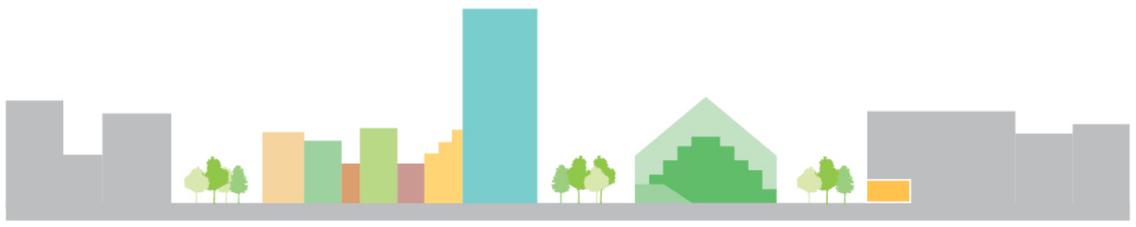
MVRDV **Carbon** *Guidelines*

At MVRDV, our mission is both practical and exploratory as we seek ways to address and alleviate the urgent climate challenges. The building industry is responsible for 39% of greenhouse gas emissions. As designers of the built environment, we recognize our crucial role in providing impactful responses to the climate crisis.

The road to zero carbon is a complex one. Challenges and opportunities vary per typology, brief, regulation and country. However, a targeted application of one or more carbon reduction strategies can lead to lowering emissions.

When it comes to decarbonizing our projects, we can have the most impact early on in the process. The "MVRDV Carbon Guidelines" help to inspire and target strategies for active carbon reduction in early design stages. They are not sequential steps or rules; rather, you can combine one or several of these guidelines into a customized strategy for your project.

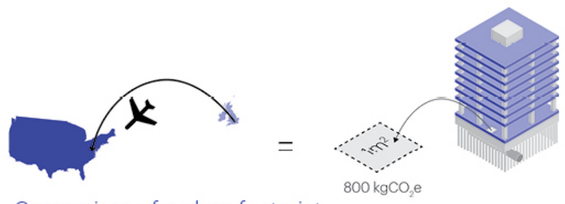


Small / Medium Scale
- Bio-based materials
- Alternative construction
- Re-use

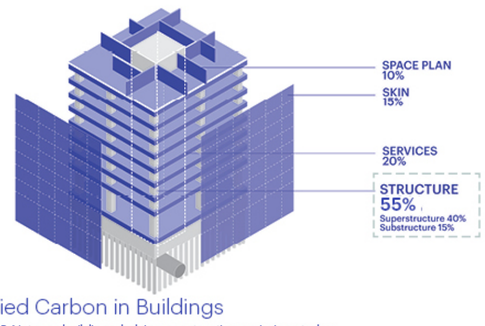
Large Scale
- Reduce structure
- Build light
- Future adaptability

Public
- Material showcase
- Programmatic Synergies

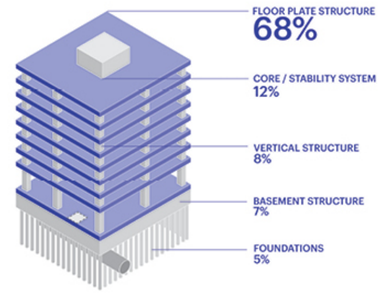
Interiors
- Demountable elements
- Recycled / fast growing bio-based materials



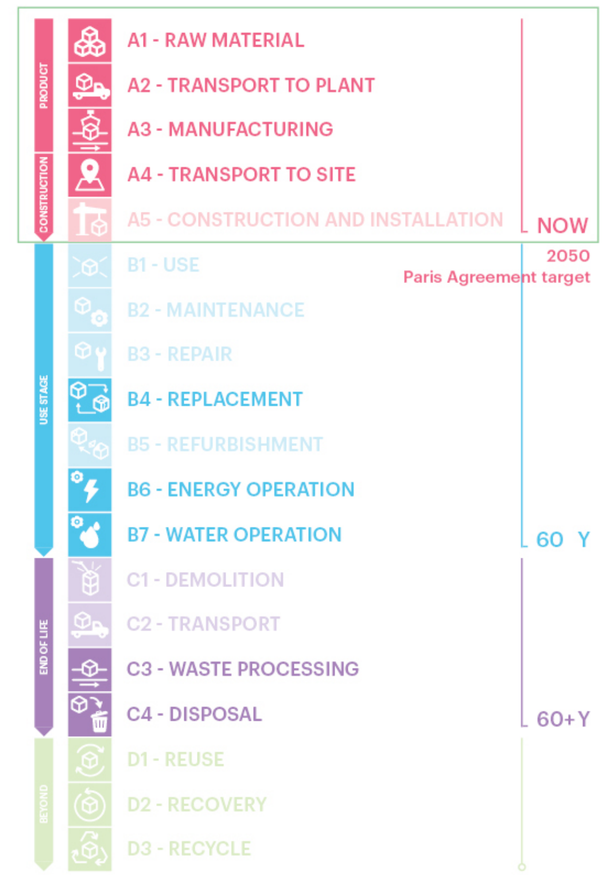
Comparison of carbon footprint



Embodied Carbon in Buildings
Source: ARUP, Net-zero buildings: halving construction emissions today



Embodied Carbon in the Structure: detailing the 55%
Source: ARUP, Net-zero buildings: halving construction emissions today



Embodied carbon must be considered throughout the design process, with a particular focus on the Life Cycle Assessment (LCA) modules A1 - A3.

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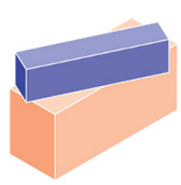
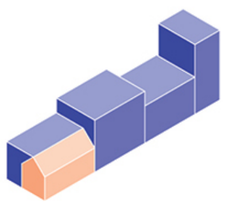
Do not build new!

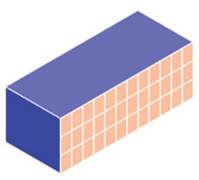
1 Integrate what is already on site



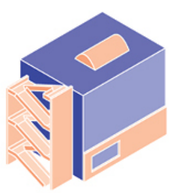
Add



Integrate

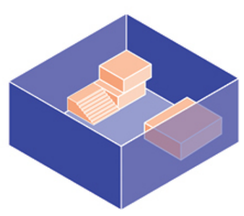


Use existing Materials



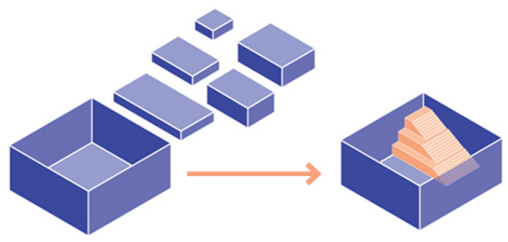
Re-Use Structures

2 Build Less & Flexible Use

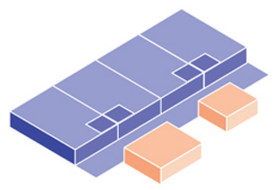


Activate underused spaces like atriums, transit spaces, semi public spaces

Flexible rooms for more intense use, change use during the day



Combine and merge programs, instead of building individual rooms



Shared facilities

3 Avoid Undergrounds

Undergound structures are material intensive and carbon heavy. Building in groundwater requires more material.

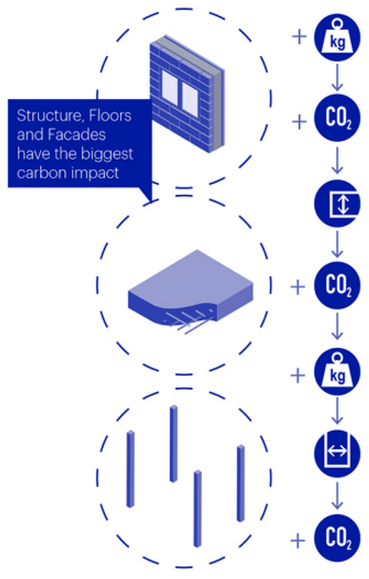
Building in the topography is very material intensive. Excavated soil is ending up unused in landfills

4 Rethink Parking

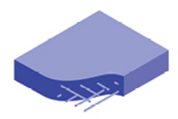
Underground parking is material intensive and difficult for future re-use.

Argue for less parking spots in city locations

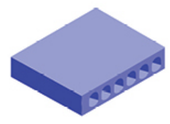
5 Reduce Weight



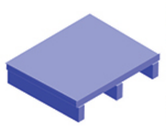
6 Optimize Floors



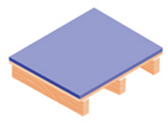
Reinforced concrete slab



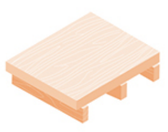
Hollow core slab



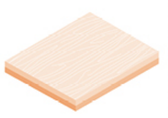
Ribbed slab



Timber hybrid slab

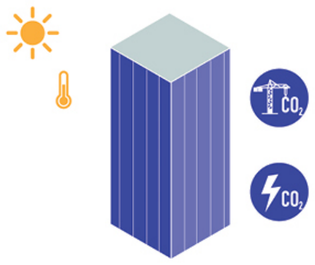


Timber ribbed slab

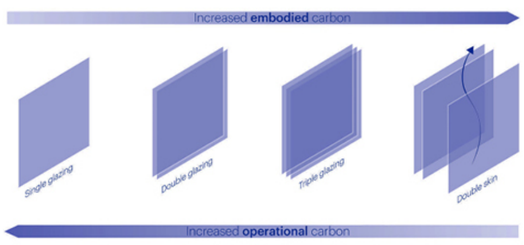


Timber slab (e.g. CLT)

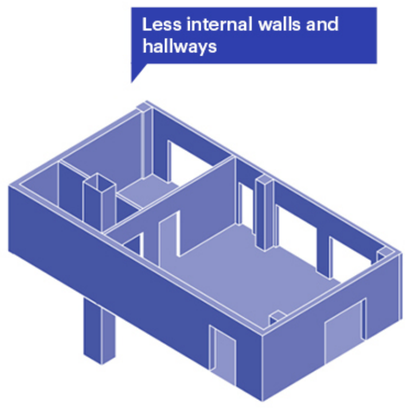
7 Rethink Openings



Glass facade with very high amount of embodied carbon
High cooling demand, therefore high amount of operational carbon

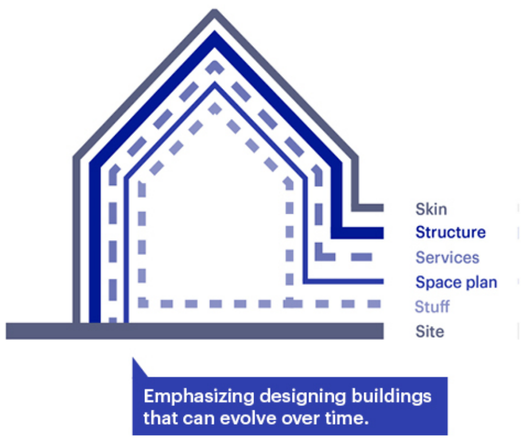


8 Build Simple & Clean

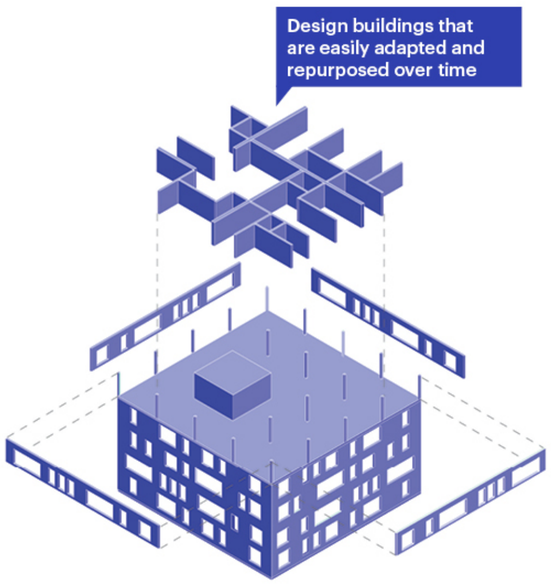


Clean and reduced floorplans, less hallways, straight shafts...

9 Future Flexibility



10 Design for Reusability



MVRDVNEXT