

The development of sustainable mobility strategies in Belgian Cities

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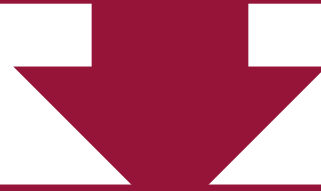
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Strategic focus of cities and local governments on Urban sustainability

Development of drivers, strategies, structures and green local improvements

Resource management and climate, mobility, buildings and public spaces

Challenge to ensure successful implementation of sustainable mobility strategies



Sustainable mobility strategy, management controls and institutional factors

Implementation of appropriate policies, actions, decisions and controls

Involvement of strategic actors, infrastructures, funding and socio-demographic parameters



How do Belgian cities use sustainable mobility controls to support the implementation of sustainable mobility strategy based on institutional influences?

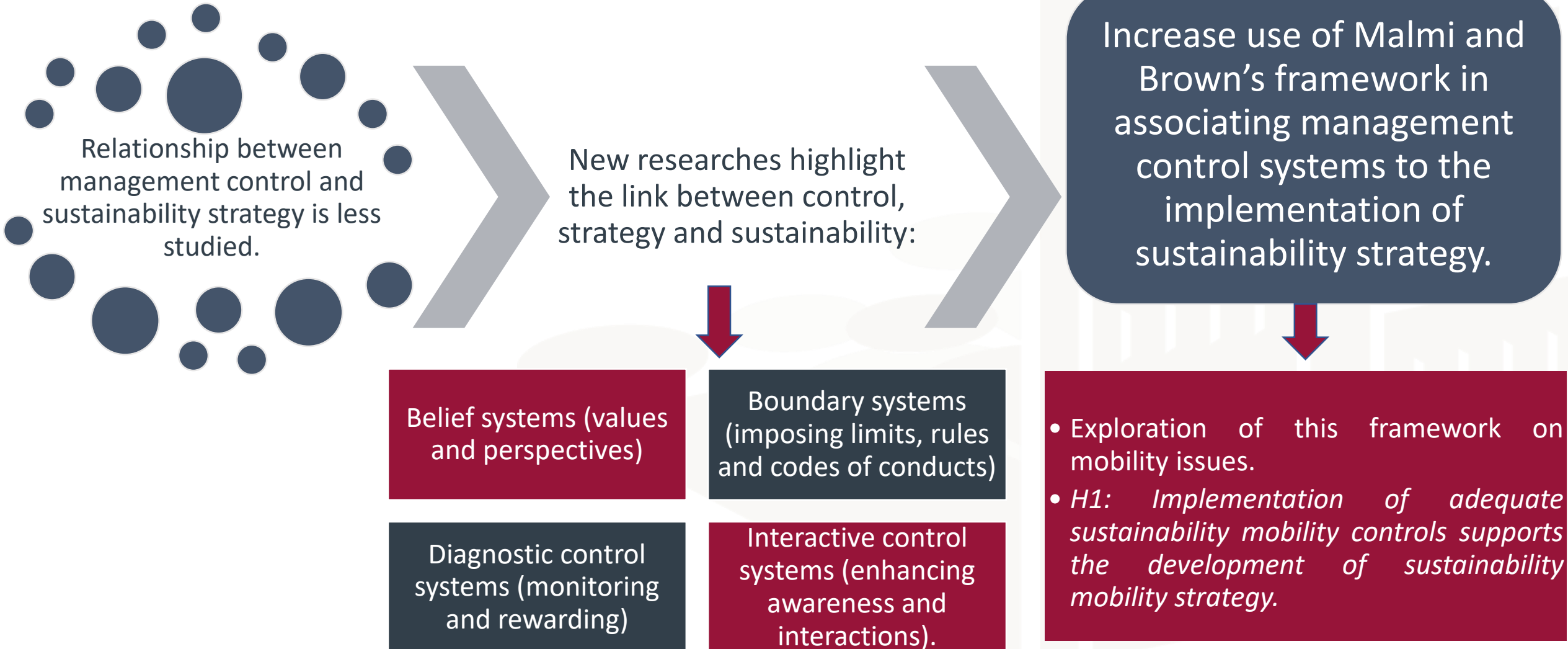
Plan

- Role of sustainable management control systems in the development of sustainable strategy.
- Link between mobility controls, sustainable mobility strategy, and institutional factors.
- Research methodology and data collection.
- Results and discussion.

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Management control systems ensure homogeneity between behaviours, decisions, objectives and strategies



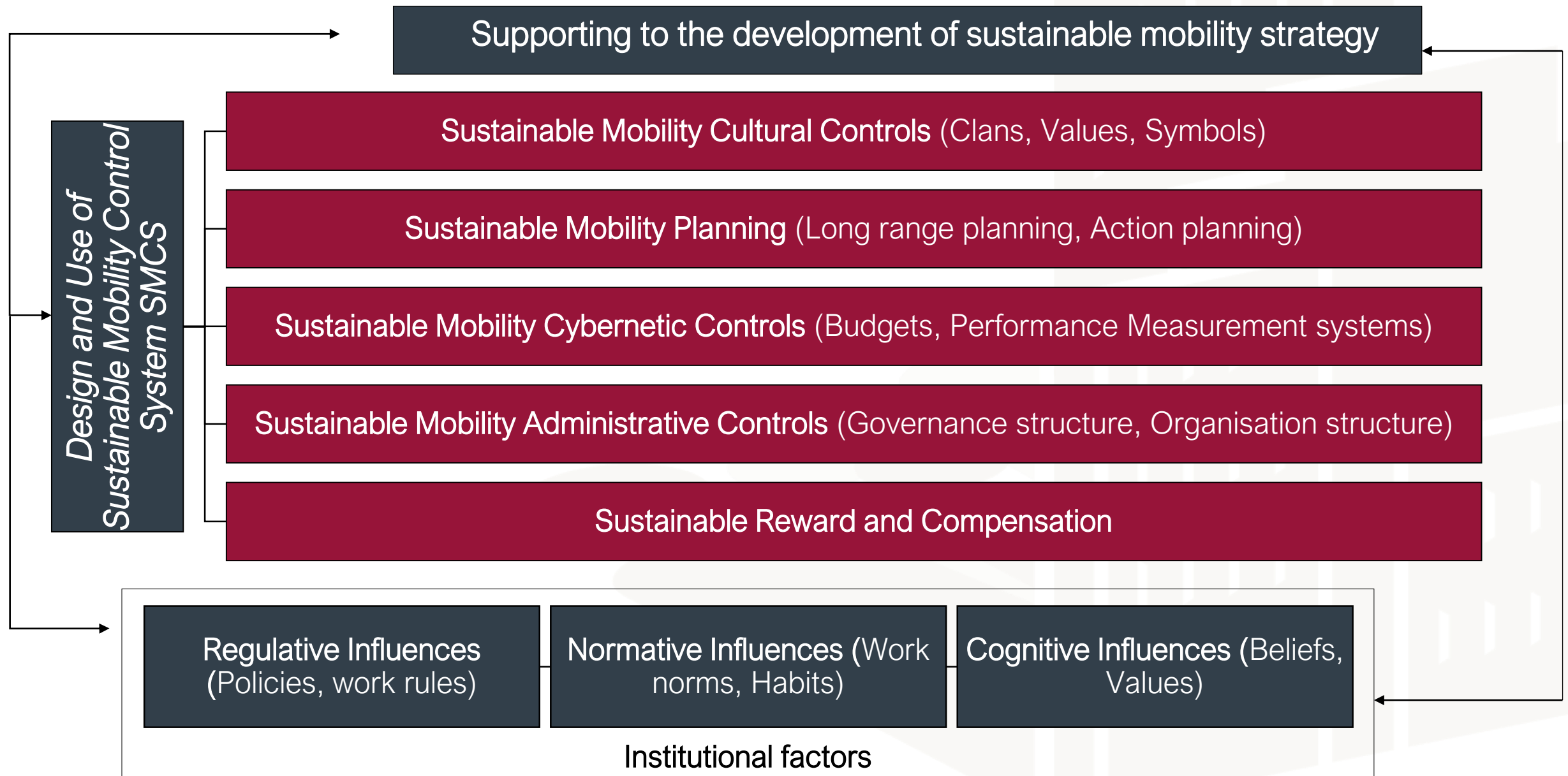
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- **Link between mobility controls, sustainable mobility strategy and institutional factors.**
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Institutional factors influence the development of sustainable mobility strategy at local government-level through the relationship between infrastructure, public spaces and environment.

- They define main orientations of sustainable mobility planning and control for
 - public transport, pedestrians and cyclists' conditions, carpooling and car sharing programs, traffic calming, zoning development, parking management and car free planning.
- *H2: Institutional factors influence both the designed and used sustainable mobility strategy controls.*

Proposed conceptual model based on Malmi and Brown's framework



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Explorative qualitative case study of two Belgian city local governments : In-depth understanding of the interrelations between sustainable mobility strategy, SMCS and institutional factors

Similarities	Namur	Leuven
Global rural and urban population size (2016)	488 820 hab.	496 969 hab.
City population size (2015) (most closer and similar)	111 166 hab.	98 404 hab.
Explicit will to develop sustainable mobility strategy	Continuous improvement High importance to long range planning	Continuous improvement High importance to long range planning
Focus on sustainable transport	-Public transport -Development of car and ride spaces -Sensitization to bike use	-Reinforcement of bike use -Car-sharing -Public transport
Initiation period of mobility issues' implementation	2000	2002
Persons in direct charge of sustainable mobility strategy	6	4
Level of willingness to develop sustainable mobility controls	Development of adequate SMCS	Development of adequate SMCS
Focus on car free	City center	City center and populated areas
Strategic mobility challenges	Walloon parliamentary	Daily students and workers

Explorative qualitative case study of two Belgian city local governments : In-depth understanding of the interrelations between sustainable mobility strategy, SMCS and institutional factors

Differences	Namur	Leuven
Region	Wallonia	Flanders
Language	French	Dutch
Regulative factors	Policies and work rules referred to Walloon government	Policies and work rules referred to Flemish government
Normative factors	Work norms and habits referred to French and Latin culture	Work norms and habits referred to German and Dutch culture
Cognitive factors	<ul style="list-style-type: none"> -Walloon local culture -Weak sensitiveness on sustainable values -Common use of cars 	<ul style="list-style-type: none"> -Flemish local culture -Importance of sustainable values -Common use of bicycles

Data collection

- Fieldwork of 12 weeks.
- **54 internal and external documents** (key policy documents; city and municipal mobility plans; urban plans; city plans; city planning and building reports; financial reports; long range plans; action plans; and list of indicators) belonging to city planning department, mobility department, local government administration, public works department and urban department.
- **20 Semi-structured interviews** (9 in Namur and 11 in Leuven) were conducted with key actors of mobility issues' implementation in city local governments (1 mayor; 3 deputies; 3 municipal councilors; 2 mobility issues managers; 1 sustainability manager; 2 policemen; 3 mobility and city cell member; and 5 administrative workers).

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SMCS of Namur

Designed [D] and used[U] mechanism of sustainable mobility strategy control

Cultural controls	Use of bicycle, public transport, ride-and-car park relays; Shared implicit values between actors in charge of mobility; Multiple organisational mobility subcultures.
Planning	Obsolete municipal mobility plan; Missed link between mobility controls and strategic vision; Outdated mobility actions; Integration of common spaces sharing and traffic flow's plans in sustainable policies; Use of flexible informal mobility controls.
Cybernetic controls	Use of standardized non-adapted indicators ; Difficulties to develop pertinent system; Controlling by informal meetings; Unclear implementation, conducting and controlling of sustainable mobility issues.

SMCS of Leuven Designed [D] and used[U] mechanism of sustainable mobility strategy control

Cultural controls
Use of car-sharing and car-pooling;
Increase of free car zones and pollution reduction
Formal mobility control culture – city map.

Planning
Inexistence of mobility plan (mobility actions in city planning plan)
Outdated and not precise mobility actions;
Integrating formal mobility controls in new vision of city planning and building (traffic flow, driving, use of public transport, speed limits)
Continuous improvement and integrative change.

Cybernetic controls
Non-updated indicators to social/economic new challenges;
Difficulties to develop pertinent system (difficult to interpret data, no real action mobility plan, low collaboration of municipalities);
Use of indicators (accident, traffic) not related to mobility issues;
Unclear implementation, conducting and controlling of sustainable mobility issues ;
Developing indicators to implement relevant conclusions based on modern mobility data.

SMCS of Namur Designed [D] and used[U] mechanism of sustainable mobility strategy control

Administrative controls Procedural and less reactive decision-making by mobility department ;
Execution of political decisions on sustainability mobility issues;
Formal line controls: city administration, municipal college, alderman and mayor office;
Controlling by formal collaboration for long-term mobility projects;
Policies and procedures are respected only for strategic actions;
Establishment of annual controls for the evaluation of mobility actions.

Reward and compensation Incentive systems for workers, citizens, visitors, firms and schools;
monetary compensation for regular use of bicycles and public transport;
incentives for carpark relays;
few legal and moral punishment for right to park, speed limit and sense of traffic.

SMCS of Leuven

Designed [D] and used[U] mechanism of sustainable mobility strategy control

Administrative controls

Mobility as a small part of sustainability issues;
focus on policeman controlling;
formal line controls: mayor, deputies, city planning, lines, police, Flemish government department and road & traffic agency;
mobility cell as controlling organisational steering committee;
creation of super committee and supra committee for key sustainable mobility challenges;
formal participation of neighbourhoods and city councils.

Reward and compensation

Incentive systems for citizens, civil servants and city walkers;
car rental for car-pooling and car-sharing;
free bicycles for students; free pass card for (-12) children; rent of electric bicycles; free parking spots for sharing car users;
high stringent legal and moral punishment in risk areas and free car zones;
flexible and reactive decision-making.

Sustainable mobility strategy, mobility controls and institutional factors

<i>Identification of mobility strategy controls</i>	Namur	Leuven
Designed sustainable mobility controls	9	16
Used sustainable mobility controls	9	5
Designed and used sustainable mobility controls	24	29
Quality of SMCS	Weak -Non-adapted indicators to strategy -requires more formal structure	Average -indicators have to face new city challenges -requires more collaboration between actors and departments

Sustainable mobility strategy, mobility controls and institutional factors

<i>Identified institutional influences</i>	Sustainable mobility strategy and control
Regulative influences	Formal laws and regulations; regional laws and policy guidelines; informal rules and collaborations; political power; political contradiction or support.
Normative influences	Social support and awareness on sustainable change; will to adopt behavioural change; work norms and habits in favour of sustainability; multiplication of local cultures; perception of sustainable mobility strategy as an opportunity or a danger; level of collaboration between actors and departments.
Cognitive influences	Orientation of values and believes; sensitiveness on sustainability culture.

Discussion of the proposed conceptual model

<i>Factors impacting the development of mobility strategy</i>	Regulative influence	Normative influence	Cognitive influence	Influence on sustainable mobility strategy
Cultural controls	Weak	Strong	Strong	Medium
Planning	Strong	Strong	Medium	Strong
Cybernetic controls	Strong	Strong	Weak	Strong
Administrative controls	Strong	Strong	Medium	Strong
Reward and compensation	Weak	Strong	Strong	Weak

- Validation of H1 and H2
- Conditions of the development of sustainable mobility strategy in the studied Belgian city local governments:
 - The implementation of an adequate SMCS (pertinent, up-dated and adapted to environmental, social and economic specifics) according to the impact of institutional factors.

Conclusion

- The conceptual model is tested and have been approved on two Belgian local governments cases. In order to have generalized findings, it should be tested on other Belgian cities, countries and continents.
- Our conceptual model based on Malmi and Brown's framework, offers new research insights on more specific sustainability issues (energy, wastewater management, pollution, climate change, solid waste management, green building, air quality technology and smart green living).



Decisions
Solutions
Urban
Used
Citizens
Cities
Smart
Mobility
Apps
New
Region
Private
Critical
Real
Public
Living
WiFi
Use
Great
Life
Mind
Social
City
Do
Life
Efficient
Start
Human
Utilities
Digital
Actions