

# NEXTSTATION

MARRAKECH 2015



## 5<sup>TH</sup> INTERNATIONAL CONFERENCE ON RAILWAY STATIONS



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# Next station must be low carbon

**yc**esignfoundation

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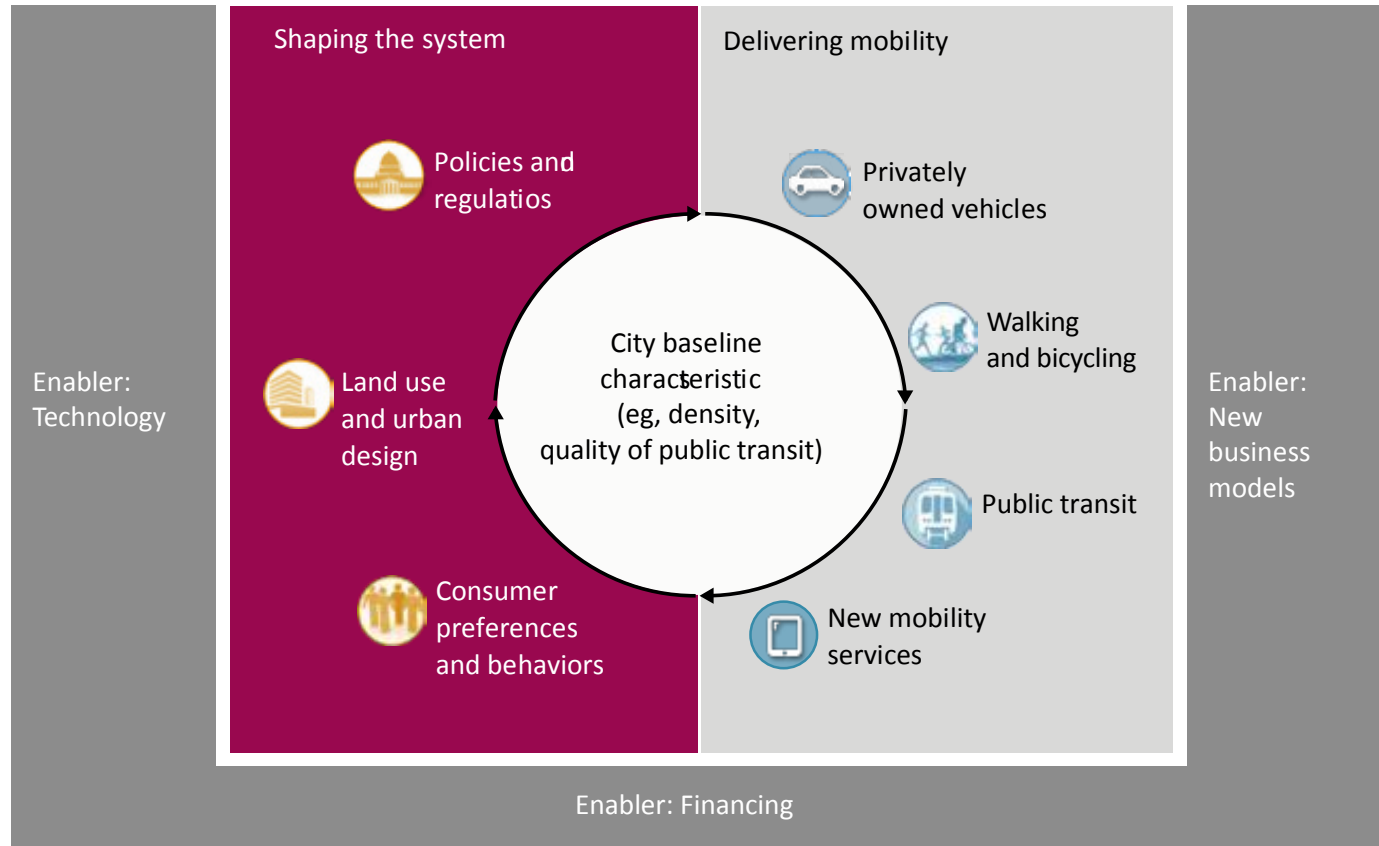
Yellow design Foundation

Belgium

3-B



## A framework for understanding urban mobility.



Source: McKinsey analysis





**reduce the CO2 and environmental footprint** of citizen's mobility by “modal shift” from private automotive mode to soft and public transportation modes.

**mitigate, as far as possible, the emissions** from successive phases of stations life- cycle; from building to operation, to refurbishment and to decommissioning.



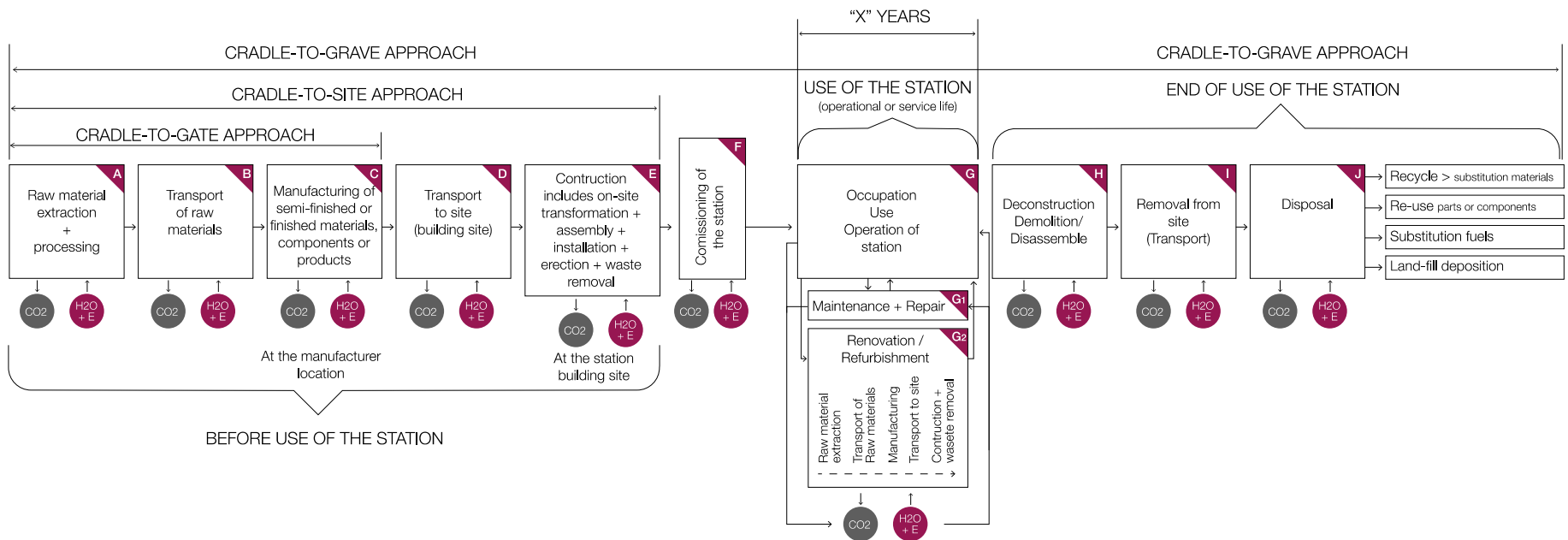


**showcases of the best practices available** for the mitigation of the CO2 footprint in the building and mobility sectors - viable and reliable design solutions only.

**gear up** the development of skills within the countries' or regions' sectors involved in design, construction and facility operations, more educational role of the station in society,



# CRADLE - TO - GRAVE APPROACH





- **embodied energy** (the energy spent by the manufacturing, application and preservation of the building materials used to materialize the station premises),
- **operational energy** (the energy directly and daily used to operate the station),





Promote passive climatisation, when possible.

- following the principles of **bio-climatic architecture**,
- Both in interior & exterior design insulation levels, air renovation, and heat gains  
+
- sun exposure, rain, snow and wind require **integrated approach**.







**ICT applications, equipments and tools consume energy when**

- **in use** by people + while **on stand-by** (keeping ready for next use), no matter how “smart” the equipments and their networks are skyrocketing year after year in that part of the world that is “connected” (IEA 2014).



## Contract documents

design, construction and operation of station/transport line.

### if Changes, also:

- Underscore importance of **controlling carbon emissions**;
- Detail senior management's principles by implementing a **life cycle assessment** of carbon emissions;
- **Define the carbon footprint's** embodied and operational content;
- **Provide direction and allocating responsibility** for undertaking necessary assessments during design, construction and operations;
- **Approve of targets and achievements** and
- Certify achievements in relation to payment.





## This could demand

- sufficient nb **energy meters to monitor** power consumption of each major station operational element
- stating that a **carbon assessment** shall be a part of the **standard design process** for the facility.
- the manual could advise a **standard** of the carbon emission assessment or advise a **specific procedure** to be followed. If no standard or procedure, then manual shall state a requirement for **designer to propose standard and procedure for approval** by the employer (engineer).





The life cycle carbon assessment shall include **embodied carbon** (that involved in the cradle to station) and **operational carbon** significantly larger than the embodied carbon content of the station.





### Particular Specification for the Station stating:

- the initial carbon budget for station, the percentage carbon reduction expected during the construction phase, and
- the payment conditions for achieving the contractual requirement.
- Numbers and placement of the electricity meters





## Particular Specification of Electrical and Mechanical Equipment

- A statement of the carbon footprint for each of the major electrical and mechanical pieces of plant for the station. (escalator, lift, cabling, air conditioner equipment, transformers etc.
- Depending on resources available, the employer will need to decide the degree of auditing of the provided statements.



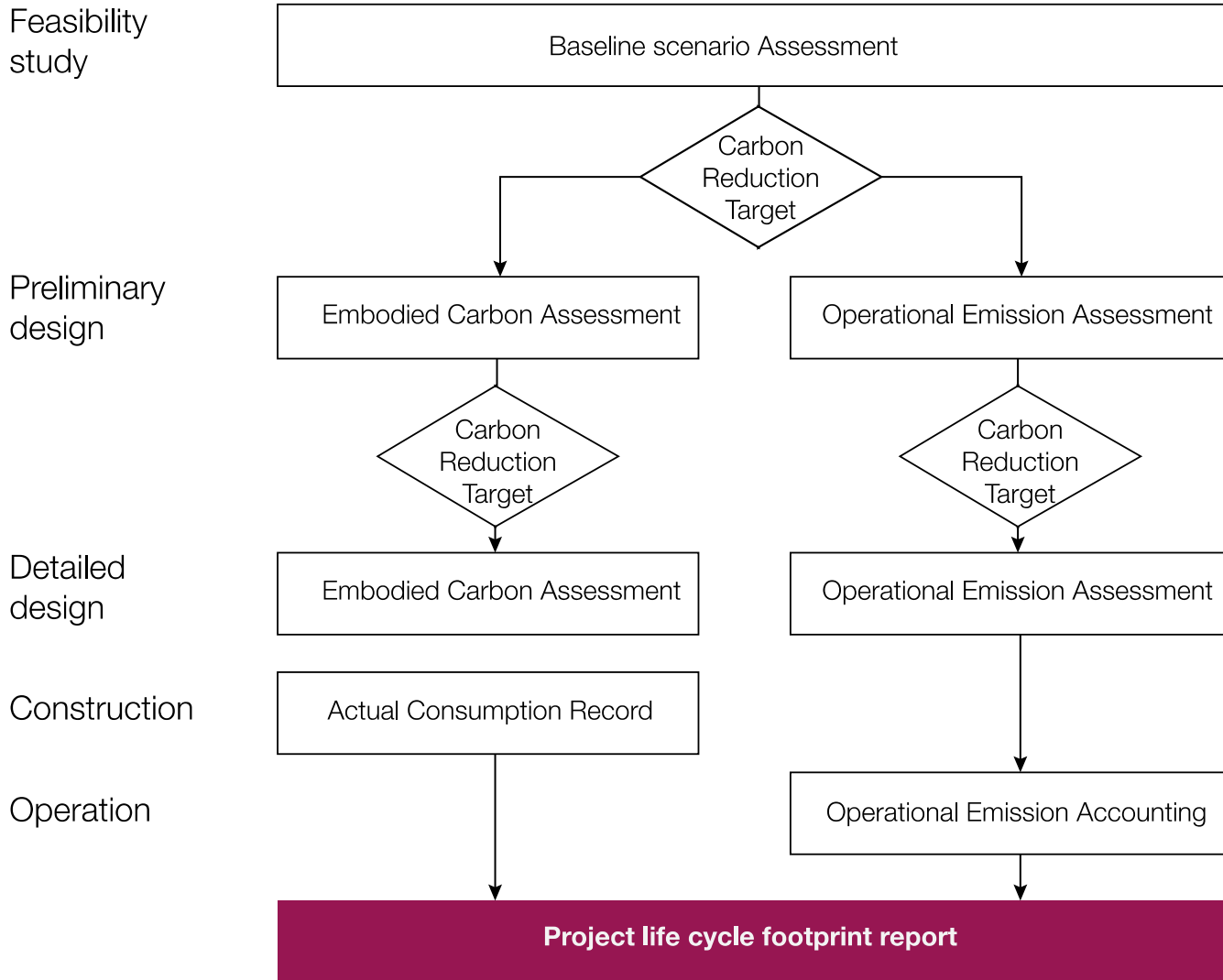


## Procedure to incorporate life cycle carbon assessment into a station delivery

- a number of “check-points” to establish & modify life-cycle assessment based on the latest project design and details
- reduction targets set by Senior Management
- specify Project Director or their delegate has overall responsibility of delivering the project carbon emissions target.
- The procedure is schematically represented in



Project stage	Embodied Carbon	Operational Emission
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**THANK YOU      MERCI**

