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Australian Sustainable Built Environment Council | ASBEC

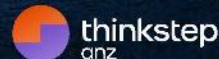


# EMBODIED CARBON EMISSIONS IN AUSTRALIA'S BUILT ENVIRONMENT

ISSUES PAPER  
PRODUCED BY:



Australian Government  
Department of Climate Change, Energy,  
the Environment and Water



# asbec

## AUSTRALIAN SUSTAINABLE BUILT ENVIRONMENT COUNCIL



# THE PROJECT



Figure 1. GBCA and thinkstep-anz (2021): Embodied Carbon and Embodied Energy in Australia's Buildings.



Scaling and deepening **NABERS' work**



Supporting the **supply chain** to deliver better products and services

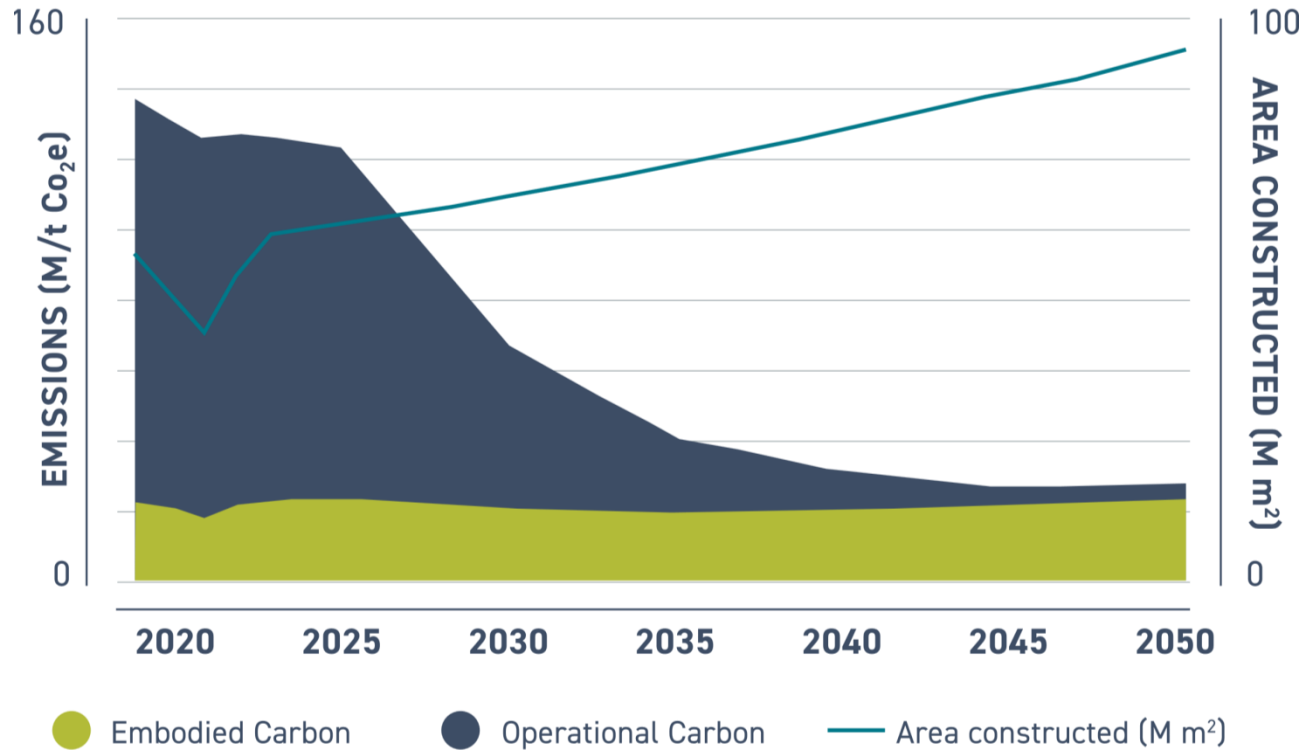


Supporting the **value chain** to deliver better design and construction outcomes



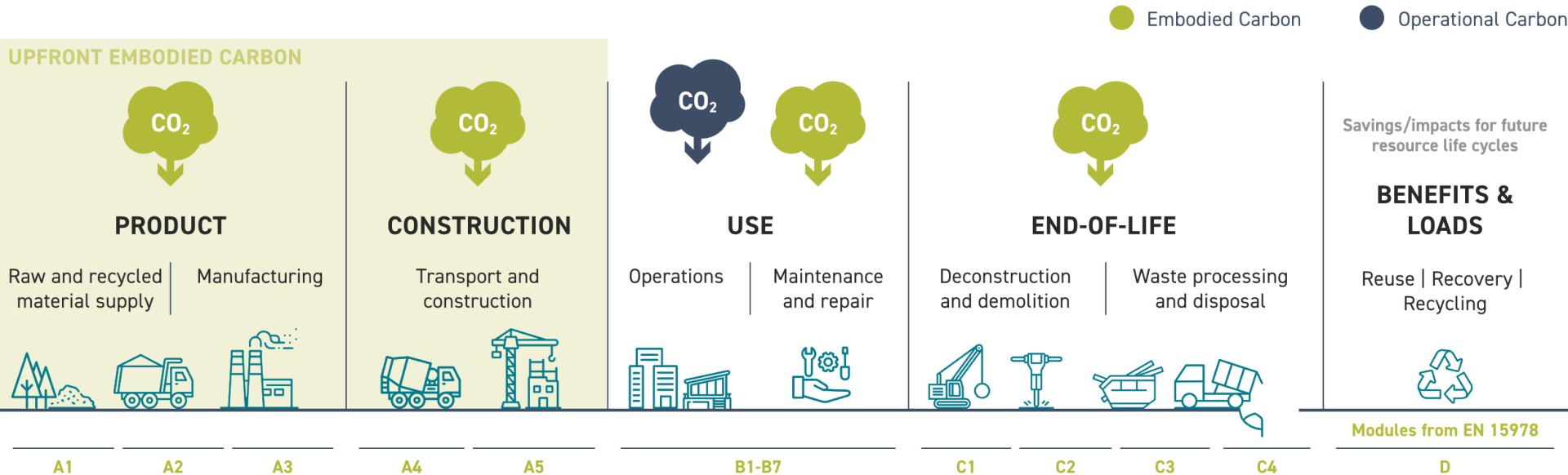
Adapted for the **needs of different segments and sectors**

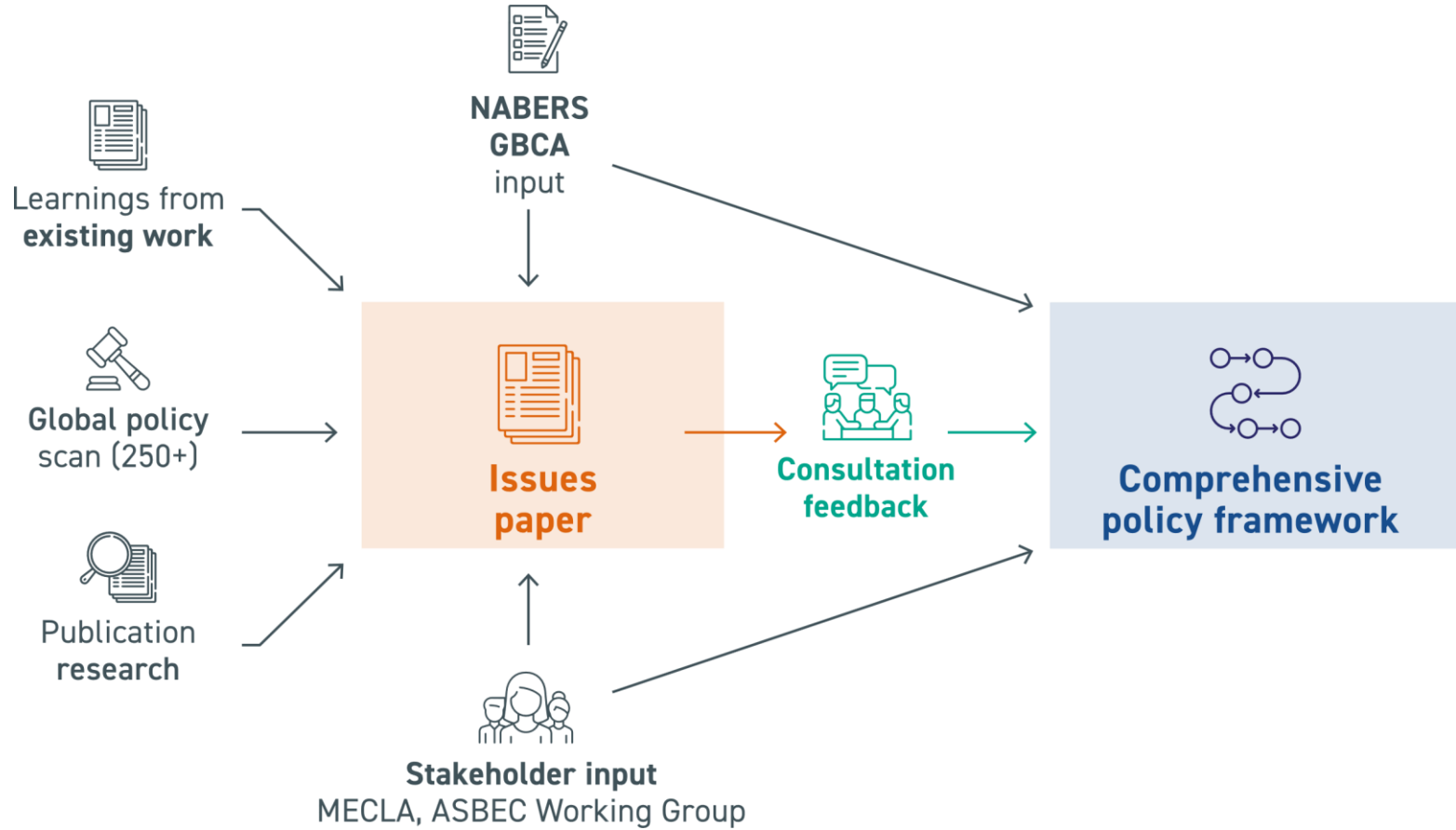
# BUILDING EMISSIONS IN AUSTRALIA



# CARBON IN THE ASSET LIFECYCLE

The focus of the Issues Paper is **upfront embodied carbon (A1-A5)**.  
This is aligned with the scope of the NABERS Embodied Carbon measurement methodology.







# 250

250 national, state and city regulations, policies and action plans from over 20 countries, including 104 regulatory instruments were reviewed.



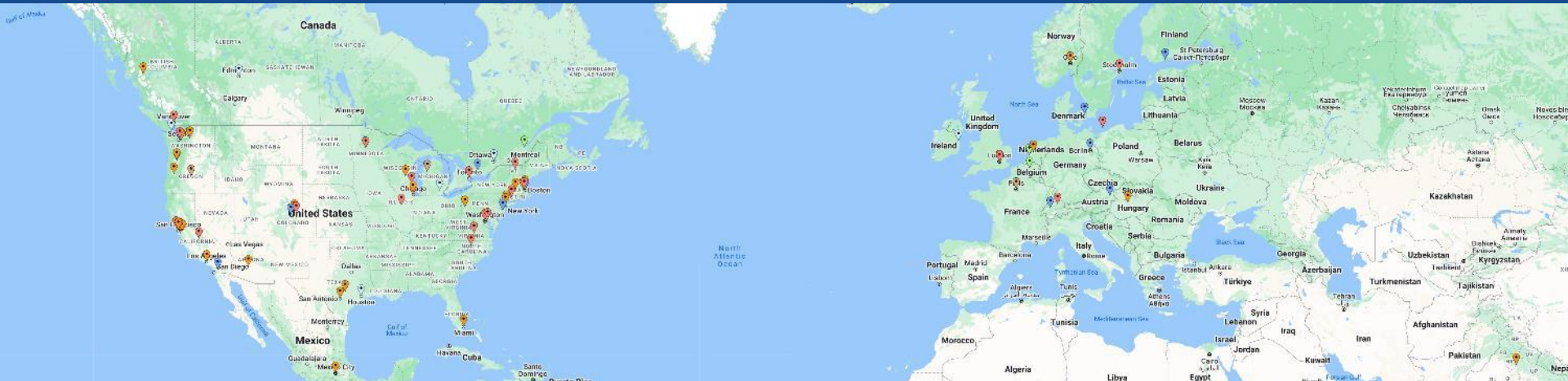
# 34

34 sources were researched using a defined parameter set to extract critical information to inform Australia's directions for government and industry.

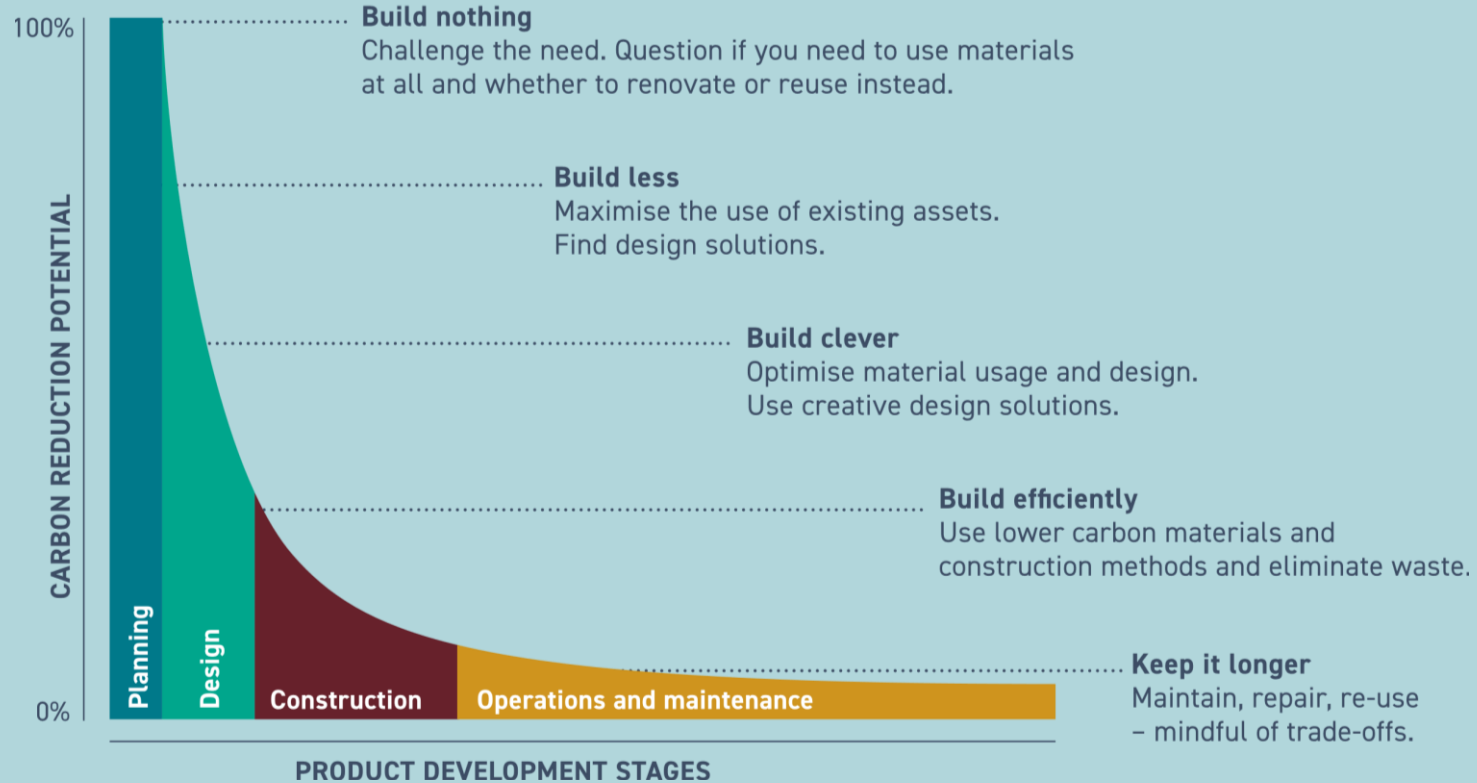


# 30

30 leading policy sources from 11 countries were analysed.



# DECARBONISATION HIERARCHY





An aerial photograph of a city skyline, likely Sydney, Australia, featuring a dense cluster of modern skyscrapers and high-rise buildings. The city is situated along a wide river, with numerous sailboats and a motorboat visible on the water. The foreground is partially obscured by out-of-focus green foliage. The sky is a clear, deep blue, suggesting a late afternoon or early morning setting. The overall scene conveys a sense of urban development and its proximity to nature.

# DECARBONISATION DILEMMAS

# THE SEVEN DECARBONISATION DILEMMAS



**1. DIRECTION**



**2. DEVELOP**



**3. DISCLOSE**



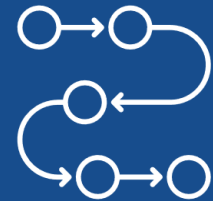
**4. DEMAND**



**5. DESIGN**



**6. DETAIL**



**7. DELIVER**





## 1. DIRECTION

Bringing lower-carbon construction to the mainstream

## INTENT

- Guiding industry towards decarbonisation
- Using the power of regulation to lift the bar
- Ensuring carbon-consciousness for all construction
- Using systems of measurement to verify outcomes
- Signalling that high-carbon assets are unacceptable
- Signalling that high-carbon products require transition
- Collaborating for success



# POSSIBLE SOLUTIONS



## 1. DIRECTION

**1.1 The Australian Building Codes Board (ABCB) should signal intent**

**1.2 Include upfront embodied carbon requirements in NCC**

**1.3 Use planning policies to mandate and incentivise**

**1.4 Ensure regulation rules out greenwash**

**1.5 Support local government**

**1.6 Collaborate for success**



## 2. DEVELOP

Building industry capacity  
to decarbonise

## INTENT

- A skilled and growing workforce
- Educational resources and platforms
- Support for developing industry capacity to deliver



## 2. DEVELOP

# POSSIBLE SOLUTIONS

2.1 Start developing capacity

2.2 Fund free learning content

2.3 Include the entire value chain

2.4 Adapt existing content

2.5 Train practitioners to develop EPDs





## **3. DISCLOSE**

**Methods, data and reporting**

## **INTENT**

- **Consistent measurement framework**
- **Credible and comparable data for products and materials**
- **Reporting that supports progress and decision making**
- **Understanding trade-offs**



## **3. DISCLOSE**

# **POSSIBLE SOLUTIONS**



**3.1 Develop standard national methods for reporting**

**3.2 Support EPD development**

**3.3 Fund and host a national database for approved product carbon footprint data**

**3.4 Standardise bills of quantities**





## 4. DEMAND

Clarity, consistency and confidence

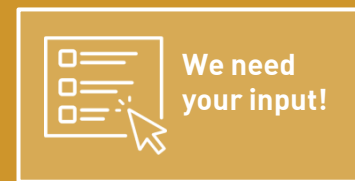
## INTENT

- Clear signals to drive segment (e.g. commercial, residential, infrastructure) and supply chain response
- Consistent demand which builds the business case for change
- Confidence to specify and use lower-carbon products



## 4. DEMAND

# POSSIBLE SOLUTIONS



4.1 Share risk and opportunity

4.2 Establish a model for specifying low-carbon assets and products on projects

4.3 Ensure specified products are installed on site

4.4 Set up materials carbon scheme for detached residential

4.5 Explore the emerging MECLA pledge

4.6 Use the C40 Cities Clean Construction Commitments

4.7 Set up small-scale incentive schemes

4.8 Develop financial and fiscal incentives to support transition



## 5. DESIGN

The best decisions from  
concept to completion

## INTENT

- **Apply the full decarbonisation hierarchy**
- **Start at concept. Question everything**
- **Whole-design process through project**
- **Optimisation of carbon impacts**
- **Carbon-conscious optioneering**



## 5. DESIGN

# POSSIBLE SOLUTIONS



5.1 Start early

5.2 Design solutions before product choices

5.3 Build less, build smarter

5.4 Re-model value engineering

5.5 Incentivise new solutions



## 6. DETAIL

The best product options

## INTENT

- Best product options are known, trusted and available
- Industry is working to create better options
  - Decarbonise manufacturing
  - New lower-carbon product offerings
  - More reused products and recycled content
  - Prefabrication and modularisation
  - Lower-carbon construction methods
  - Designing out waste
- Standards support adoption of new products
- Products have third party-verified carbon data



## 6. DETAIL

# POSSIBLE SOLUTIONS

**6.1 Make NABERS requirements for product carbon data the norm**

**6.2 Support EPD development**

**6.3 Support startups and SMEs with product compliance**

**6.4 Support products from hard-to-abate industries to transition**

**6.5 Proof-test new products at larger scale**

**6.6 Continue electrification of product manufacturing with renewable energy**

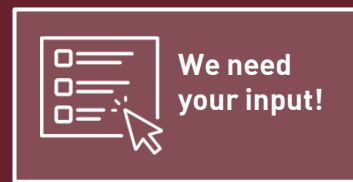
**6.7 Investigate prefabrication and modularisation**

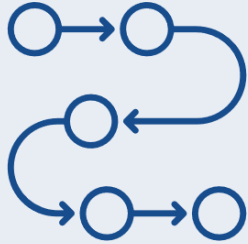
**6.8 Increase fossil fuel-free construction**

**6.9 Increase product stewardship**

**6.10 Speed-up updating of performance-based requirements**

**6.11 Collaborate early across the whole value chain**





## 7. DELIVER

Delivering lower-carbon assets

## INTENT

- Lower-carbon projects planned and delivered
- Project processes support lower-carbon outcomes
- Contribute through pilots and developing case studies
- Government and industry both responsible



## 7. DELIVER

# POSSIBLE SOLUTIONS



**7.1 Make lower-carbon construction more visible**

**7.2 Mandate to expect and reward decarbonisation**

**7.3 Apply the new NABERS Embodied Carbon tool for buildings**

**7.4 Create a library of case studies**

**7.5 Consider adoption of carbon value**



A wide-angle photograph of a city skyline, likely New York City, viewed from across a body of water. The sky is a clear, deep blue. In the foreground, the water is dark blue with several sailboats and a small motorboat. The city buildings are a mix of modern glass skyscrapers and older structures. The text "What are we hearing?" is overlaid in the center in a large, white, sans-serif font. The overall mood is serene and contemplative.

**What are we hearing?**

A panoramic view of a city skyline at dusk, featuring numerous skyscrapers and a river in the foreground with several sailboats. The text "What's next?" is overlaid in the center in a large, white, sans-serif font. The sky is a deep blue, and the water reflects the city lights. In the foreground, there are blurred green leaves, suggesting the photo was taken from a slightly elevated position behind some foliage.

**What's next?**



**Thank you**