# Unveiling the Power of KPIs: Mapping Their Role in Technical, Economic, Environmental, Social, and Business Domains

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# Background and Introduction

## Introduction

In the current landscape of **urban transformation and energy transition**, sustainability-driven projects face increasing pressure to **demonstrate their impact in measurable and transparent ways**.
As cities work toward ambitious goals such as climate neutrality, robust and standardized evaluation frameworks have become essential.
In this context, **Key Performance Indicators (KPIs)** play a central role in monitoring, managing, and communicating the progress of implemented actions.


**¿What does the existing body of literature reveal about how KPIs have been used across domains, and where are the key gaps especially in project and energy-related contexts?**

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# Introduction to KPIs

Bibliometric analysis and keywords mapping

📚 **What is bibliometric analysis?**

- A **quantitative method** for analyzing academic literature to evaluate research performance, trends, and networks.

🔍 **Key Objectives:**

- Identify **influential authors**, papers, and journals
- Analyze **research trends** and topic evolution
- Evaluate **collaboration networks** and institutional output
- Support **evidence-based research planning**

🛠 Tools Used:

- VOSviewer
- **Bibliometrix** (R package)
- **Data bases: Scopus**, **Web of Science, Google Scholar etc.**

📈 Common Techniques:

- **Citation analysis**
- **Co-citation** and **bibliographic coupling**
- **Co-authorship networks**
- **Keyword co-occurrence mapping**

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# Introduction to KPIs

- Quantification of all-time KPIs - bibliometric analysis
  - Assessment of bibliometric data
    - Identified domains mainly focused
    - Identified research gap, the least used KPIs
  - Visualized existing topics addressing KPIs
    - All-time KPIs evaluation, domains involved
    - KPIs & Projects-related documents
    - KPI, Energy, & projects - related documents

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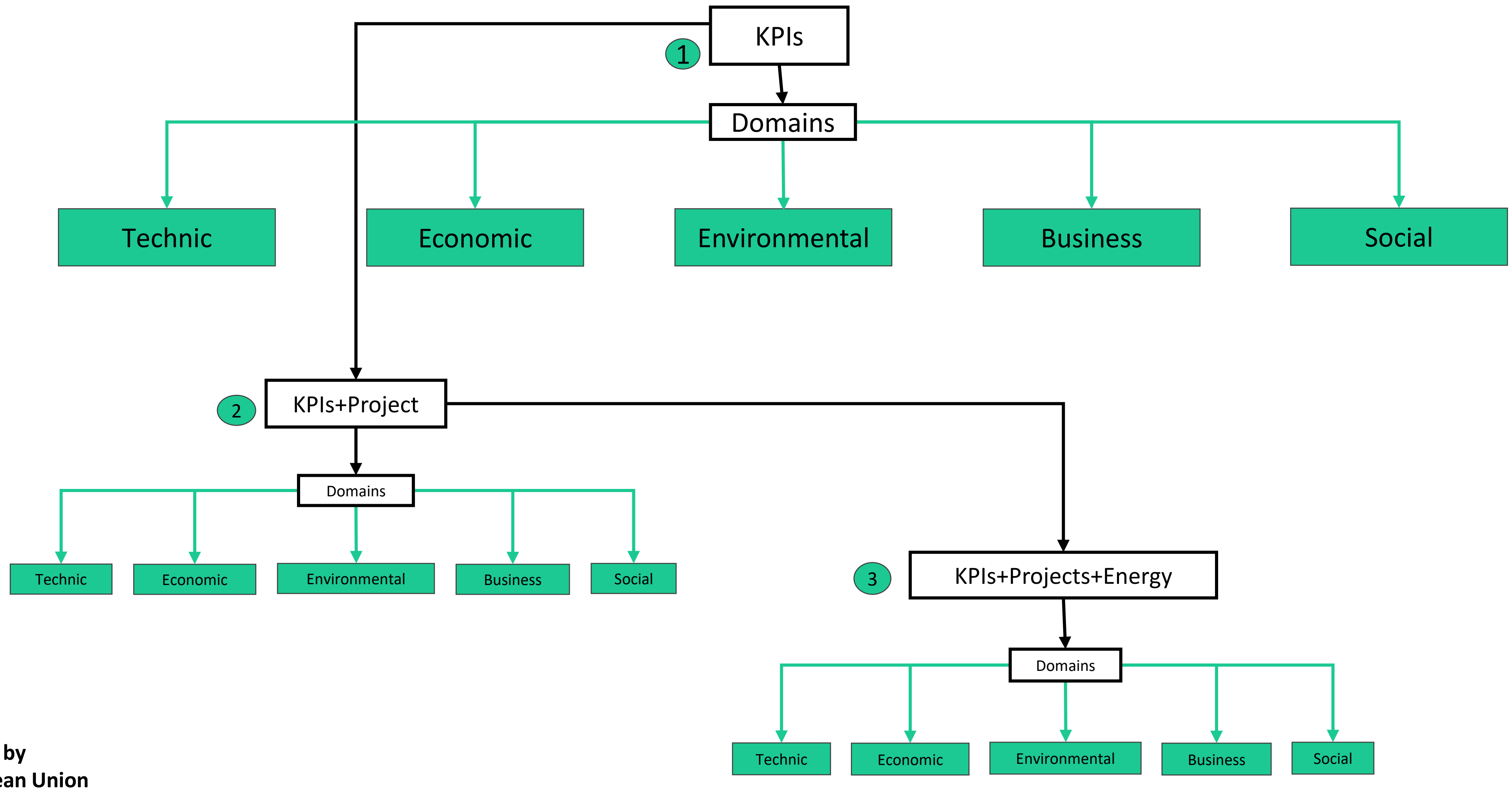
# Methodology

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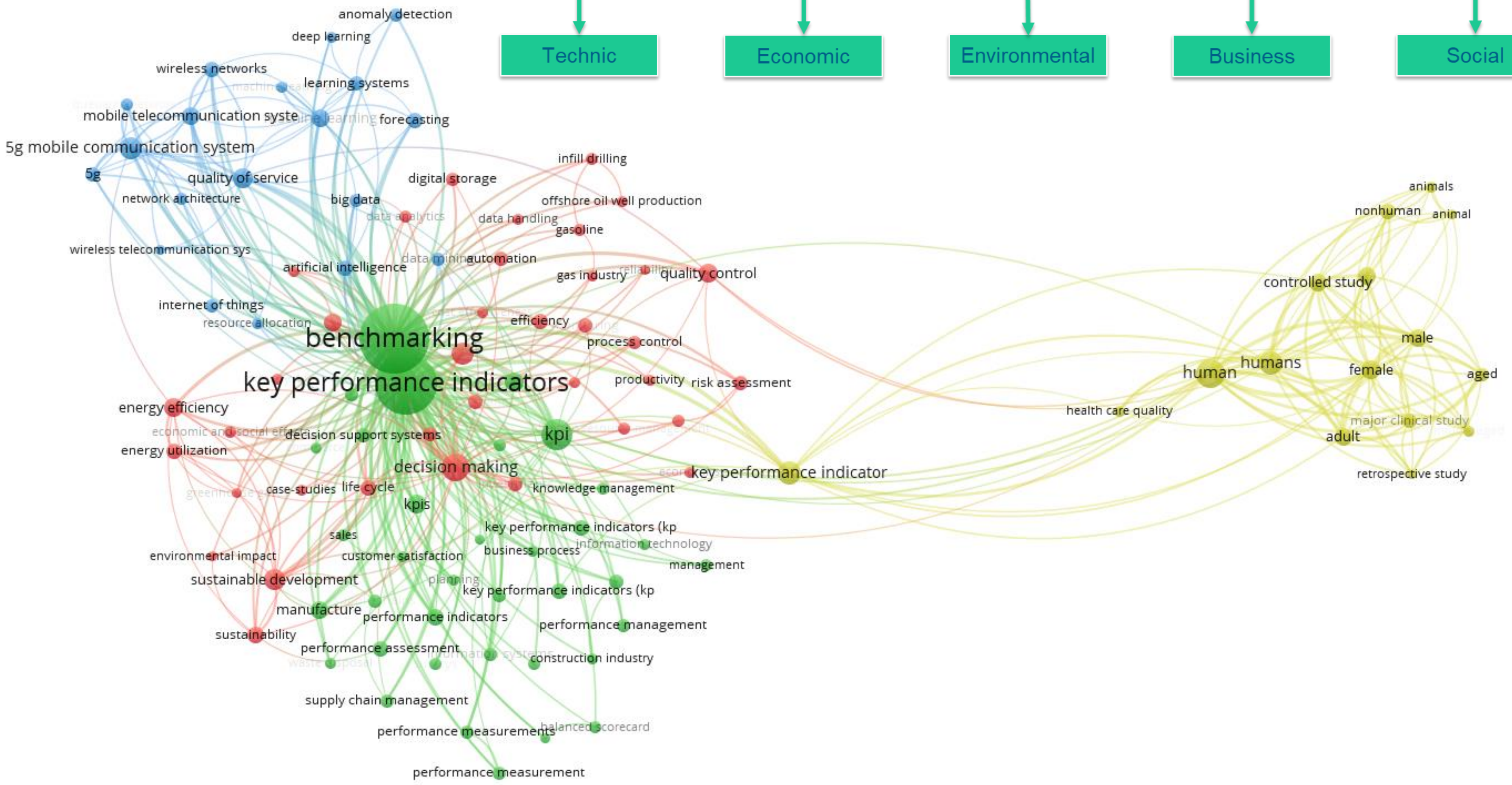
# Results: KPIs state-of-art

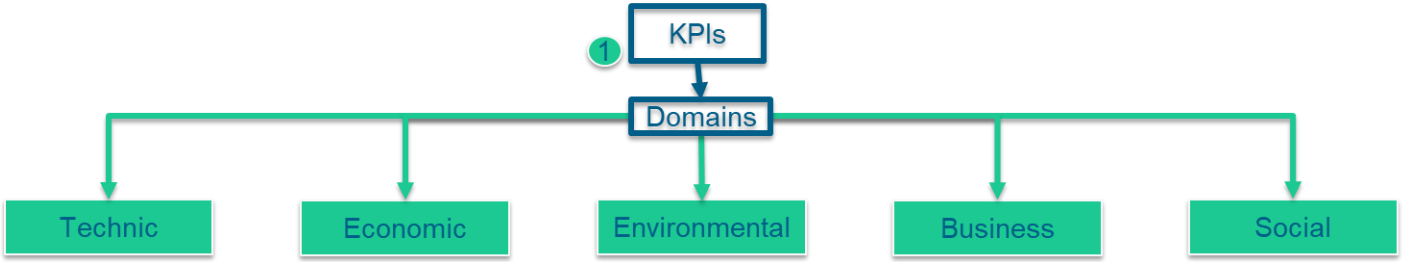
1 KPIs

Domains

- Technic
- Economic
- Environmental
- Business
- Social



# Results




**Domains specific query strings for KPIs in open literature**

| Category | Query | Results | Normalized |
|---|---|---|---|
| Technic | TITLE-ABS-KEY ("kpi*" AND "technic*") AND (EXCLUDE (PUBYEAR, 2024)) | 695 | 37% |
| Economic | TITLE-ABS-KEY ("kpi*" AND "economic*") AND (EXCLUDE (PUBYEAR, 2024)) | 1,133 | 61% |
| Environmental | TITLE-ABS-KEY ("kpi*" AND "environmental*") AND (EXCLUDE (PUBYEAR, 2024)) | 850 | 46% |
| Business | TITLE-ABS-KEY ("kpi*" AND "business*") AND (EXCLUDE (PUBYEAR, 2024)) | 1,862 | **100%** |
| Social | TITLE-ABS-KEY ("kpi*" AND "social*") AND (EXCLUDE (PUBYEAR, 2024)) | 775 | **42%** |
| KPI | TITLE-ABS-KEY ("kpi*") AND (EXCLUDE (PUBYEAR, 2024)) | **10,467** | Total |

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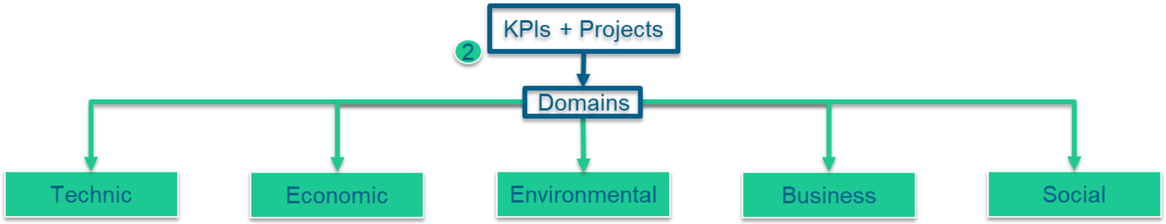
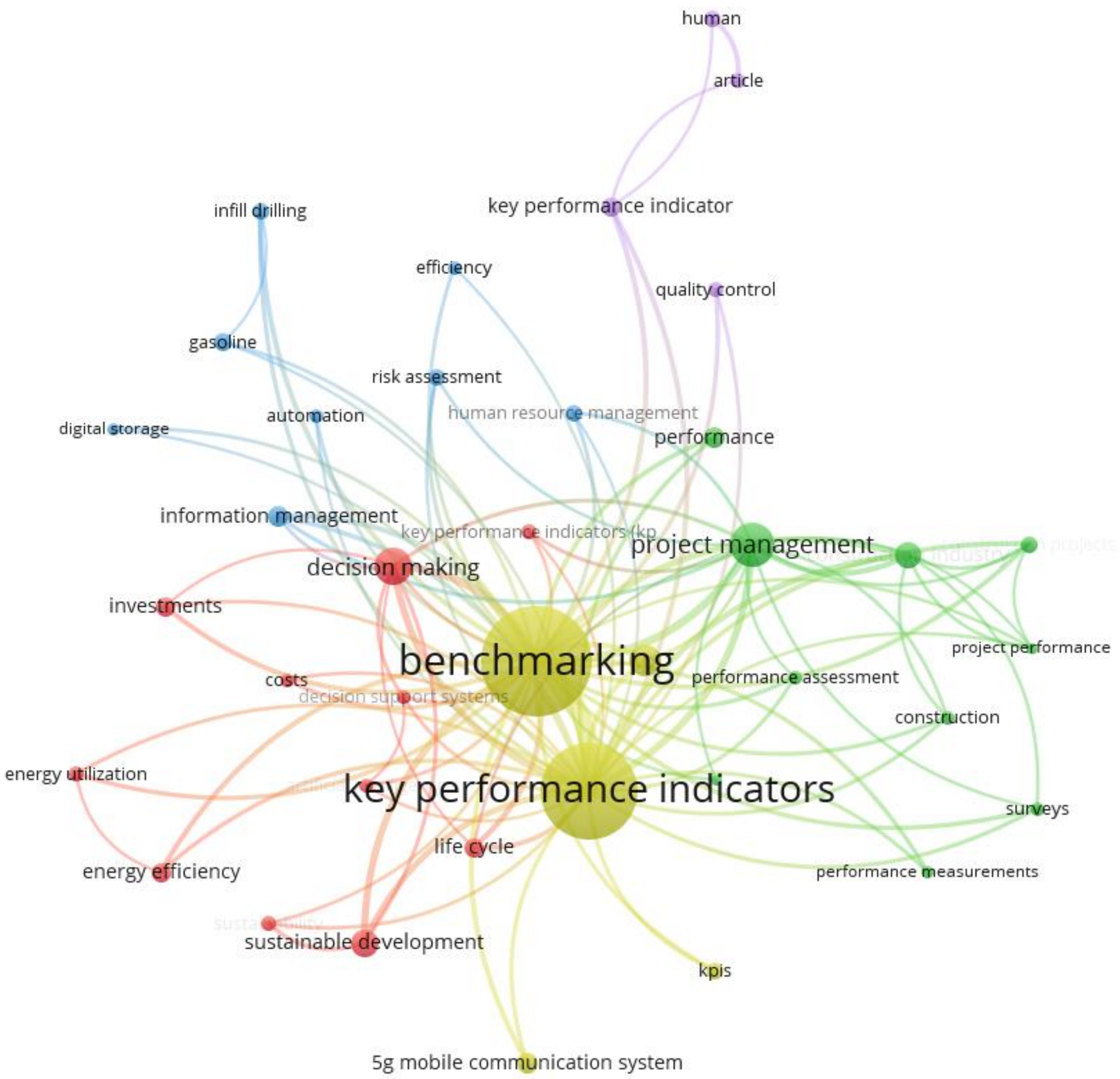
# Results

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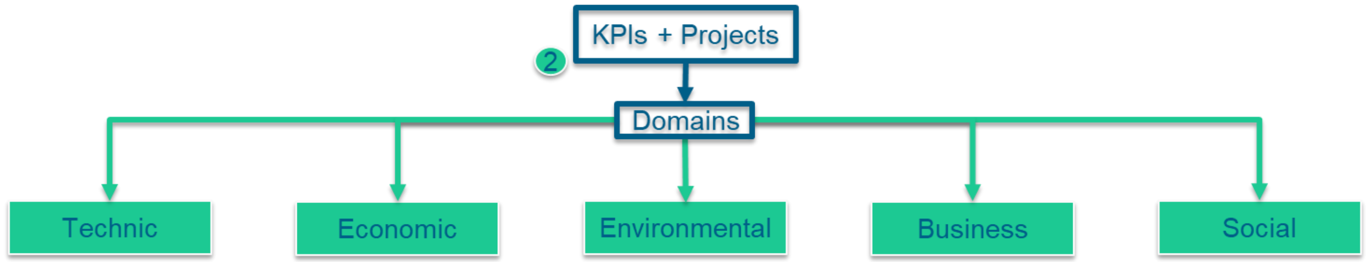
# Results




| Category | Query | Results | Normalized |
|---|---|---|---|
| **Technic** | TITLE-ABS-KEY ("kpi*" AND "technic*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 199 | 58% |
| **Economic** | TITLE-ABS-KEY ("kpi*" AND "economic*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 248 | 72% |
| **Environmental** | TITLE-ABS-KEY ("kpi*" AND "environmental*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 186 | 54% |
| **Business** | TITLE-ABS-KEY ("kpi*" AND "business*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 345 | **100%** |
| **Social** | TITLE-ABS-KEY ("kpi*" AND "social*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 165 | **48%** |
| KPI + project | TITLE-ABS-KEY ("kpi*" AND "project*") AND (EXCLUDE (PUBYEAR, 2024)) | 1,593 | **Total** |

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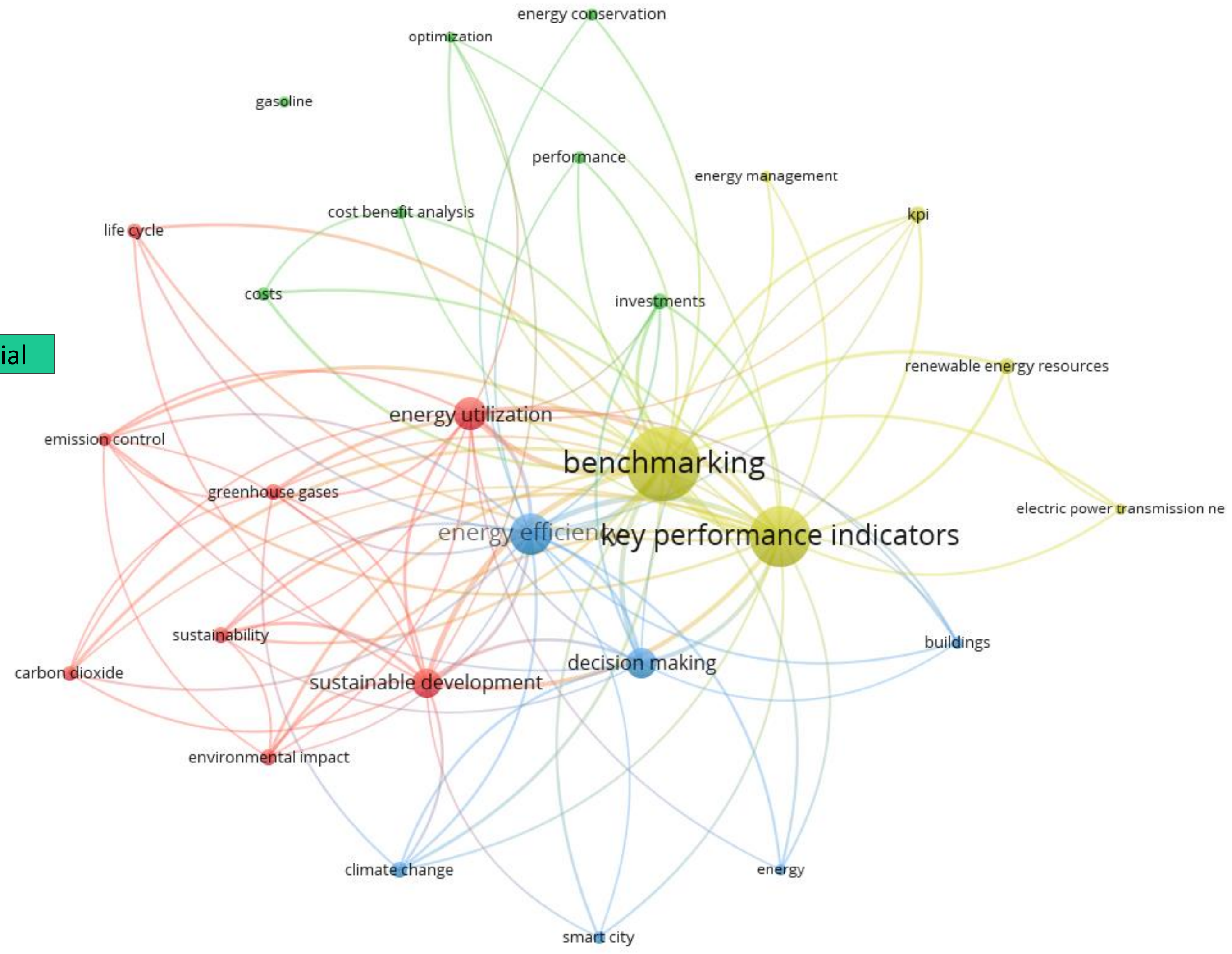
# Results

3 KPIs+Projects+Energy

Domains

- Technic
- Economic
- Environmental
- Business
- Social

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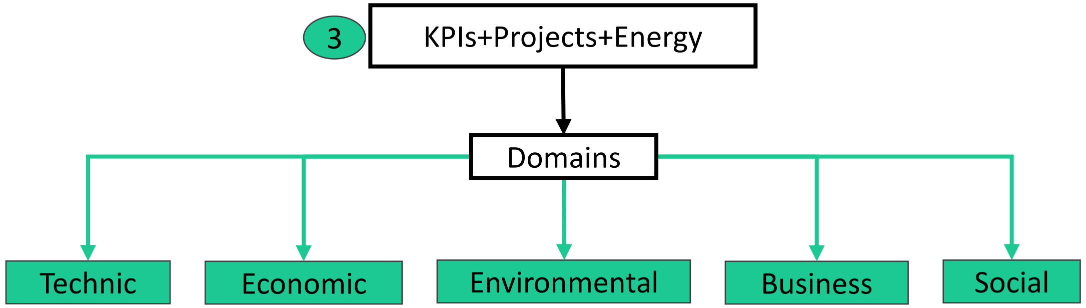
# Results




| Category | Query | Results | Normalized |
|---|---|---|---|
| Technic | TITLE-ABS-KEY ( "kpi*" AND "energy*" AND "project*" AND "technic*" ) AND ( EXCLUDE ( PUBYEAR , 2024 ) ) | 45 | 58% |
| **Economic** | TITLE-ABS-KEY ( "kpi*" AND "energy*" AND "project*" AND "economic*" ) AND ( EXCLUDE ( PUBYEAR , 2024 ) ) | 78 | **100%** |
| Environmental | TITLE-ABS-KEY ( "kpi*" AND "energy*" AND "project*" AND "environmental*" ) AND ( EXCLUDE ( PUBYEAR , 2024 ) ) | 72 | **92%** |
| Business | TITLE-ABS-KEY ( "kpi*" AND "energy*" AND "project*" AND "business*" ) AND ( EXCLUDE ( PUBYEAR , 2024 ) ) | 38 | 49% |
| Social | TITLE-ABS-KEY ( "kpi*" AND "energy*" AND "project*" AND "social*" ) AND ( EXCLUDE ( PUBYEAR , 2024 ) ) | 31 | 40% |
| KPI + Project + energy | TITLE-ABS-KEY ("kpi*" AND "project*“ AND “Energy*”) AND (EXCLUDE (PUBYEAR, 2024)) | 255 | **Total** |

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# Main findings

**KPIs**

- KPIs are predominantly used in business and economic contexts.
- There is a lesser focus on environmental, and social domains.
- Literature reveals a gap in evaluating performance measurement and management focusing social domain.

**KPIs and Projects**

- KPIs play a prominent role in business and economic projects.
- Technical and environmental KPIs receive notable attention
- Social project KPIs are less emphasized
- Interdisciplinary applications of KPIs are identified, especially in energy efficiency, technological advancements, and project performance assessment.

**KPIs, Projects, and Energy**

- KPIs in energy-related projects emphasize economic and environmental metrics
- KPIs cover interdisciplinary themes such as energy management, conservation, and sustainability.
- There is a noticeable research gap in the application of social KPIs in energy projects, indicating an area for future investigation and development.

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# Acknowlegements

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