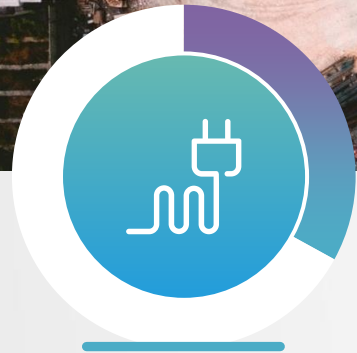




Circular principles in Green Building & Construction business

Phan Thu Hang
Chair, VGBC

THE BUILT ENVIRONMENT HAS A HUGE IMPACT on the environment



33%

OF ENERGY
CONSUMPTION



39%

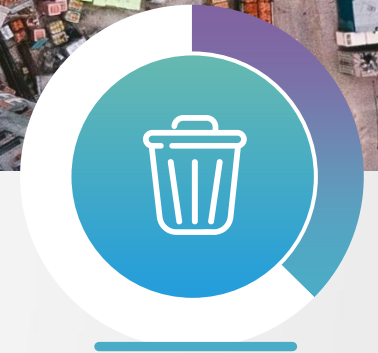
OF GREENHOUSE GAS
EMISSIONS



40%

OF RAW MATERIAL
CONSUMPTION

42.4bn tonnes per annual



40%

OF SOLID WASTE
STREAMS*

By **2050**, global population will increase 27% to **9.8bn**

and global floor area will increase by **100%**



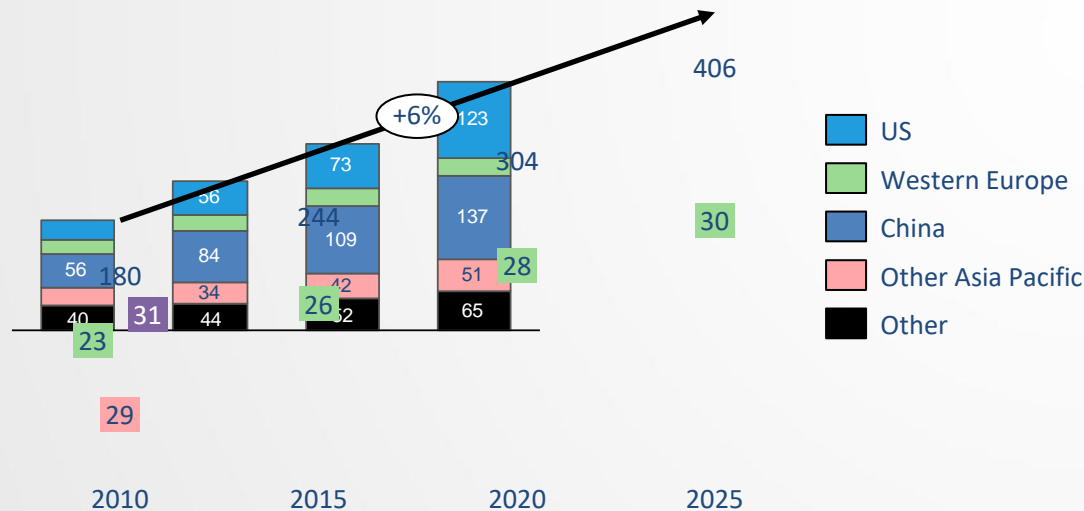
VGBC Vietnam Green
Building Council
Hội đồng Công trình xanh Việt Nam

Material Scarcity : Sand Is The Most Consumed Resource On Earth After Freshwater – And The Right Qualities More And More Difficult To Source

Only 20 years global supply of easy-to-access high-purity silica sand remaining

- Increasingly expensive to access
- ...while demand increases

WORLD INDUSTRIAL SILICA SAND DEMAND
(million tons)



Sand in construction

- **Building sector : 75% of global sand consumption**
- **Increasing sustainability issues with extraction:** Lack of regulation and increasing illegal mining to the detriment of local ecosystems

FINITE

Imperial College
London

- Biodegradable construction material made from **desert sand**
- less than half the CO2 footprint than concrete

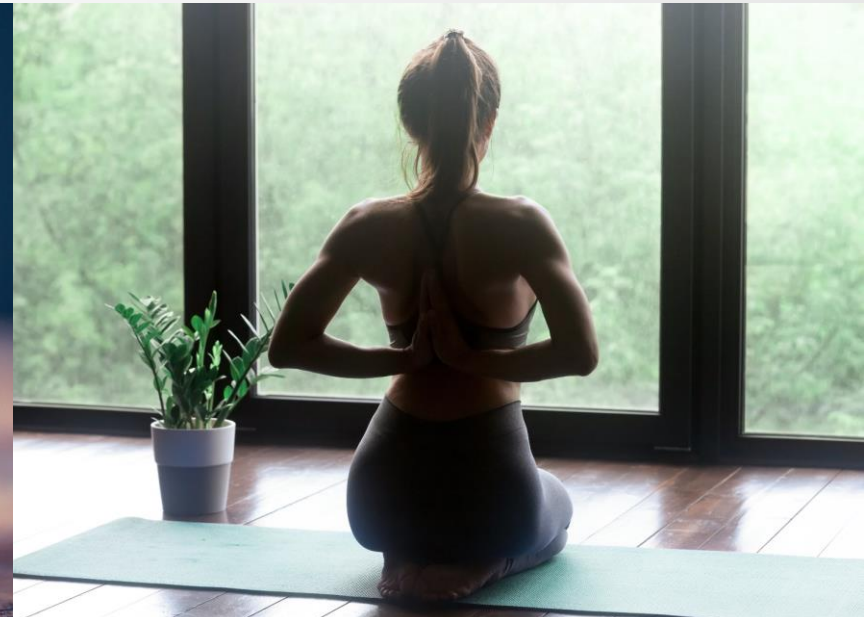




EARTH OVER SHOOT DAY

Earth Overshoot Day marks the date when humanity has exhausted nature's budget for the year

3 major developments on the Construction markets...



**TOWARDS ZERO
CARBON**



**CIRCULAR
ECONOMY**



**HEALTH &
WELLBEING**



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Trendsetters (a few names...)



From a linear to a circular economy



CIRCULAR ECONOMY



- extending product lifetimes
- reducing material losses
- recirculating materials and products
- preventing downcycling
- substituting CO₂-intensive materials with those with lower emissions.

CIRCULARITY A PART OF THE SOLUTION FOR
CARBON EMISSIONS & BIODIVERSITY



Recycled content

Ressource scarcity

**Lower energy
consuming process**

**Space for
Landfill use**

Reutilisation

From a linear to a circular economy

CIRCULARITY AT STAGES



How To ACT In Building & Construction ?



DESIGN & CONSTRUCTION

Building design : adaptability,
easiness of dismantling, modularity...

Construction waste : reduction,
pre-fab, 3D printing



USAGE

Extended building life time

Repair and maintenance

Reversible and modular

Reorientation of the usages
(sharing, leasing)



DECONSTRUCTION

Building as a « material bank » :
material passport, transparency,
traceability

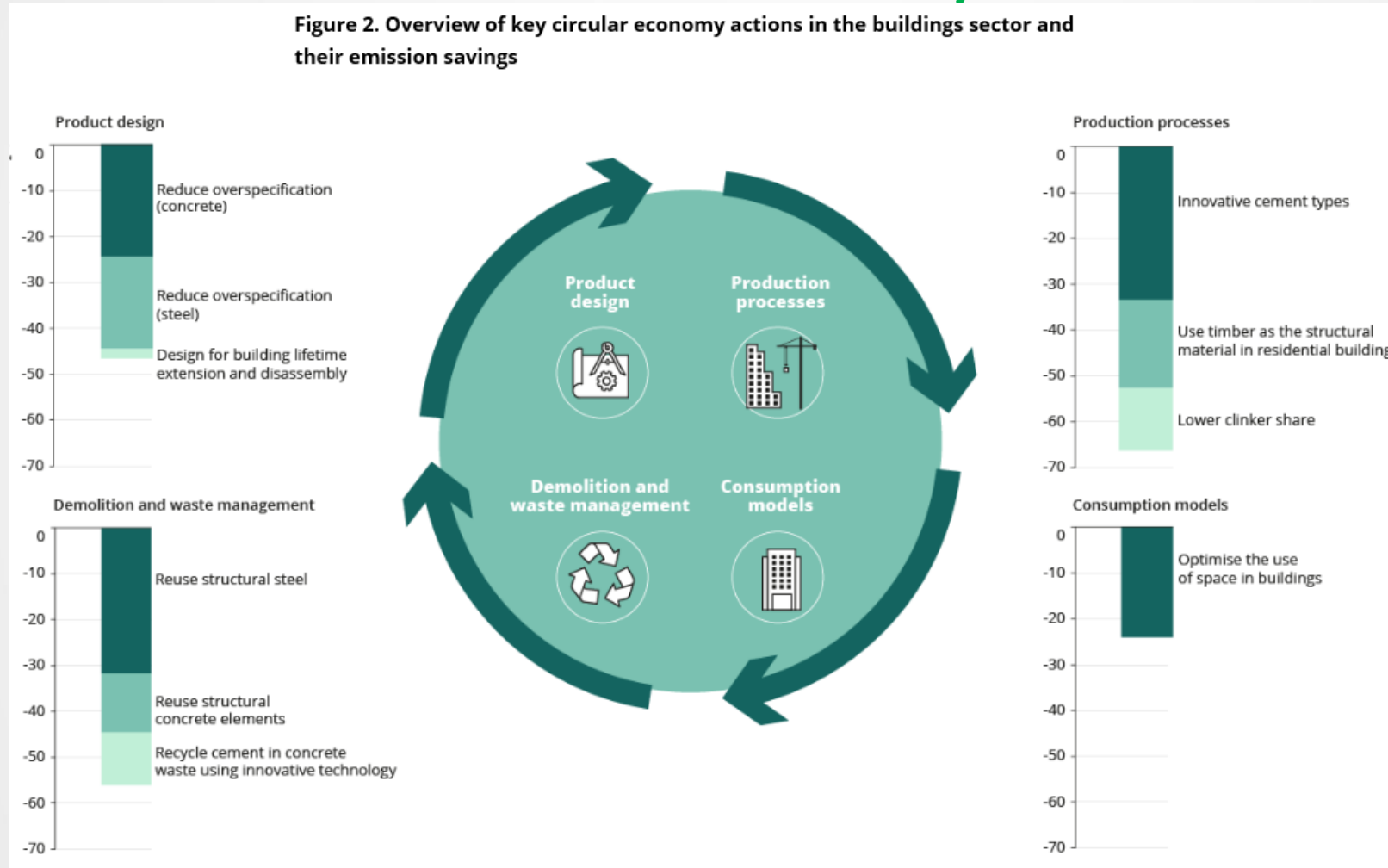
**Deconstruction versus
demolition**

Early sorting

Recycling / reuse



Cutting greenhouse gas emissions through circular economy



<https://www.eea.europa.eu/themes/climate/cutting-greenhouse-gas-emissions-through/cutting-greenhouse-gas-emissions-through>



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Towards buildings as materials bank

EXAMPLES



ITALY

Minimum % recycled content in materials and minimum % recyclable materials in public construction work (decree on Green Public Procurement of construction works -2016)



FRANCE

France roadmap and regulation project on circular economy with extended responsibility for the producers of building materials



EUROPE

- Circular Economy package
- Waste framework directive
- LEVEL(s) macro-objective: Resource-efficient and circular material life cycles
- Plastic packaging focus



From a linear to a circular economy

SEIZE A BUSINESS OPPORTUNITY TO THIS TREND...

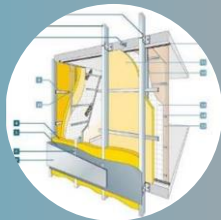


**Waste
in landfill**

FOR PRODUCTS & SERVICES

DESIGN & ECO- CONCEPTION

LIGHTWEIGHT
PRODUCTS
& SYSTEMS



SUPPLY CHAIN & INDUSTRY

RECYCLING
SOLUTIONS
& INCREASING
RECYCLED
CONTENT



ALTERNATIVE
RAW
MATERIALS



PACKAGING
(RECYCLABLE,
RECYCLED,
BIOSOURCED)



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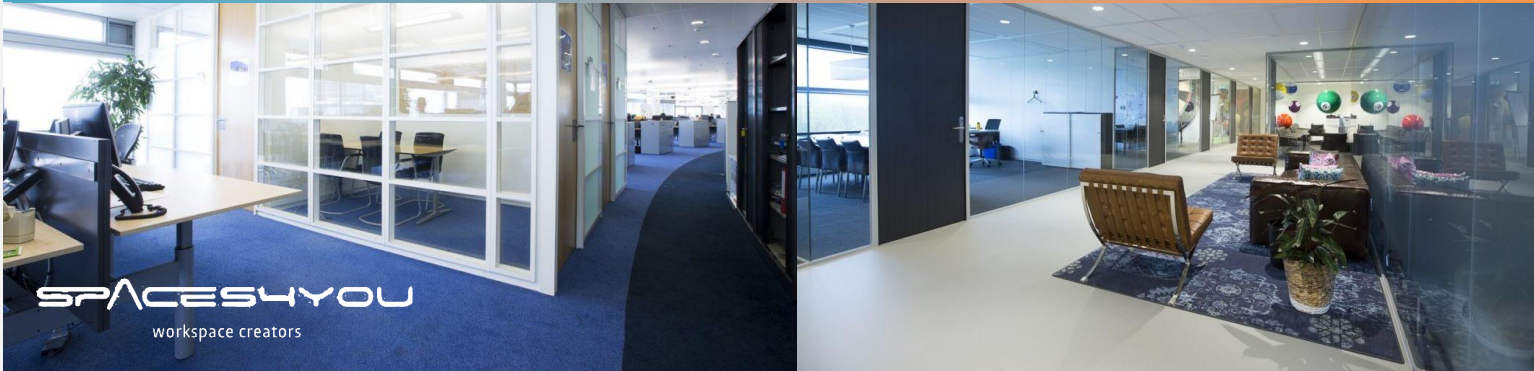
From a linear to a circular economy

NEW BUSINESS MODELS

PRODUCT AS A SERVICE



REUSE



MARKET PLACES

FRANCE



ENGLAND



USA



BELGIUM

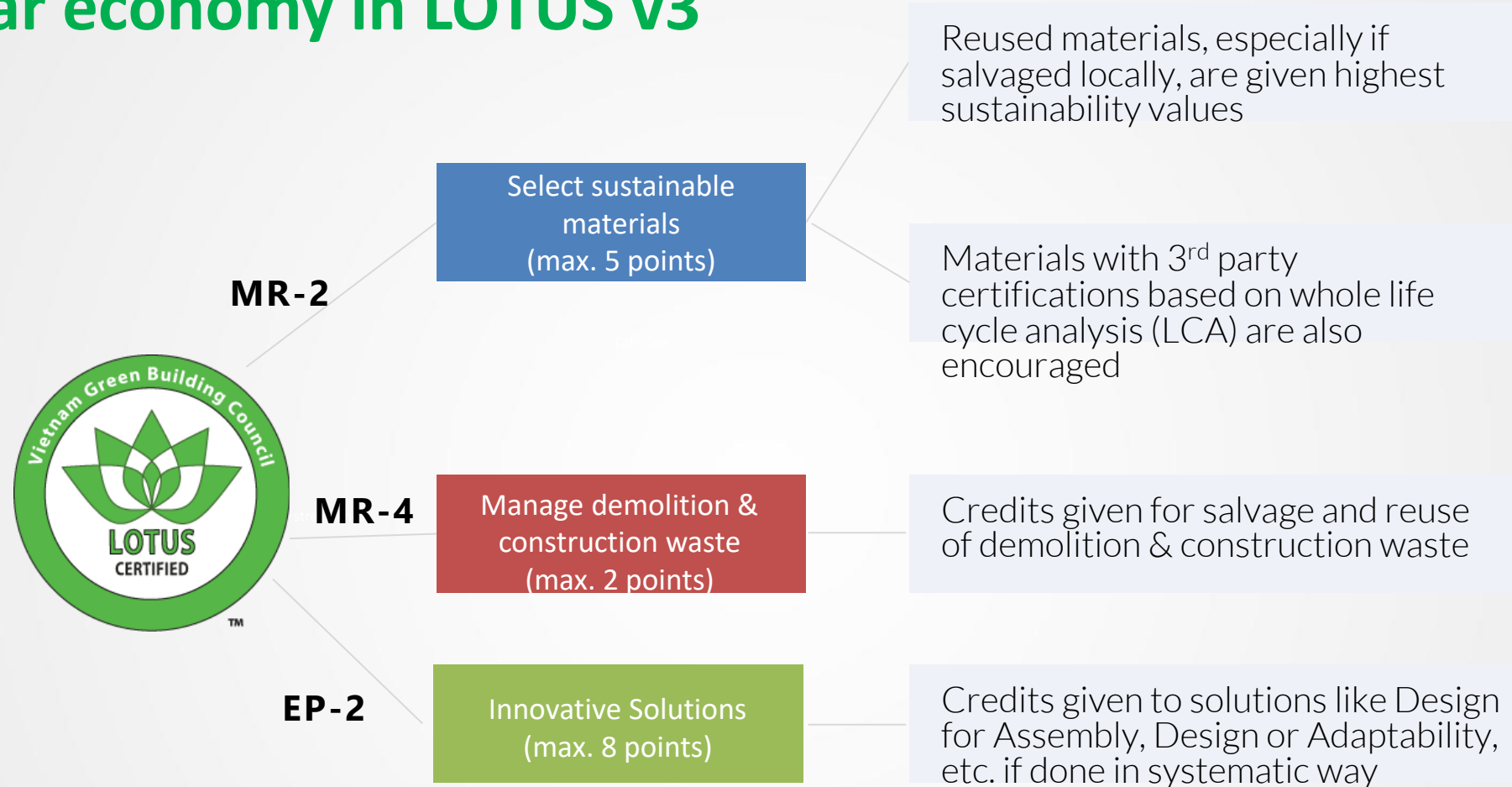


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OPPORTUNITIES AND CHALLENGES ACROSS A CIRCULAR VALUE CHAIN



Circular economy in LOTUS v3



In A Nutshell: 3 Major Developments Shaping The Construction Market



TOWARDS ZERO CARBON



CIRCULAR ECONOMY



HEALTH & WELLBEING

Low operational carbon

~~Low~~ embodied carbon

Recyclable or reusable
construction products,
Products with a **high(er)**
recycled or **renewable**
content

Products & systems
easy to repair & to
dismantle

Products containing
no hazardous substances

Push for **healthy**
& **comfortable** buildings



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THANK YOU



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