

❖ Structured KPI Framework Developed

A comprehensive set of **Key Performance Indicators (KPIs)** has been created to assess **result-based carbon farming** practices under Latvian conditions.

❖ Multi-Dimensional Evaluation

The KPIs cover **agronomic, environmental, economic, and social** dimensions.

- ✓ **Environmental:** CO₂-eq reduction, N₂O and CH₄ emissions intensity, soil carbon capture
- ✓ **Agronomic:** crop yield, water use efficiency, crop rotation, cover crops
- ✓ **Economic:** cost per ton of CO₂ sequestered, return on investment, labour productivity
- ✓ **Social:** adoption rates, infrastructure availability

❖ Wide Range of Practices Assessed

- ✓ **Soil practices:** zero/minimal tillage, bio-tillage, biochar, organic fertilisation
- ✓ **Crop strategies:** cover crops, intercroops, crop diversity, perennial plants
- ✓ **Integrated systems:** agroforestry, organic permaculture, grazing management
- ✓ **Bioenergy options:** biogas and biomethane production

❖ Decision-Making Support Tool

The developed framework enables **data-driven decisions** for stakeholders, offering guidance for **climate-smart agriculture** and **Green Deal targets**.

Introduction

•In the **European Union**, agriculture accounts for **10.5%** of total GHG emissions, making it the **fifth-largest** emitting sector.

•In **Latvia**, the situation is more acute, with agriculture ranked as the **third-largest** GHG-emitting sector, contributing **22.2%** of national emissions in **2024**.

To address this, **carbon farming** offers a promising solution—combining **carbon sequestration** and **emission reduction** through sustainable land management practices.

To effectively implement these strategies, it is crucial to:

- Develop **robust performance indicators**
- Systematically assess **carbon farming practices** for their environmental and socio-economic impact

While the broader agricultural sector was initially reviewed, this study focuses in-depth on one representative sector to pilot a methodological approach.

Methodology

A **systematic literature review** was conducted to explore the link between **carbon farming practices** and relevant **performance indicators**.

- ❖ Databases used: **ScienceDirect** and **Scopus**
- ❖ Search keywords: “carbon farming”, “indicators”

- ❖ **30 performance indicators** were identified
- ❖ **12 distinct carbon farming practices** were analysed and cross-compared based on these indicators.

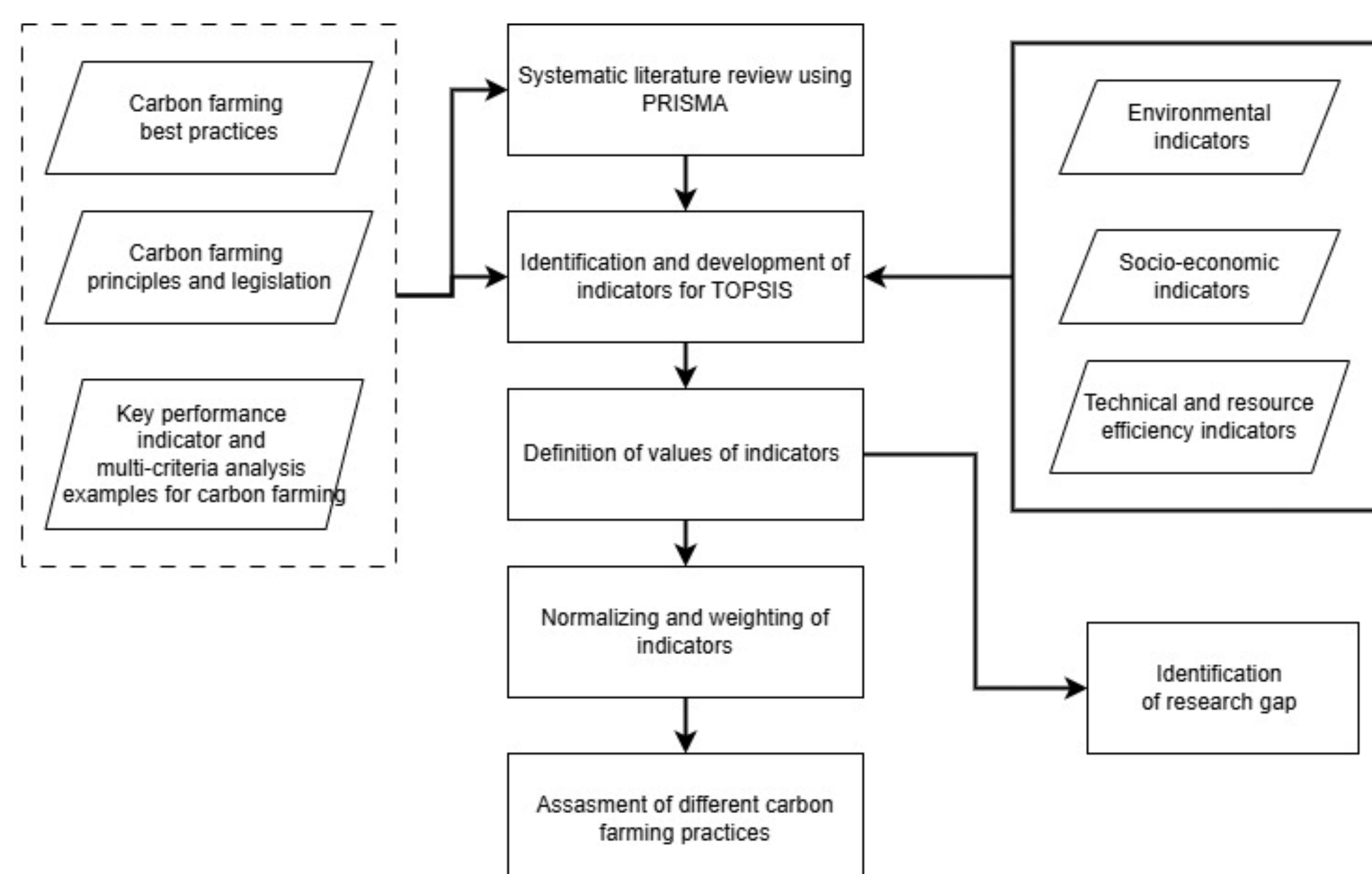


Fig.1 Methodological framework

Results

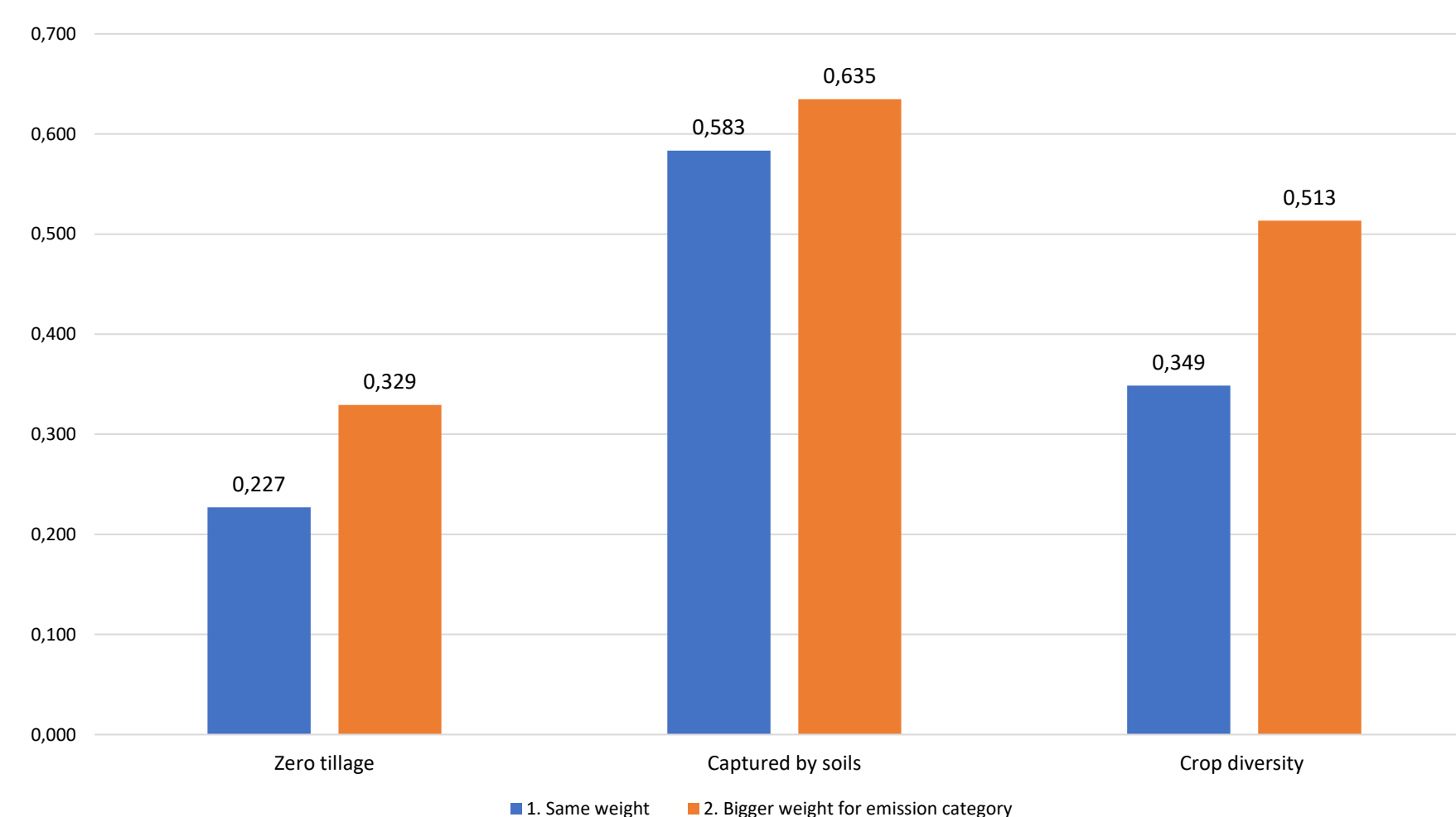


Fig.2 TOPSIS results: Ranking of agricultural practices

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