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Sustainable Management of roadside: towards a research agenda

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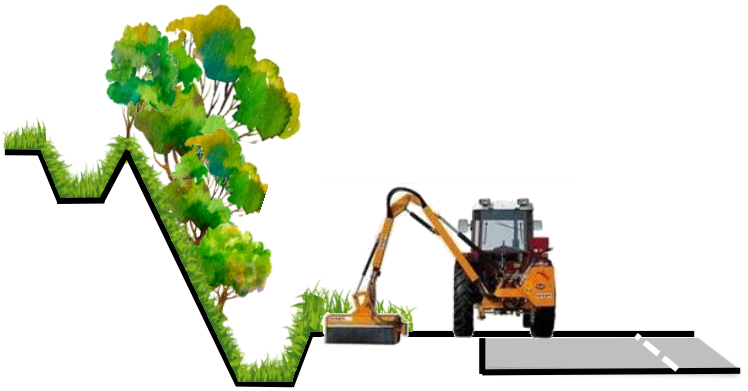

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NOREMAT

Summary

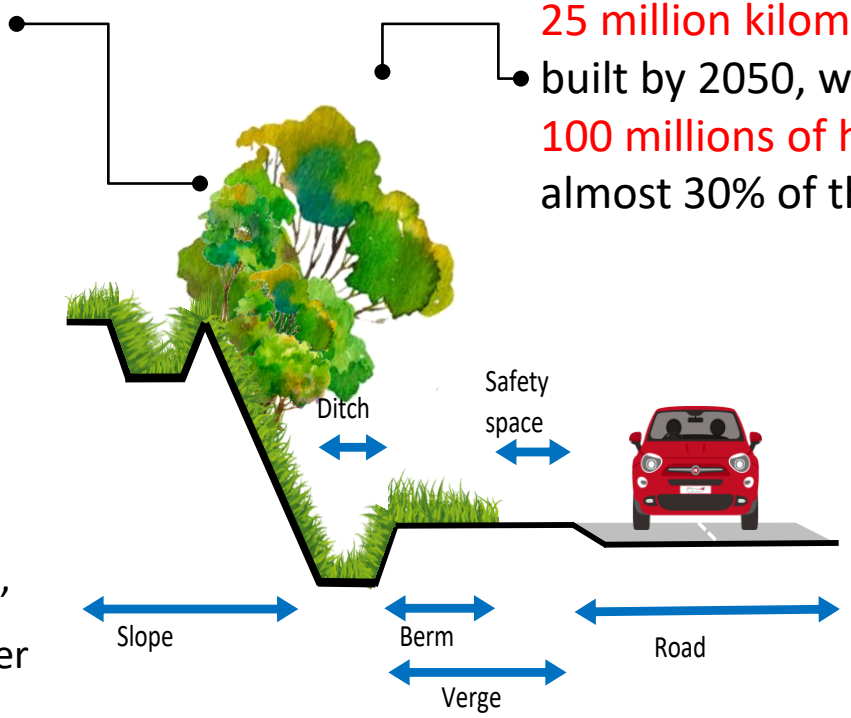
1. Context
2. Research aim and search strategy
3. Results
4. Towards a research agenda

1. Context

What is the importance of roadside (RS)?

The RS are a social interface between:

- ✓ forests,
- ✓ wildlife,
- ✓ agricultural farms,
- ✓ rural communities,
- ✓ vehicles,
- ✓ communication networks,
- ✓ landscape, and many other aspects.



On a global scale, it is expected that 25 million kilometers of new roads will be built by 2050, which implies about 100 millions of hectares of news RS, almost 30% of the world's forest area

"Roadside Nature Reserves“ (England, Belgium)

Depending on the way it is managed, it can demand high costs for the local authorities in charge of its maintenance.

1. Context

Increased Risk of Fire

Waste on the road

What happens if the roadside is not managed?

Flood

Reduction of Road Safety

Contamination

Accident

1. Context - Issues

How to conciliate the different objectives of the stakeholders involved in roadside management?

Economic

- Valorization of biomass (methanization, composting, animal food)
- Promoting of energy transition
- Rural development and job creation

Ecology

- Biodiversity preservation
- Improvement of water, air and soil quality
- Reduction of carbon footprint

Technology

- Vehicular network
- Roadside maintenance (frequency, intensity, tools)

Social and safety

- Road safety
- Flood and fire prevention
- Creation of local value, attractiveness of the territory (landscape)

https://www.sciencedirect.com/science/article/pii/S1026309811002252

2. Research objective and search strategy

Research objective

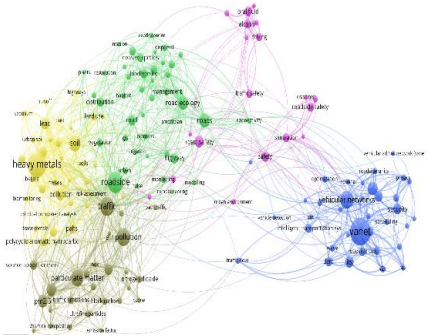
Define the research trends about the relationship between sustainable management and roadside.

Search strategy

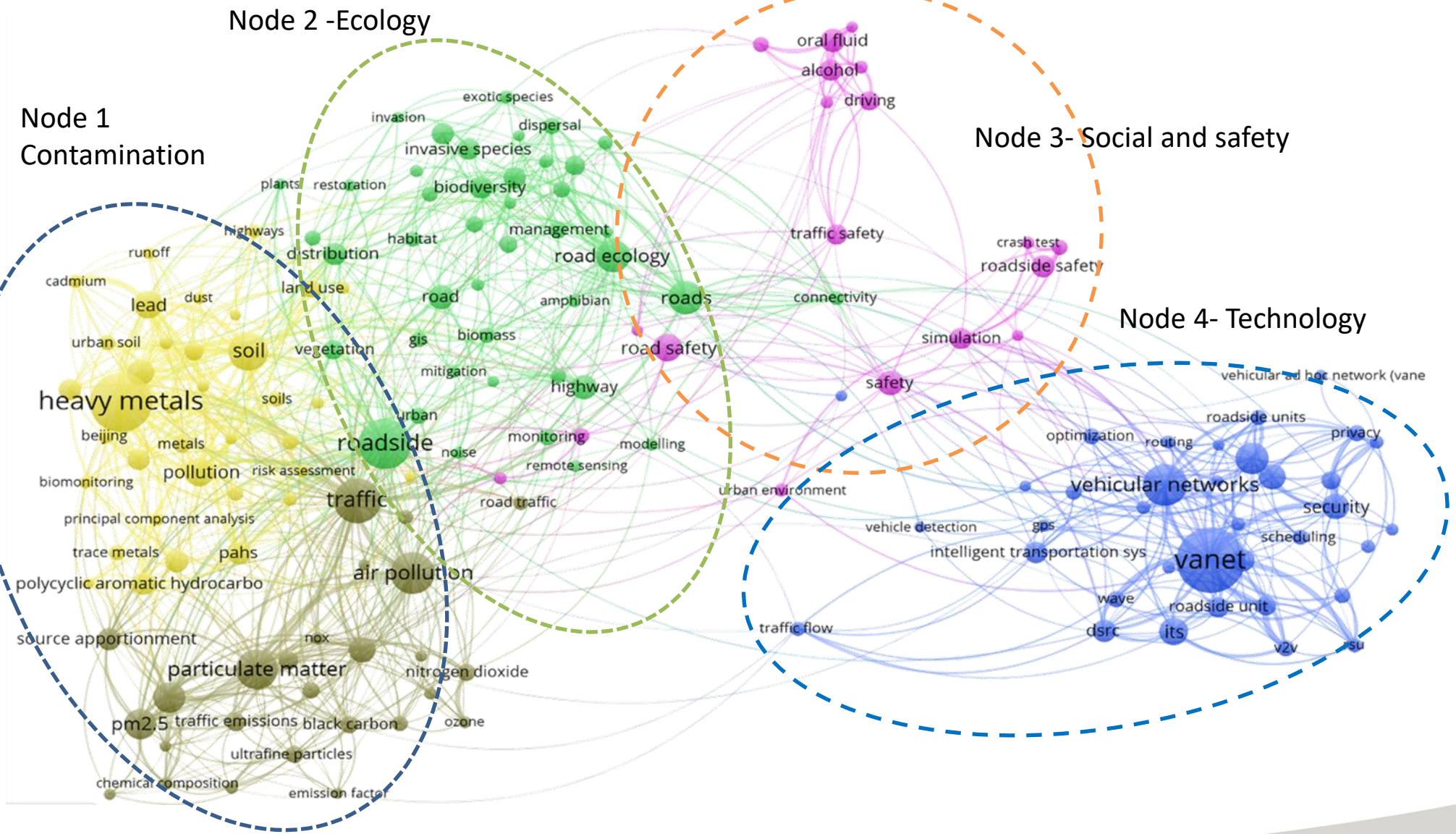
Steps	Description
keywords and Boolean expression	(Title-Abs-Key ("roadside") Or Title-Abs-Key ("road verge") Or Title-Abs-Key ("road edge"))
Sources of information	Scopus
Period of information	Pub year > 1999

Specification	Condition
Number of total scientific documents:	10 112
keywords:	20 351
Minimum number of occurrences of a keyword:	20
Meet the threshold keywords:	163

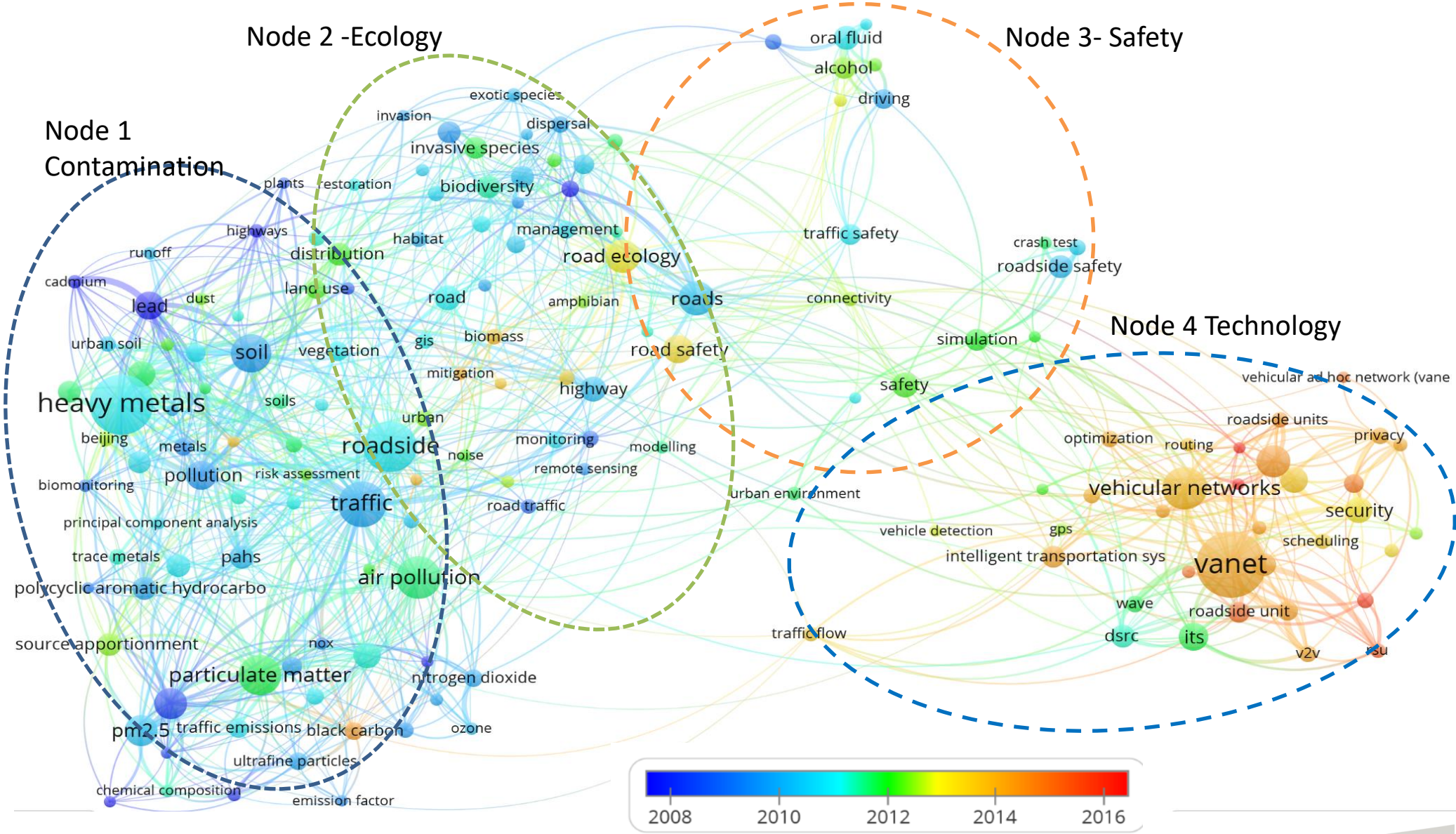
Graphical representation of bibliometric maps



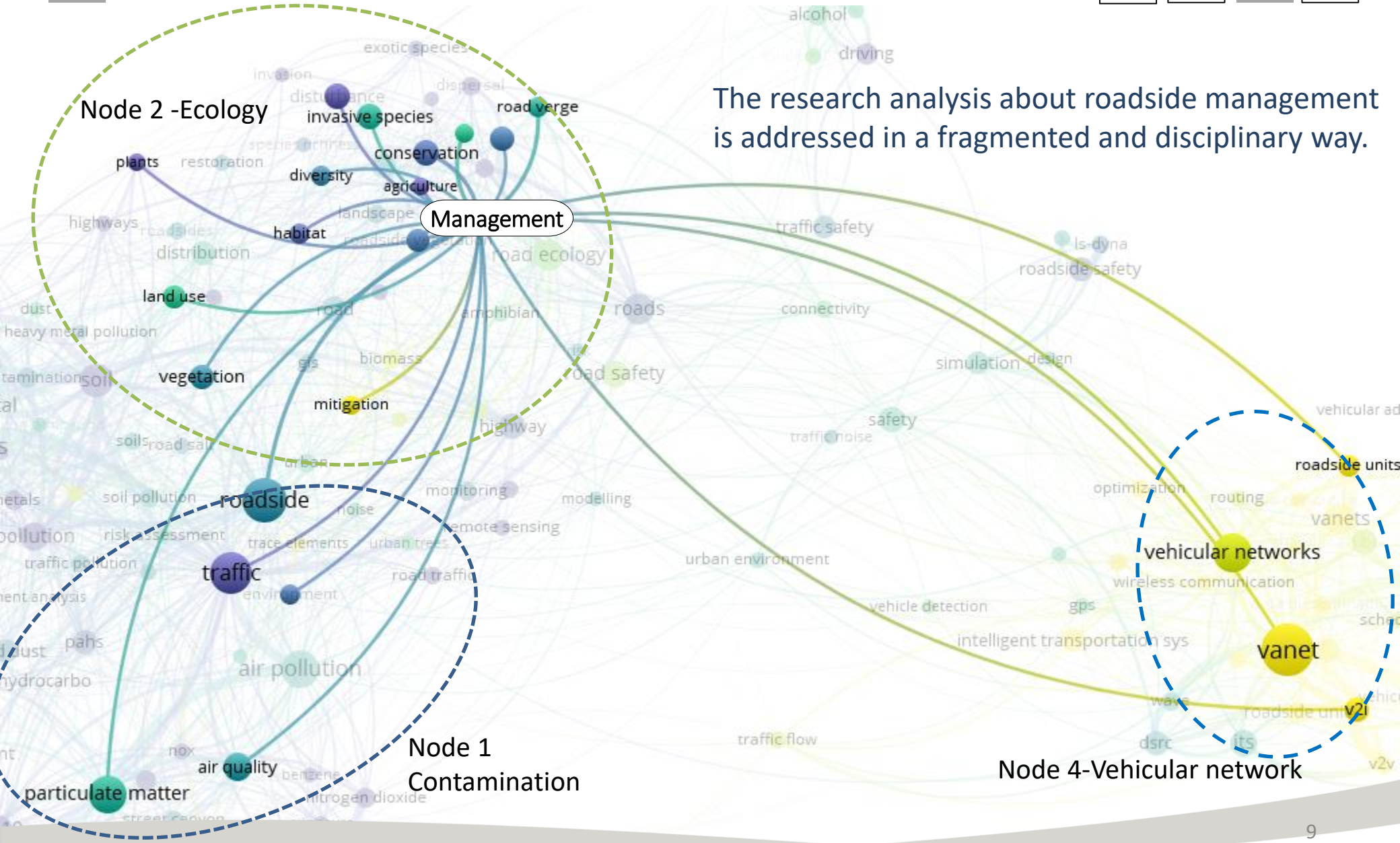
3. Results **Network visualization**



3. Results **Temporal evolution**



3. Results



The research analysis about roadside management is addressed in a fragmented and disciplinary way.

4. Towards a research agenda

Node 1 Contamination

Node 2 -Ecology

Economic quantification of positive effects of roadside management:

Node 3- Safety

- Ecosystem services, wildlife and biodiversity preservation,
- Soil and air quality, noise reduction, invasive vegetation control,
- Pollutant emission mitigation and its connection with human health.

4. Towards a research agenda

Node 4 Technology

The management of traffic to:

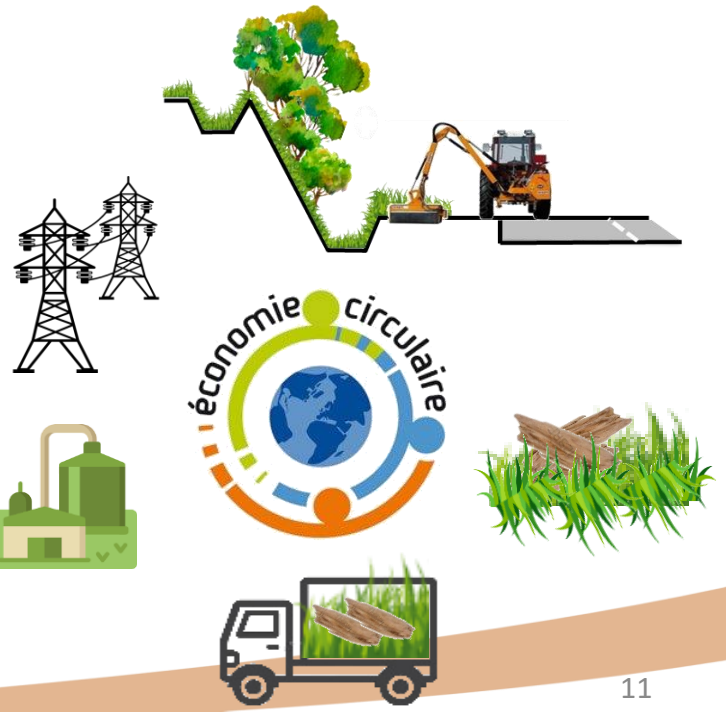
- Reduction of route times, road measurements through roadside units and
- Integration of information in vehicular networks
- Intelligent transportation systems, traffic flow and wireless sensors

Future research

- Energy efficiency
- Roadside infrastructure,
- Biomass to bioenergy

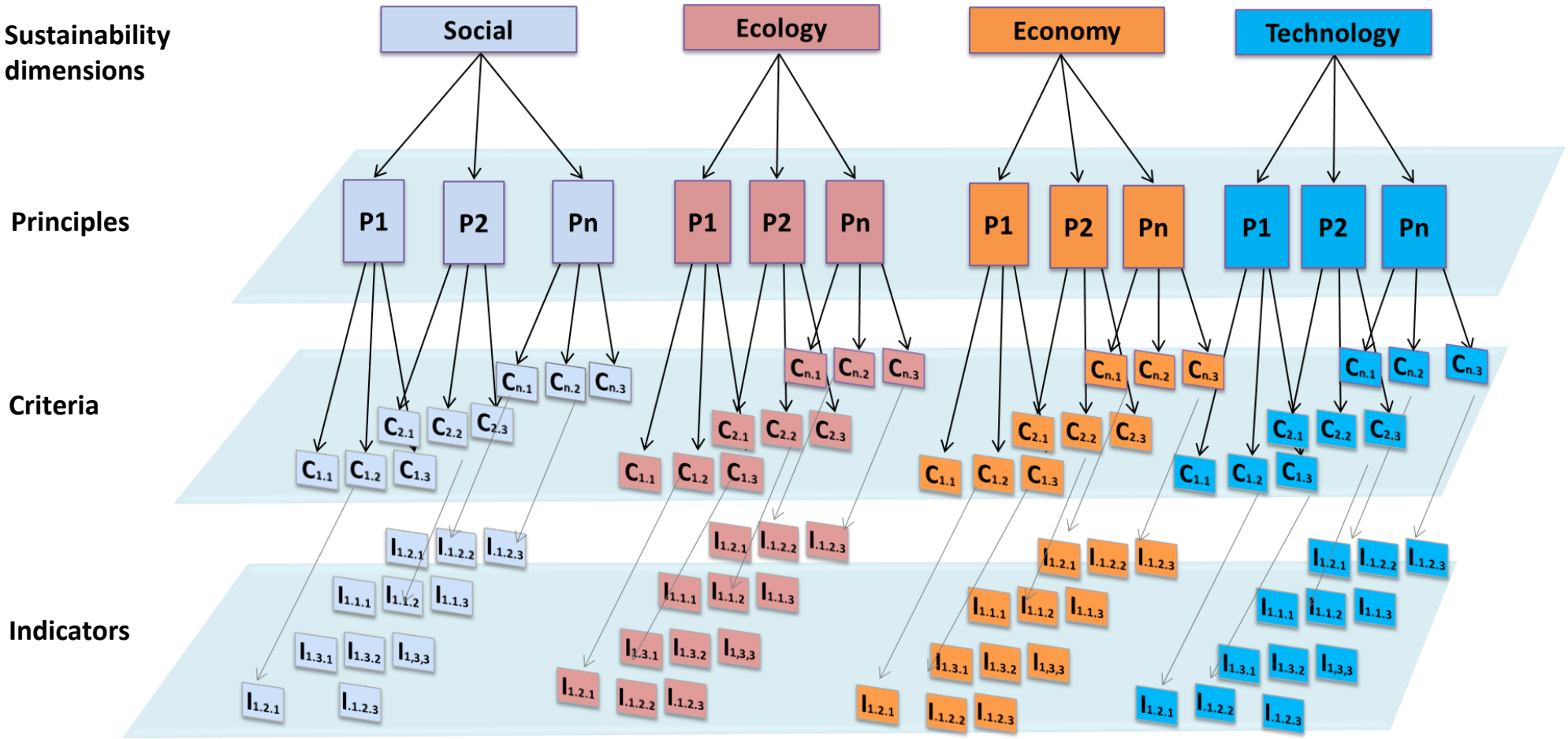
Economic

- Creation of local value
- Attractiveness of the territory
- Bioeconomy
- Job creation



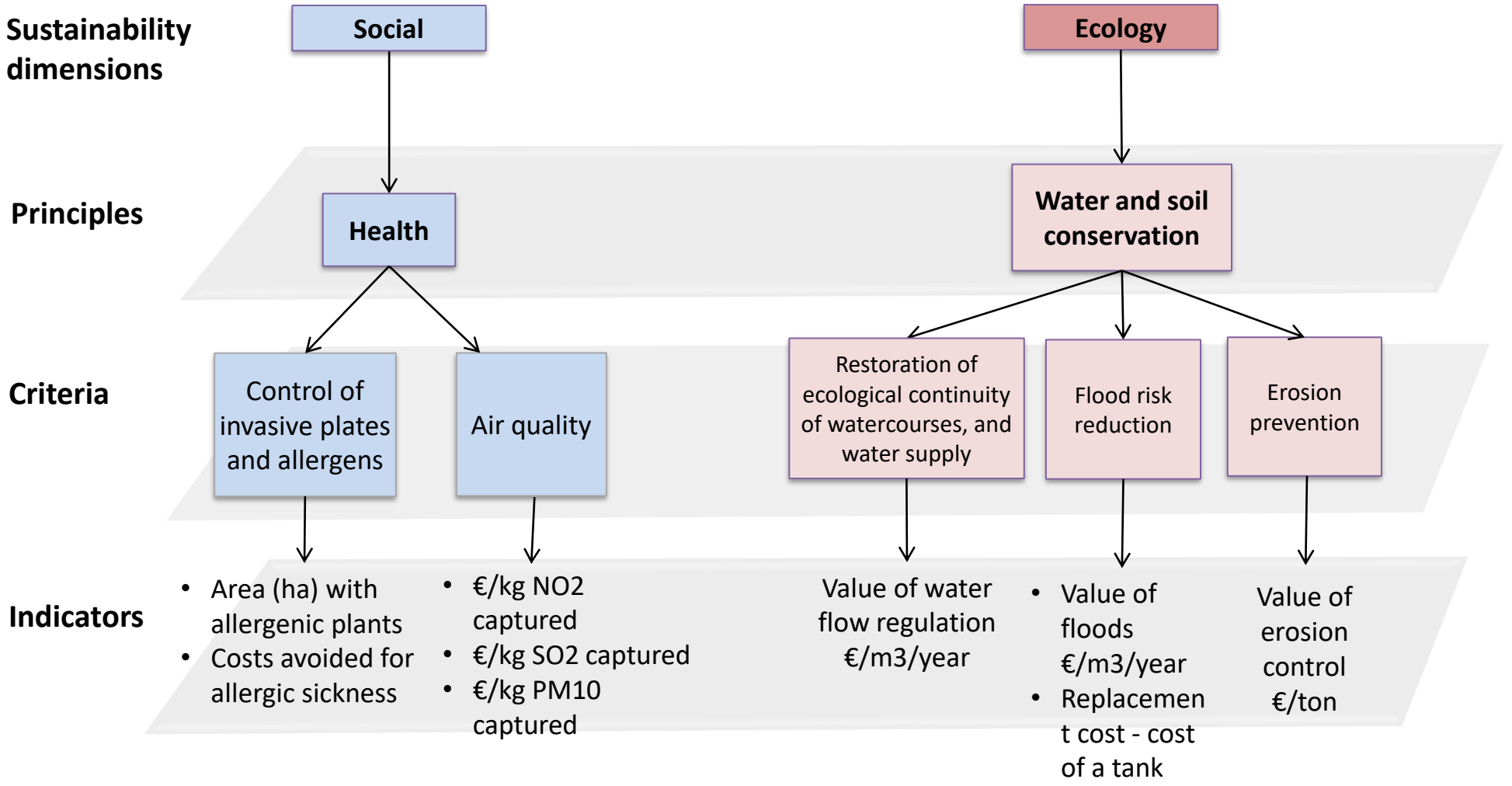
4. Towards a research agenda

Proposition of hierarchical sustainability management framework



4. Towards a research agenda

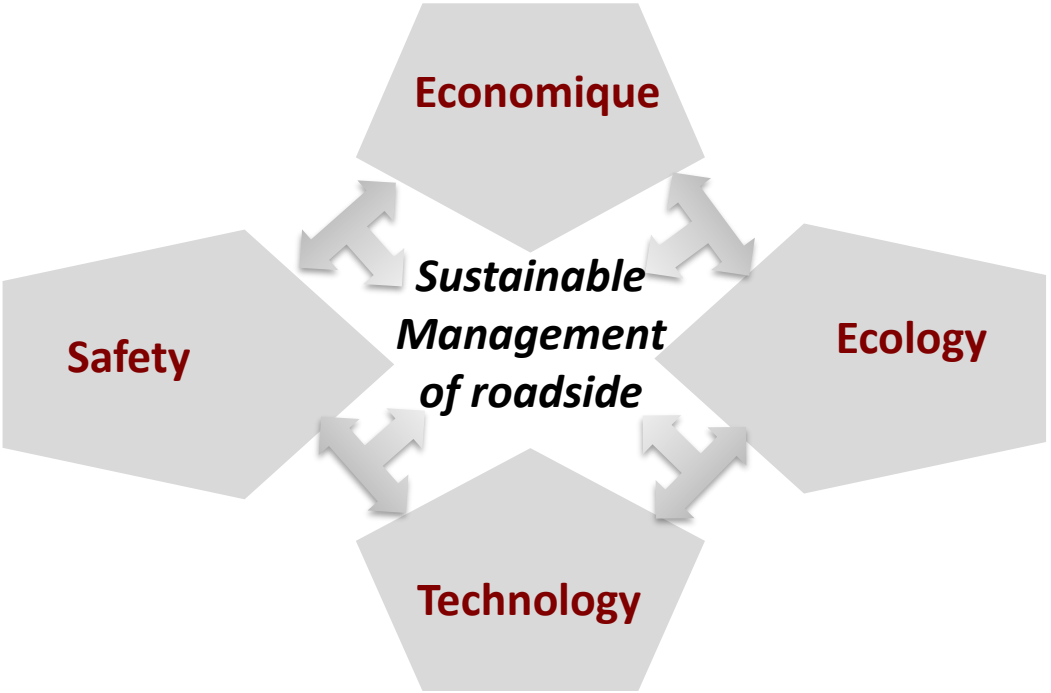
Example



4. Towards a research agenda

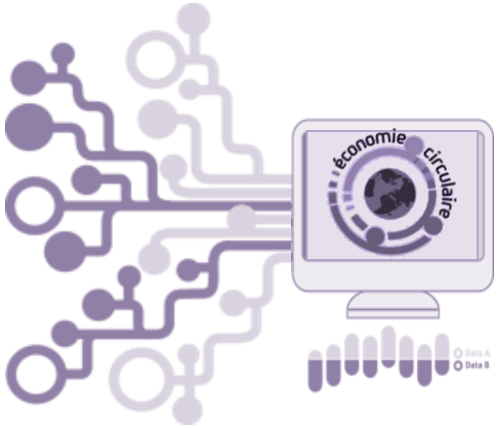
Conslusions

The Sustainable Management of roadside might be addressed in a transdisciplinary way.



The ecosystem services promotion and valuation to support decisions about sustainable management of roadside.

Development of an integrated information management system to support decision-making that promotes value creation around Innovative and Sustainable Management of Road Dependencies in "circular economy mode".



Thank you for your attention