Towards a sustainable built environment in the Brussels-Capital Region

22 June 2022

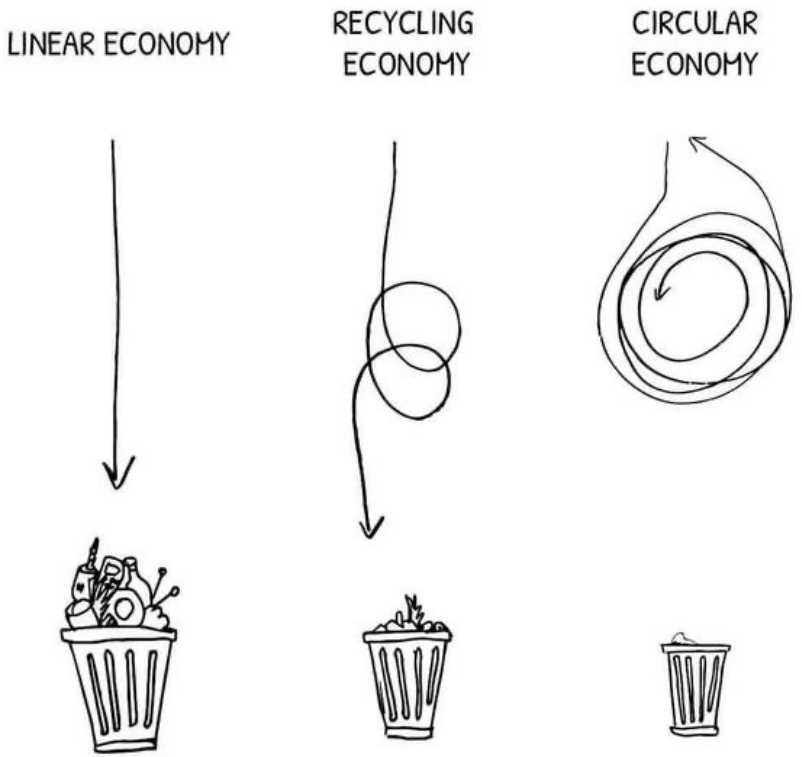
ROLE OF POLICY

Governments can play an important role on different levels:

- By providing a clear objective the market can rely on
- By preparing the regulation of tomorrow while supporting the market to get there
- By raising awareness and developing knowledge, along the different stakeholders of the value chain

Strategy for reducing the environmental impact of existing buildings in the Brussels-Capital Region by 2030 - 2050

Brussels-Capital Region's Program for a circular economy



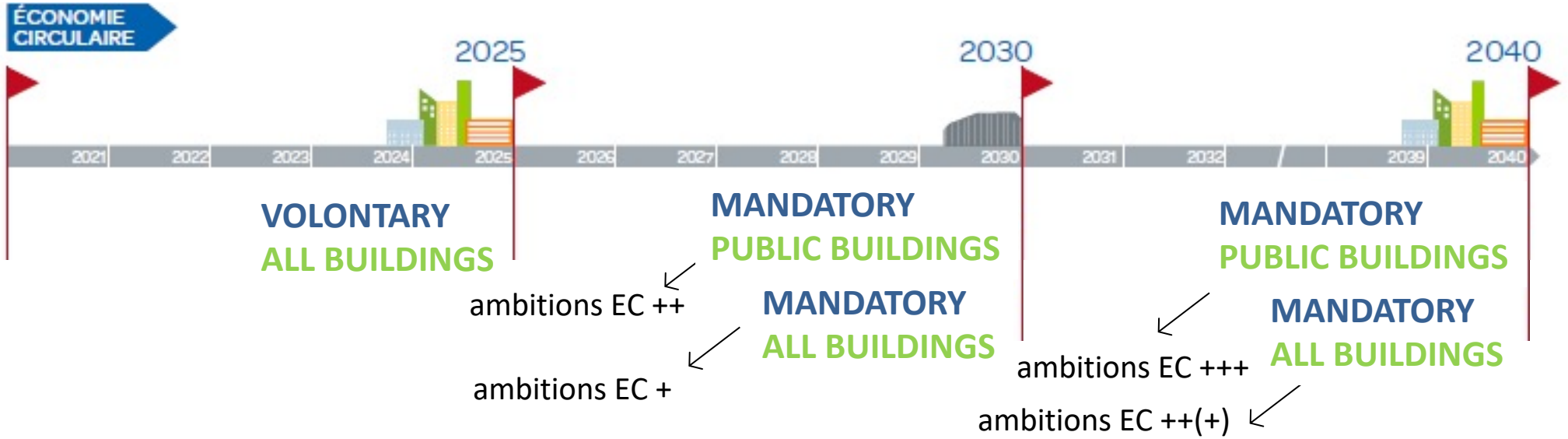
RENOLUTION

be circular

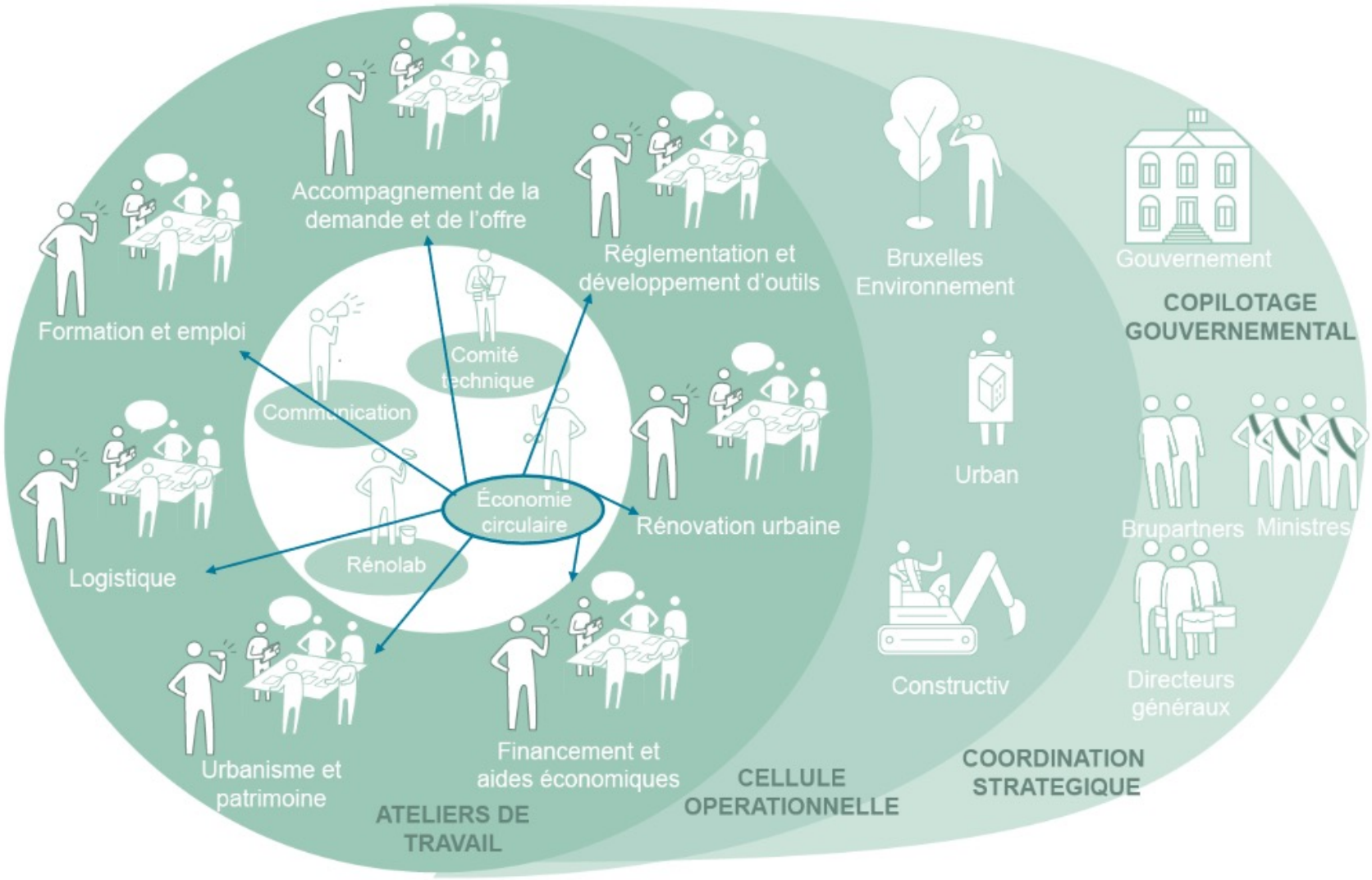
BRUSSELS-CAPITAL REGION'S PROGRAM FOR A CIRCULAR ECONOMY : ROAD MAP

MAINTAINING THE EXISTENT BUILDING STOCK	USE OF RECLAIMED MATERIALS	REVERSIBLE BUILDING DESIGN	LIFE CYCLE ANALYSIS

RENOLUTION – ADAPTING CIRCULAR ECONOMY POLICY OBJECTIVES



RENOLUTION - PUBLIC PRIVATE STAKEHOLDER ALLIANCE



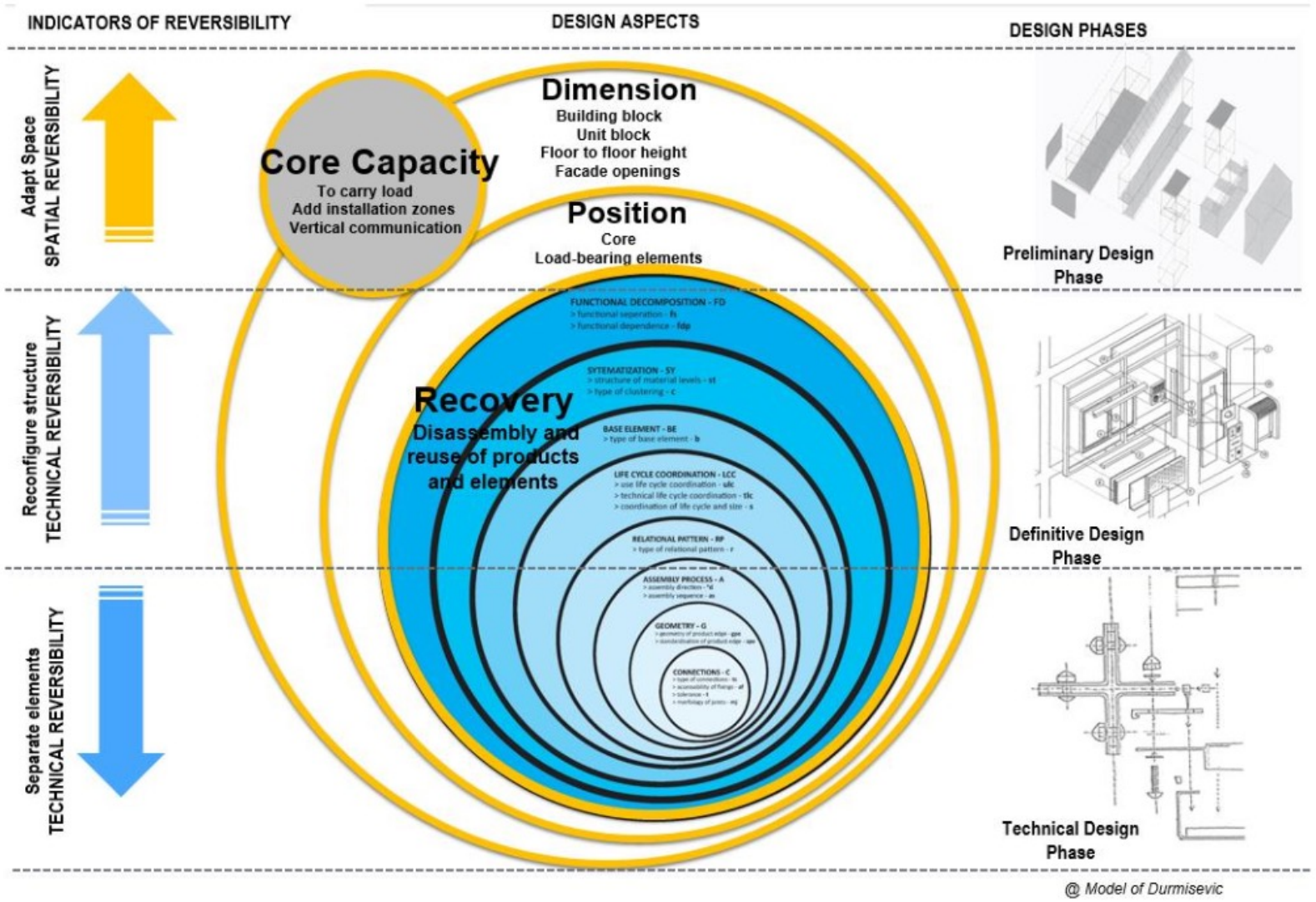
RENOLUTION – ACTION PLAN

Réglementer		Accompagner			Simplifier		Documenter, évaluer, innover		
CPEB 1	Référentiel bâtiment durable 2	Conseiller énergie 21	Facilitateur Copropriété 22	Facilitateur Bâtiment durable 20					
Stabilité loyers 4	Pouvoirs publics exemplaires 3	ESCO COE 5	Feuille de route 14	Guichet unique particuliers 13	Passeport logement 26	GT urbansistique interinstance 27	Rénolab 29	TOTEM 30	Outils conception circulaire 31
Financement européens 9	Fiscalité 6	Prêt Vert Bruxellois 8	Primes énergie 7	Soutenir auto-rénovation 18	Encourager citoyens 12	Soutiens communes 23	Soutenir coopératives et actions citoyennes 16	Outils conception durable 32	Accompagner déconstruction 33
Financer									
Soutenir chaleur renouvelable 10	Soutenir électricité renouvelable 11	Communication générale 25	Rénover stratégiquement 15	Sensibiliser l'occupant 17	Formations professionnelles 24	Aspect santé 19	Filière réemploi 34	Indicateurs 28	

REVERSIBLE BUILDING DESIGN

SPATIAL REVERSIBILITY

TECHNICAL REVERSIBILITY



REVERSIBLE BUILDING DESIGN protocol

Transformation capacity Tool

Reuse potential Tool

REVERSIBLE DESIGN - POLYCLINIC BRACOPS

CHECK-LIST REVERSIBLE BUILDING DESIGN

SPATIAL REVERSIBILITY

DESIGNING FOR LONGEVITY

OBJECTIVES

Describe here by means of **use scenarios**
- which flexibility in activities the building must be able to accommodate today (**adaptability of the plan layout, polyvalence of spaces**)
- and what activities the building must be able to accommodate in the future (**functional adaptability, expandability/contractability**)

Demonstrate in plan and in cut that these scenarios are possible for the aspects listed below. Monitor them throughout the project.

Demonstrate using plans and cross-sections that these scenarios are possible for the aspects listed below. Monitor them throughout the project.

Description of the project goals and requirements by the client:

Design approach and outline of the project by the design team:

proposal | preliminary design | final design | tender | provisional acceptance | final acceptance

STRATEGIES

1. VOLUMETRICS AND SPATIAL ORGANIZATION OF FUNCTIONS

strategies	priority (x)	application	achieved (x)
1.1 **Location and orientation** of the building volumes allow for a logical, spatial organization of the desired functions for each use scenario	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
the spatial organization of functions can be tested in terms of: *- thermal zoning: definition of the conditioned building volume, position and clustering of functions according to their heating/cooling demands* *- access to daylight: orientation, ratio between depth and height of spaces* *- access to outside air: natural ventilation possibilities (single sided, two sided, stack ventilation); restrictions with regard to outside air quality, noise pressure, etc.* *overcapacity (excess space) is avoided in any scenario*	*+info (FR):* Dimensions du volume bâti Dimensions des unités du bâtiment		
1.2 The **depth of the building volumes** allows for a logical, spatial organization of the desired functions for each use scenario	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
building depths, atrium depths and space depths in relation to the intended space use, daylight availability, ...	*+info (FR):* Profondeur du volume bâti Dimensions des baies par rapport à la lumière naturelle Hauteur sous-plafond		

CHECK-LIST REVERSIBLE BUILDING DESIGN

TECHNICAL REVERSIBILITY

DESIGNING FOR DISASSEMBLY AND FUTURE REUSE

OBJECTIVES

The client and the design team define for **which elements, layers or components** in the building the technical reversibility is optimized and the **type of optimization** that is envisaged.
- type of disassembly: disassembly of elements, disassembly of components
- type of accessibility: for maintenance, for repair, for disassembly and relocation, for disassembly and adaptability, ...
- type of reuse: direct reuse, reuse by minor modification, reuse by remanufacturing, high-value recycling, ...

Description of the project goals and requirements by the client:

Design approach and outline of the project by the design team:

proposal | preliminary design | final design | tender | provisional acceptance | final acceptance

STRATEGIES - ELEMENT (CONNECTION BETWEEN LAYERS/COMPONENTS)

Describe the element here: e.g. ground floor slab

1. INDEPENDENCE

strategies	priority (x)	application	achieved (x)
1.1 Layers/components with different functions or lifespans are **independent** of each other	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
1.2 The **order of assembly** of the layers/components is such that the parts with the shortest lifespan remain the most easily accessible, replaceable and modifiable	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
1.3 The layers/components can be removed, replaced and modified without disturbing the **integrity and performance** of adjacent layers/components	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
1.4 The **number of layers/components** with which the layer/component is connected is limited	☐	☐	☐ ☐ ☐ ☐ ☐ ☐

2. REVERSIBILITY OF CONNECTIONS

strategies	priority (x)	application	achieved (x)
2.1 The connections between layers/components are **reversible** or reversible with minor damage	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
2.2 The connections are not formed by **containment**	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
2.3 The connections are easily **accessible**	☐	☐	☐ ☐ ☐ ☐ ☐ ☐
2.4 Disassembly of the connections is **quick and easy**	☐	☐	☐ ☐ ☐ ☐ ☐ ☐

3. SIMPLICITY AND STANDARDISATION

to evaluate, this block of strategies can be copied and completed

CHECK-LIST REVERSIBLE BUILDING DESIGN

GREEN
PUBLIC
PROCUREMENT

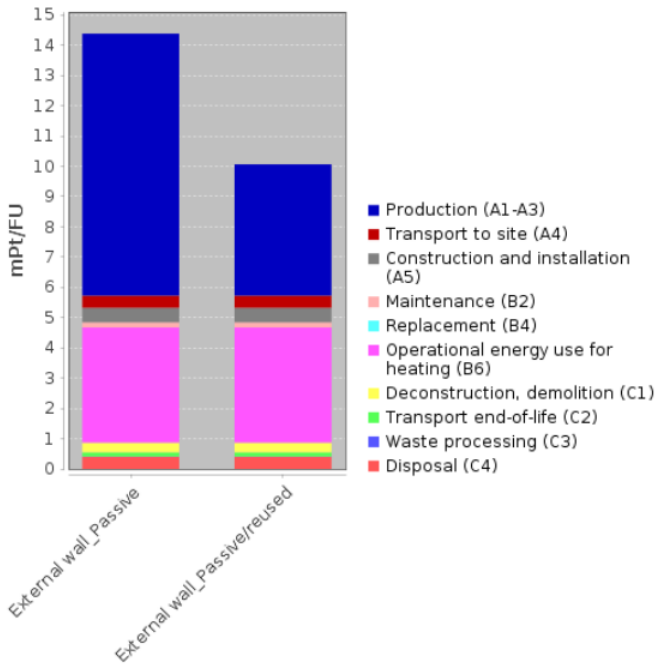
REGIONAL
PLANNING
REGULATION

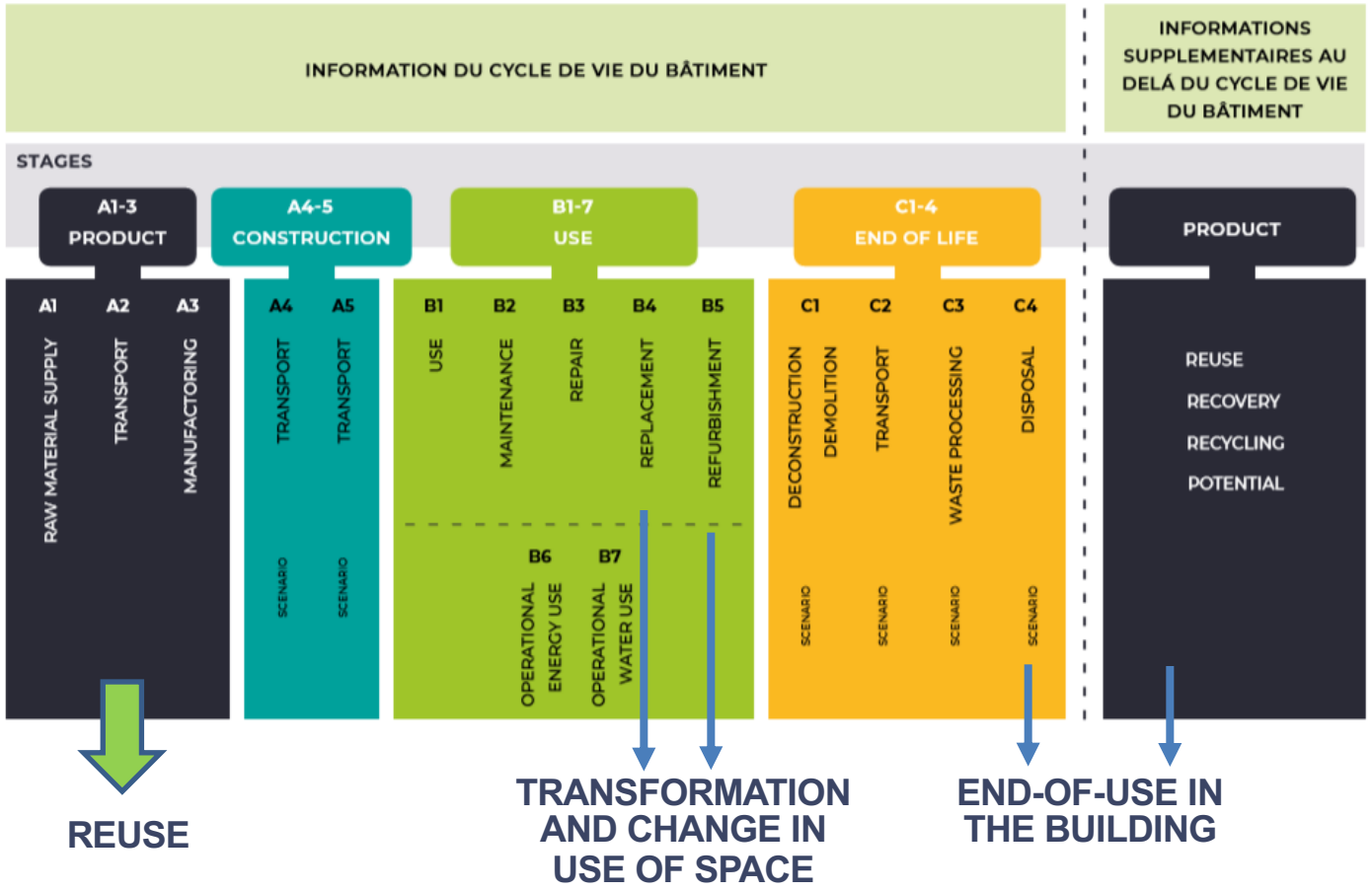
ONGOING STUDIES

LINKING TOTEM AND RPT

Impact per life cycle stage

In this graph, the impact of the elements is given per life cycle stage. This evaluat
It allows the user to address a specific life cycle stage.

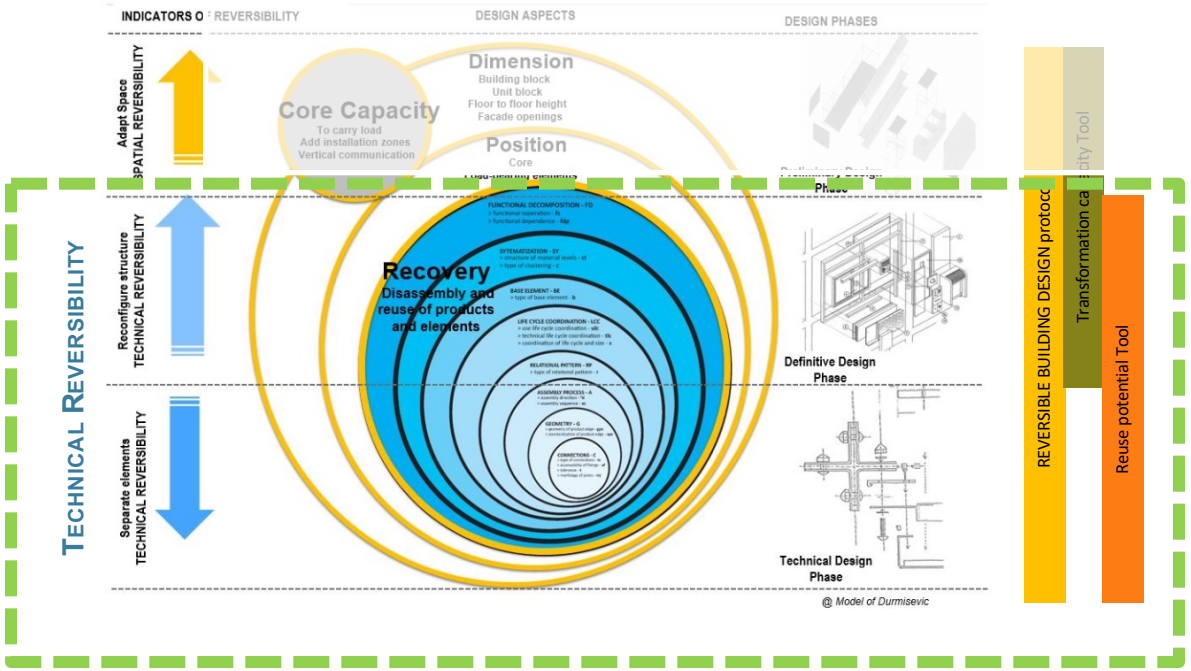


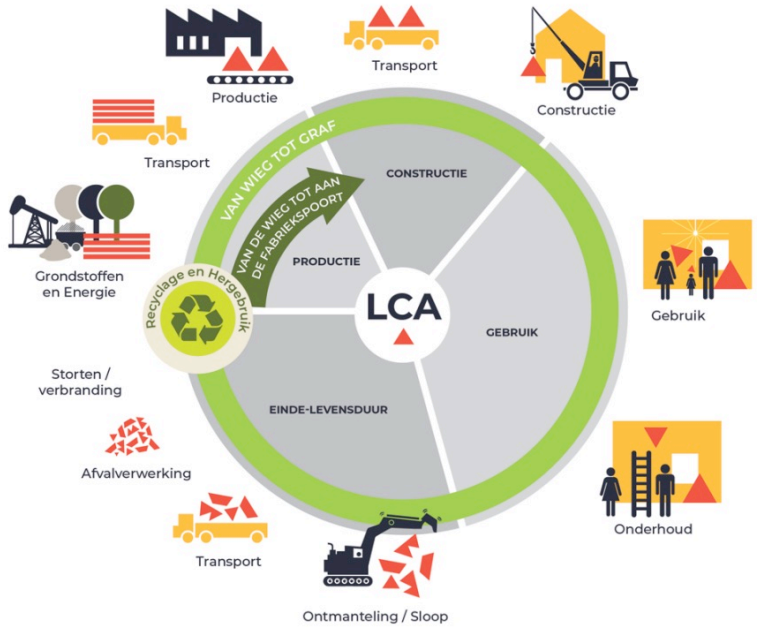


Source: BAMB

ONGOING STUDIES

LINKING TOTEM AND RPT





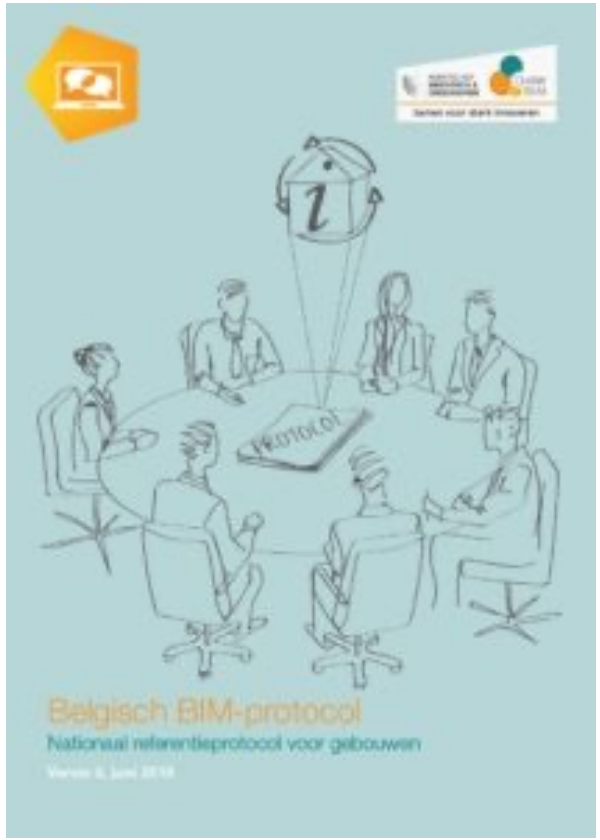
- Element and building level
- 8 indicators
- Aggregation towards 1 unique score

- Element and building level
- 18 indicators
- Aggregation towards 1 unique score

Source: BAMB

ONGOING STUDIES

ANALYSIS AND METHODOLOGICAL PROPOSALS TO ALLOW A GOOD ARTICULATION BETWEEN THE BIM AND THE REUSE POTENTIAL TOOL



- Developing a Reversible BIM Protocol
- Developing a simplified Reuse Potential assessment methodology

Source: BAMB

TOOLS SUPPORTING CIRCULAR ECONOMY POLICIES

guidance

Inventory for reclaimed materials

checklist
Reversible building design

…

vadémecum
bâtiment circulaire

assessment

LCA

…

reuse
potential tool

Source: BAMB

Caroline Henrotay
Brussels Environment
chenrotay@leefmilieu.brussels