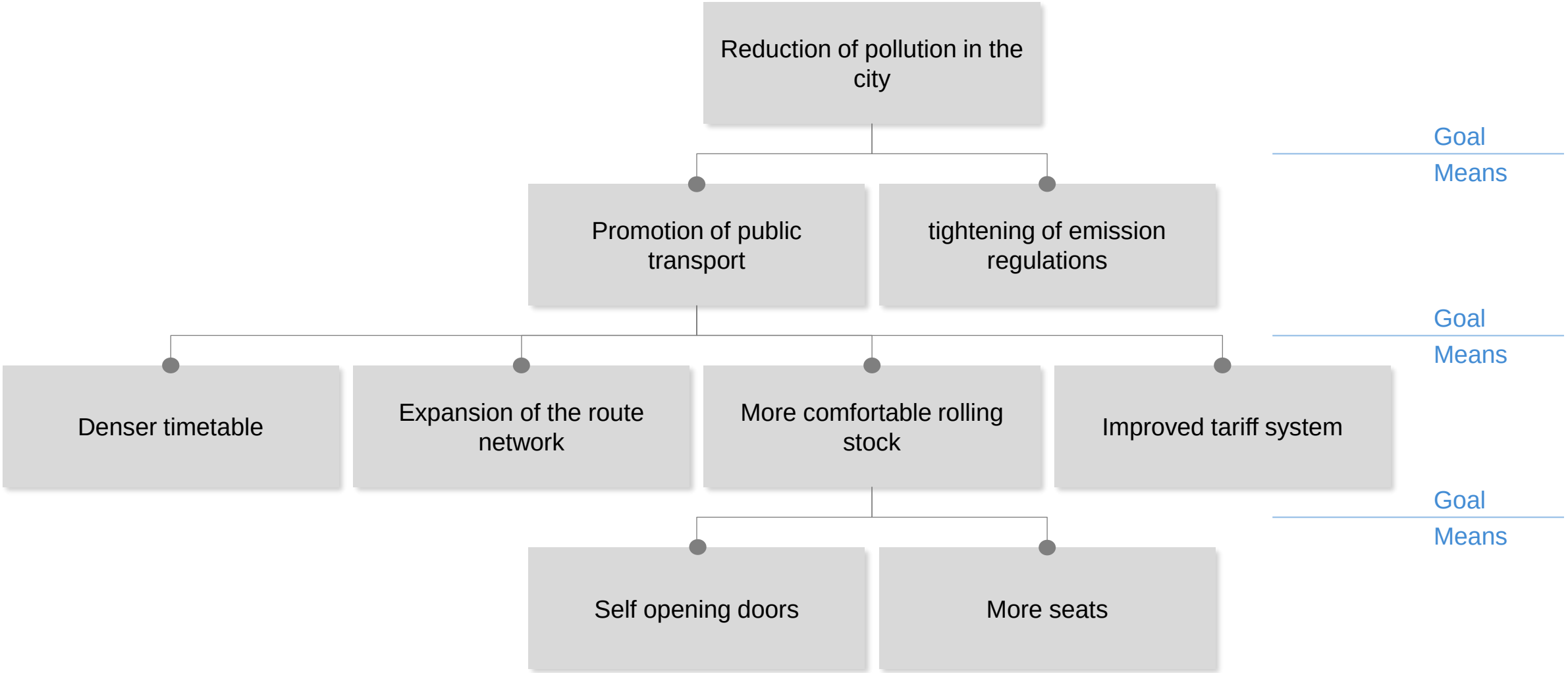
Following an extensive literature review, a bottom-up approach is followed



Definition of target system

A target system represents the **totality of all objectives** as a set of **elements that** are interconnected by a network of relations. Thus, a target system determines the **course and result of** a decision-making process.

Example of a target system



HABERFELLNER 2018, p. 231

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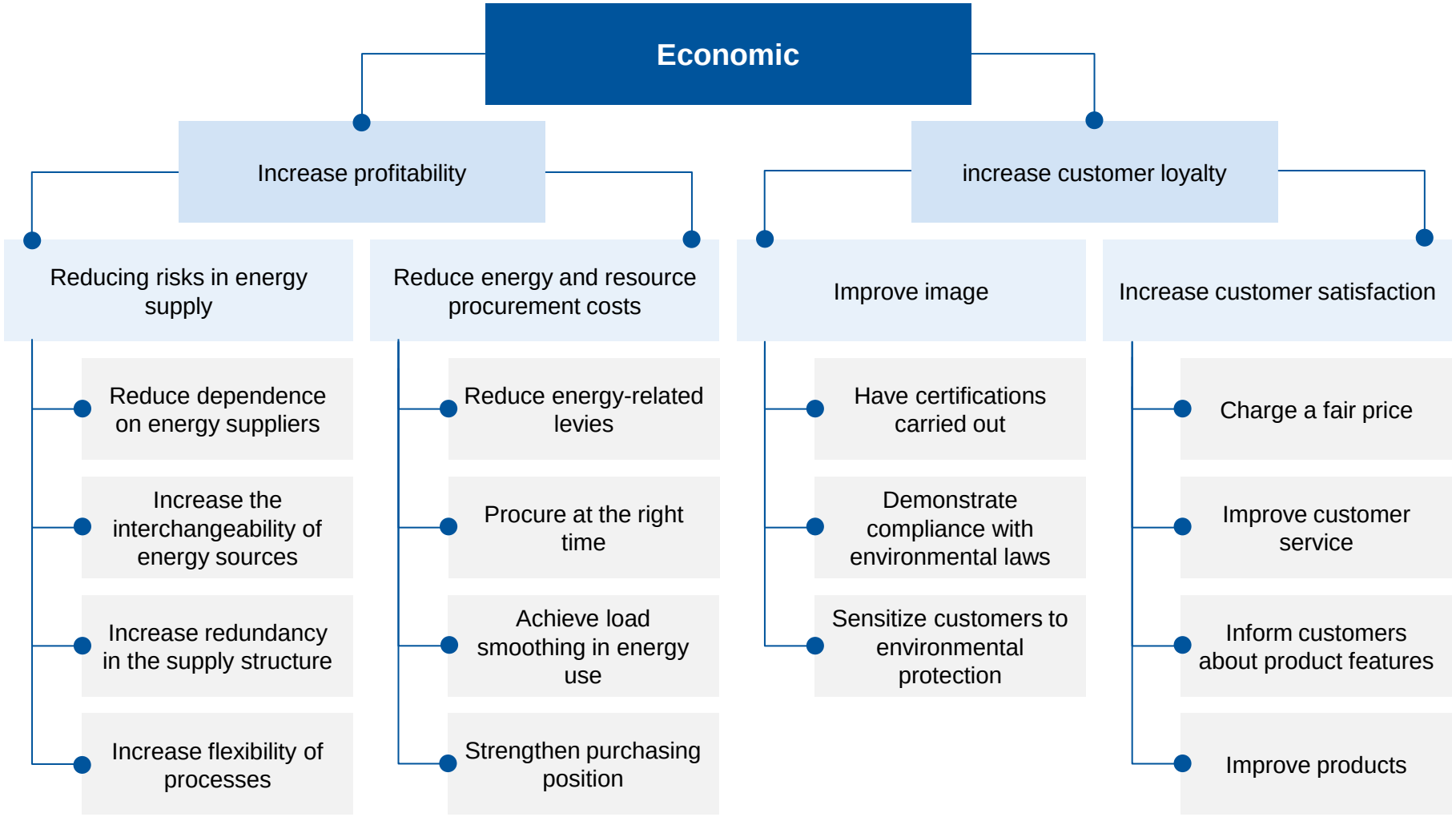
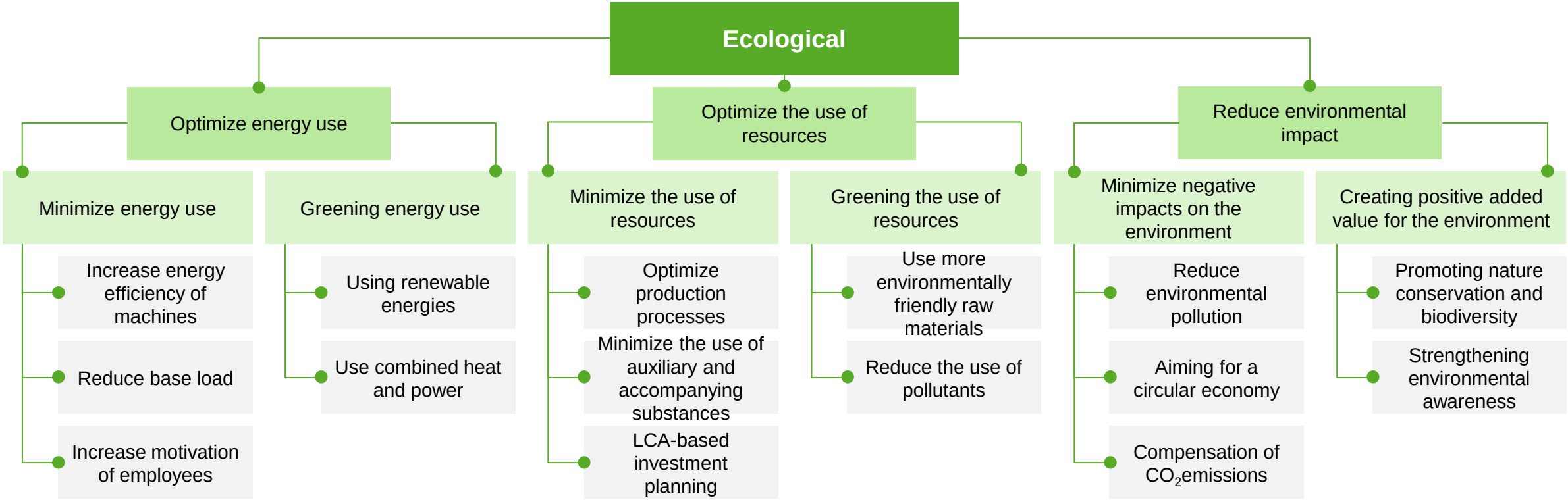
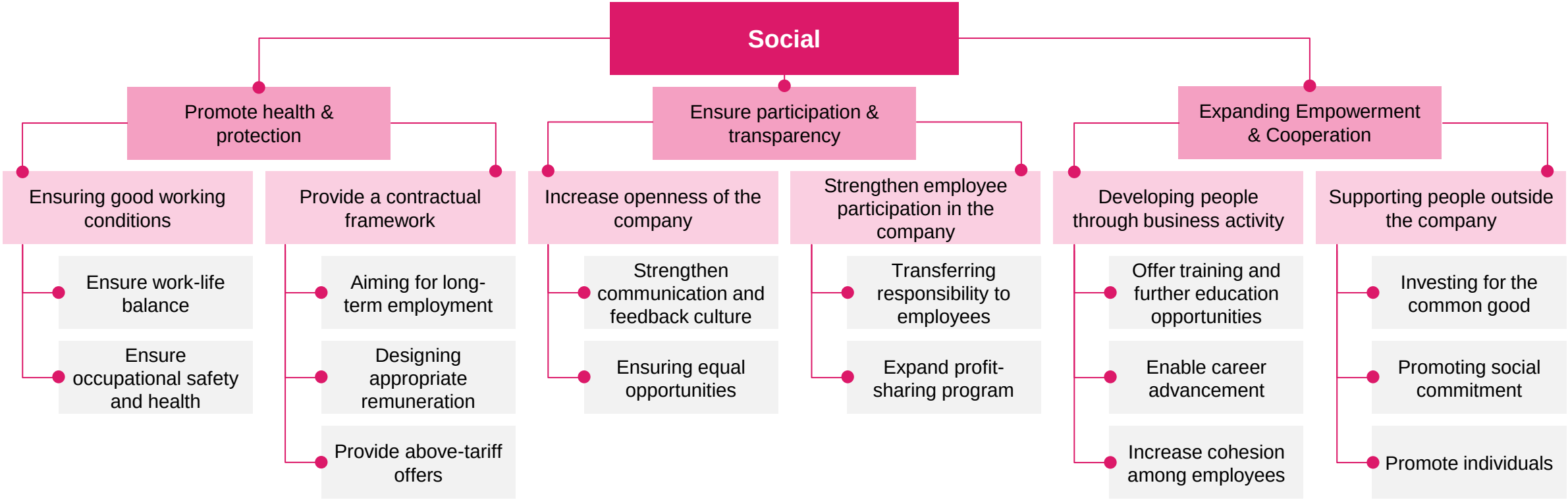
Economic dimension of the target system



Ecological dimension of the target system



Social dimension of the target system



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Conclusion & Outlook

Conclusion

- A Target System for the Introduction of IT-based Sustainability Management in Companies is established
- This target system can be used to structure the process of defining relevant features of an IT-based sustainability management

Outlook

- A systematization of the IT-based sustability management needs to be established (i. e. function tree)
- The method for using the target system needs to be developed

FLEMING is a research project funded by the BMWi within the framework of the 7th Energy Research Program of the German Federal Government

Project Profile

Research Context

Project topic

- Development of novel artificial intelligence-based concepts for flexible monitoring and control systems in the distribution grid to support the energy & mobility transition in Germany.
- Limiting the need for grid reinforcement by retrofitting these systems to the already installed components.

Project goals

- Cost-effective retrofit sensor solution without time-consuming manual intervention
- Upgrade monitoring systems for closed-loop control
- Transfer of generic models to different asset configurations without experts
- Systematic data generation as a basis for automated condition classification
- Customer and product view for future operation and maintenance concepts

Project consortium

Coordination

ABB

Scientific partners

fir an der RWTH Aachen

KIT Karlsruher Institut für Technologie

SICP

Industry partner

SÜG Energie Und mehr.

HEIMANN Sensor HEIMANN SENSOR GMBH

Associated industry partners

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Backup: New Agenda