Transitioning to circular cities: where to focus and why?

Findings from research

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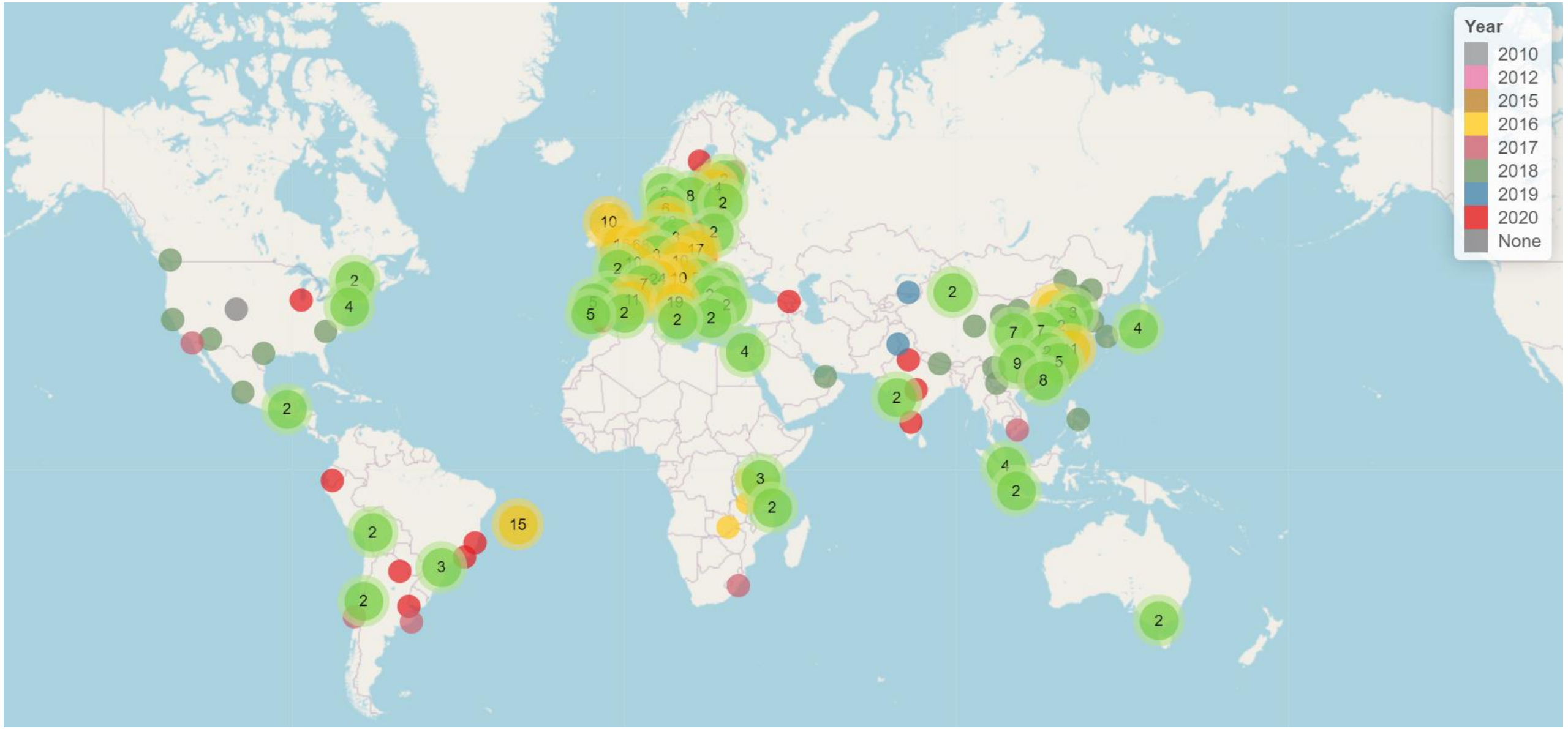
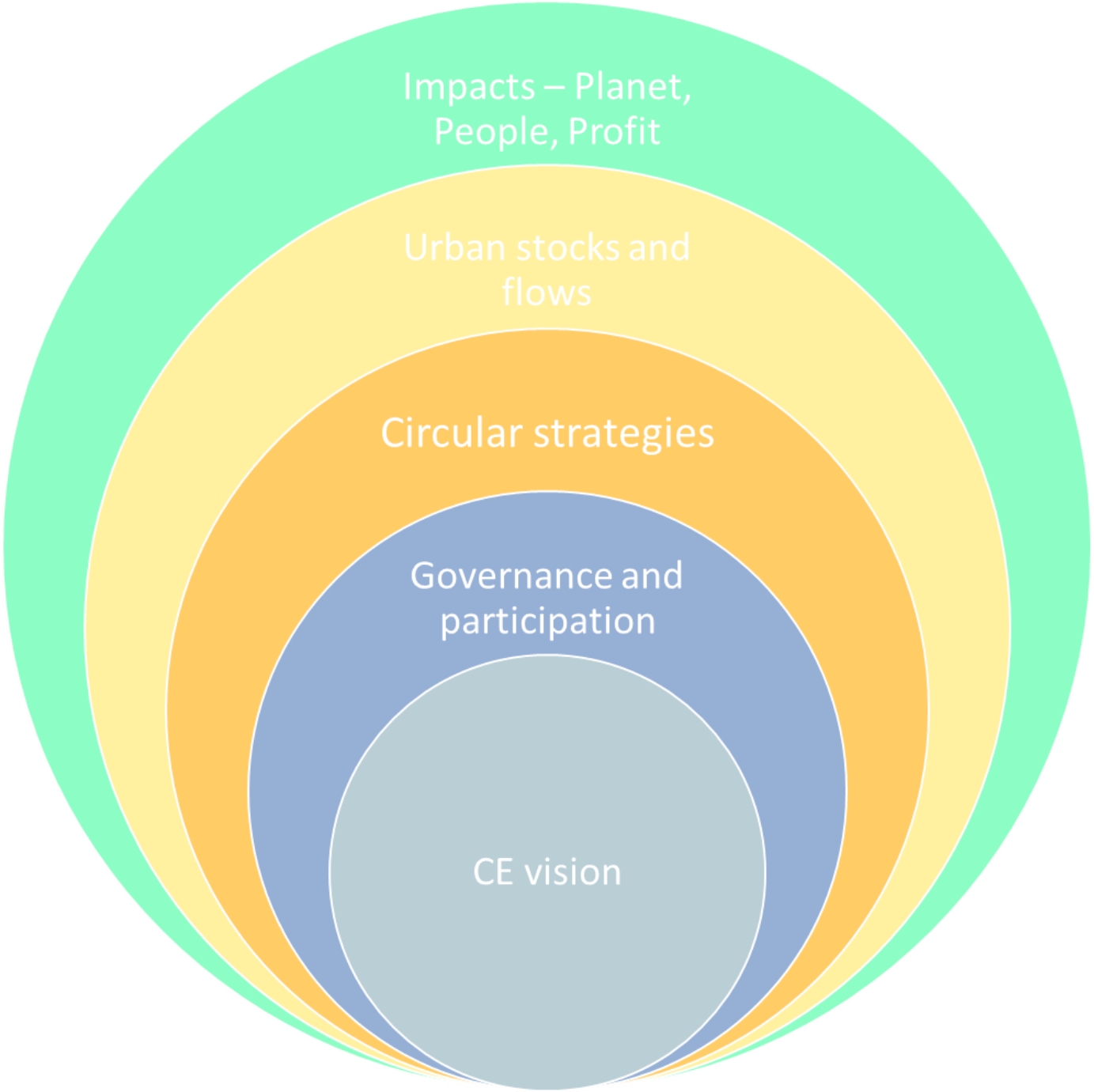
Summary findings

- More cities are embarking on CE transitions given the importance to reduce material and energy footprints and given socio-economic pressures
- The focus mostly on recycling (waste management) and recovery of energy from waste (energy production)
- Technocentric viewpoint: win for the economy, the people (job creation), and the planet (reducing environmental impacts)
- Yet, limited consideration of the negative, at times unintended consequences, such as rebound effects, the quality of jobs, access to services, and long-term viability of the CE initiatives

The interactive evidence atlas containing a research overview on circular cities (2010-2020)

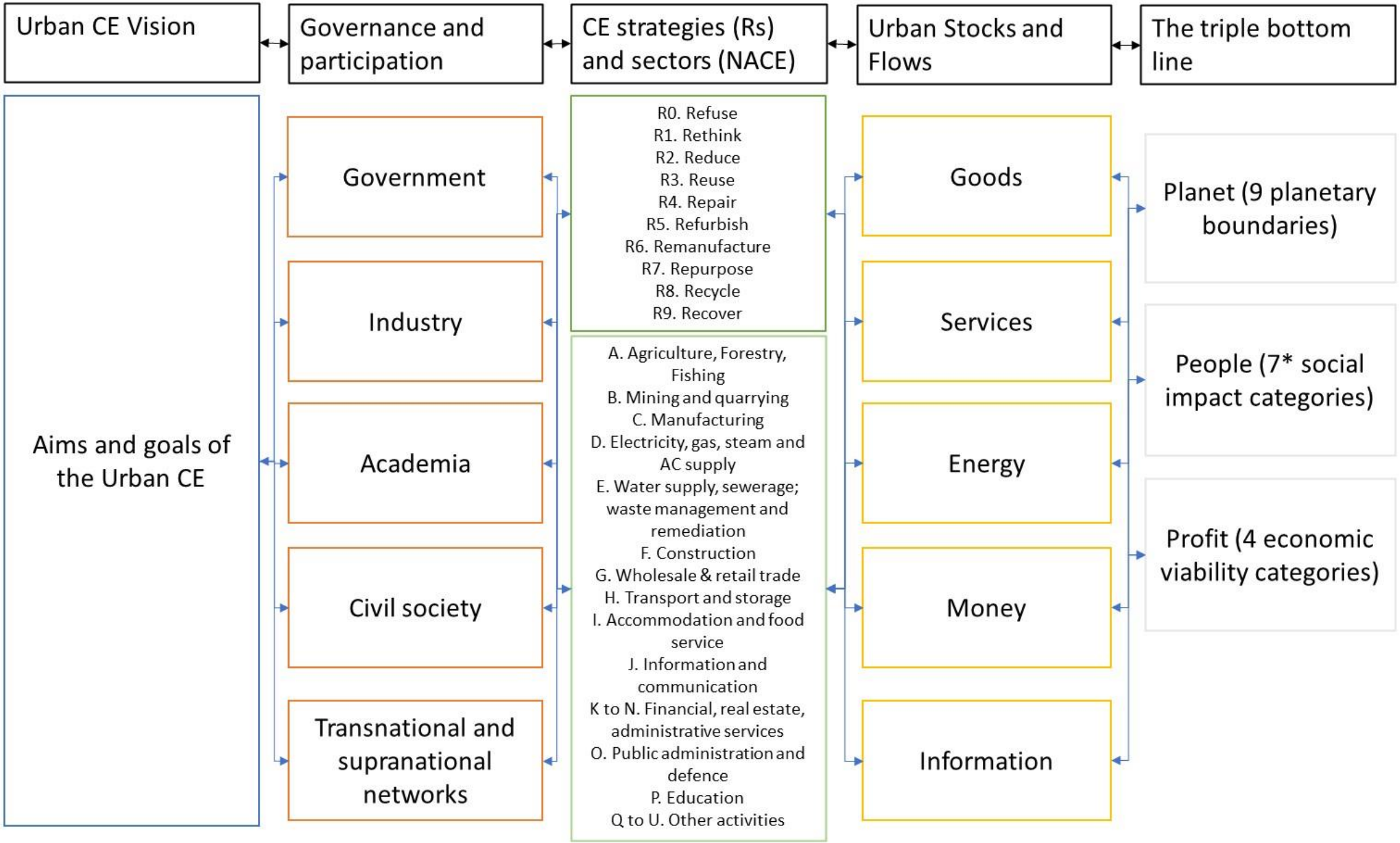


Source: Vanhuyse et al. (2021). Circular cities: an evidence map of research between 2010 and 2020. Discov. Sustain. 2:50. http://doi.org/10.1007/s43621-021-00059-2. Available at Eviatlasmap.

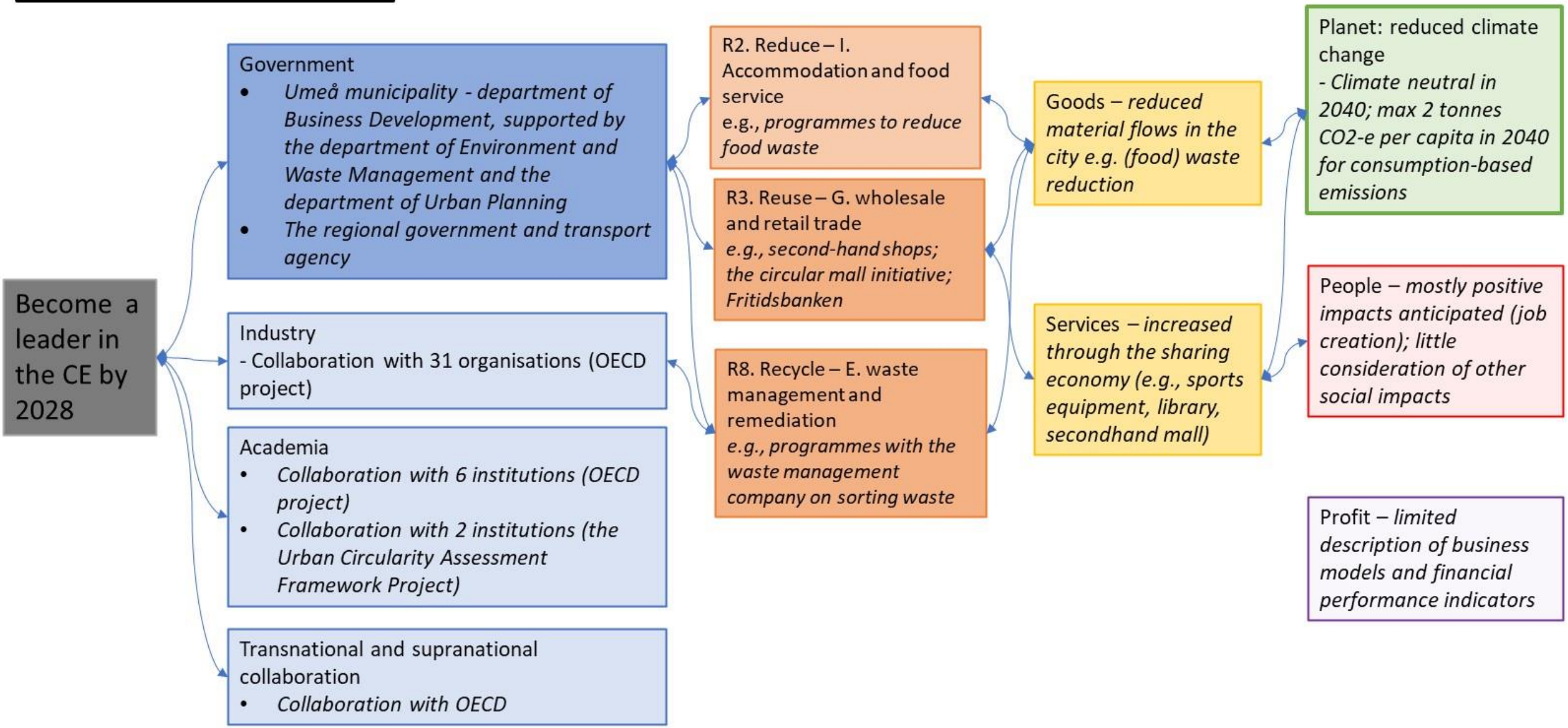


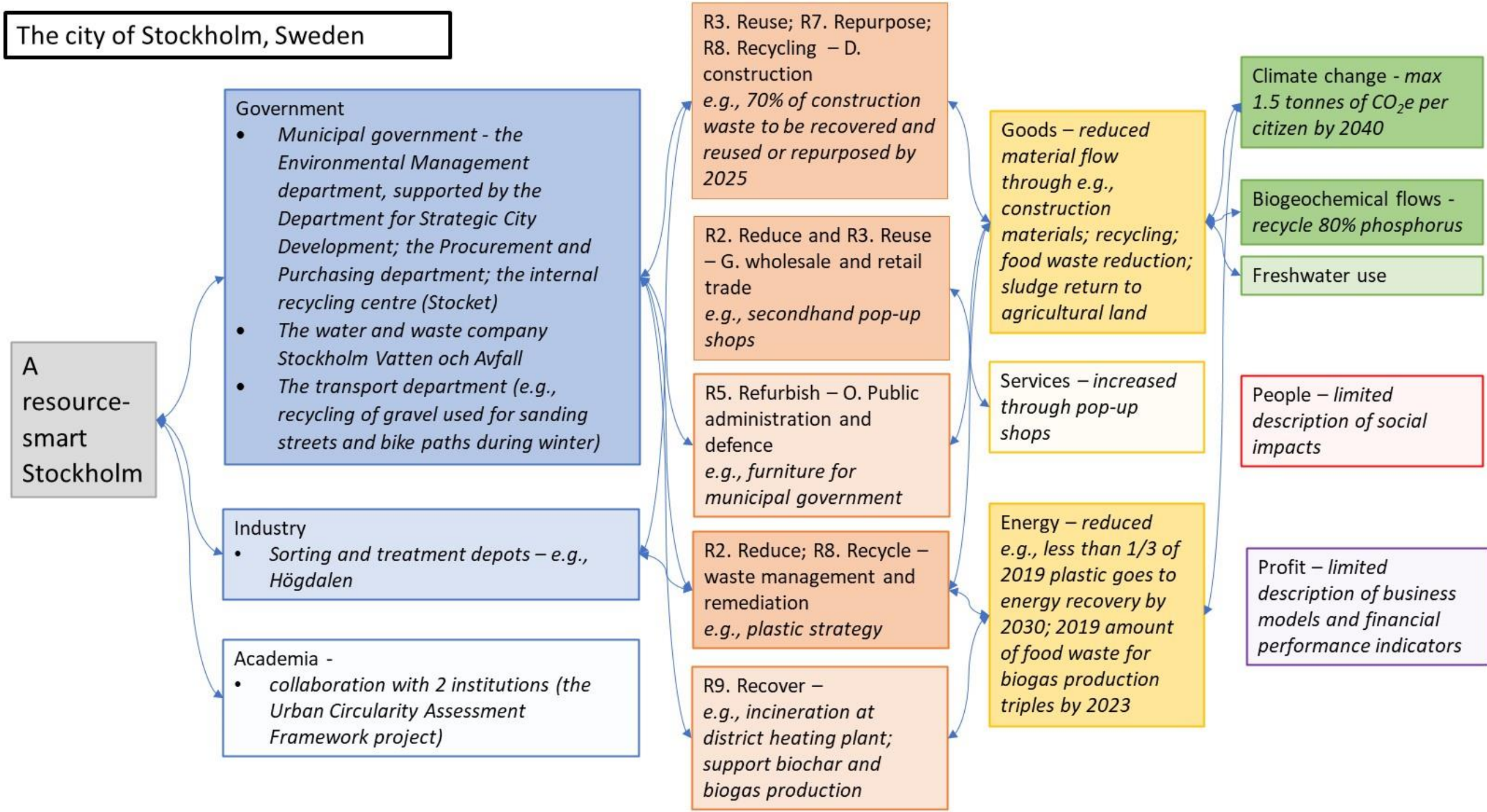
Our Circular Cities' Framework:

- Aims at clarifying connections between different components, allowing to better understand decisions
- Shows gaps in cities' CE approach – and where the CE approach could be strengthened
- Each component can be used stand-alone (for inspiration) or as point of departure (linking left and right)


Urban CE Vision
Governance and participation
CE strategies (Rs) and sectors (NACE)
Urban Stocks and Flows
The triple bottom line
Aims and goals of the Urban CE
Government
Industry
Academia
Civil society
Transnational and supranational networks
R0. Refuse
R1. Rethink
R2. Reduce
R3. Reuse
R4. Repair
R5. Refurbish
R6. Remanufacture
R7. Repurpose
R8. Recycle
R9. Recover
A. Agriculture, Forestry, Fishing
B. Mining and quarrying
C. Manufacturing
D. Electricity, gas, steam and AC supply
E. Water supply, sewerage; waste management and remediation
F. Construction
G. Wholesale & retail trade
H. Transport and storage
I. Accommodation and food service
J. Information and communication
K to N. Financial, real estate, administrative services
O. Public administration and defence
P. Education
Q to U. Other activities
Goods
Services
Energy
Money
Information
Planet (9 planetary boundaries)
People (7* social impact categories)
Profit (4 economic viability categories)

The city of Umeå, Sweden




The city of Stockholm, Sweden
A resource-smart Stockholm
Government
• Municipal government - the Environmental Management department, supported by the Department for Strategic City Development; the Procurement and Purchasing department; the internal recycling centre (Stocket)
• The water and waste company Stockholm Vatten och Avfall
• The transport department (e.g., recycling of gravel used for sanding streets and bike paths during winter)
Industry
• Sorting and treatment depots – e.g., Högdalen
Academia -
• collaboration with 2 institutions (the Urban Circularity Assessment Framework project)
R3. Reuse; R7. Repurpose; R8. Recycling – D. construction
e.g., 70% of construction waste to be recovered and reused or repurposed by 2025
R2. Reduce and R3. Reuse – G. wholesale and retail trade
e.g., secondhand pop-up shops
R5. Refurbish – O. Public administration and defence
e.g., furniture for municipal government
R2. Reduce; R8. Recycle – waste management and remediation
e.g., plastic strategy
R9. Recover –
e.g., incineration at district heating plant; support biochar and biogas production
Goods – reduced material flow through e.g., construction materials; recycling; food waste reduction; sludge return to agricultural land
Services – increased through pop-up shops
Energy – reduced e.g., less than 1/3 of 2019 plastic goes to energy recovery by 2030; 2019 amount of food waste for biogas production triples by 2023
Climate change - max 1.5 tonnes of CO_2e per citizen by 2040
Biogeochemical flows - recycle 80% phosphorus
Freshwater use
People – limited description of social impacts
Profit – limited description of business models and financial performance indicators

Recommendations for further research – points of attention for practitioners

- Participation – how to include civil society and citizens
- Rights' question – including shared ownership. Access to "circular" services
- Moving beyond lower R's – recycling and recovery (waste to energy) to remanufacturing; rethinking and refusing
- Financial side – investments required as well as profitability of the circular industry to investigate

More info:
https://www.sei.org/projects-and-tools/projects/urban-circularity-assessment-framework/

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