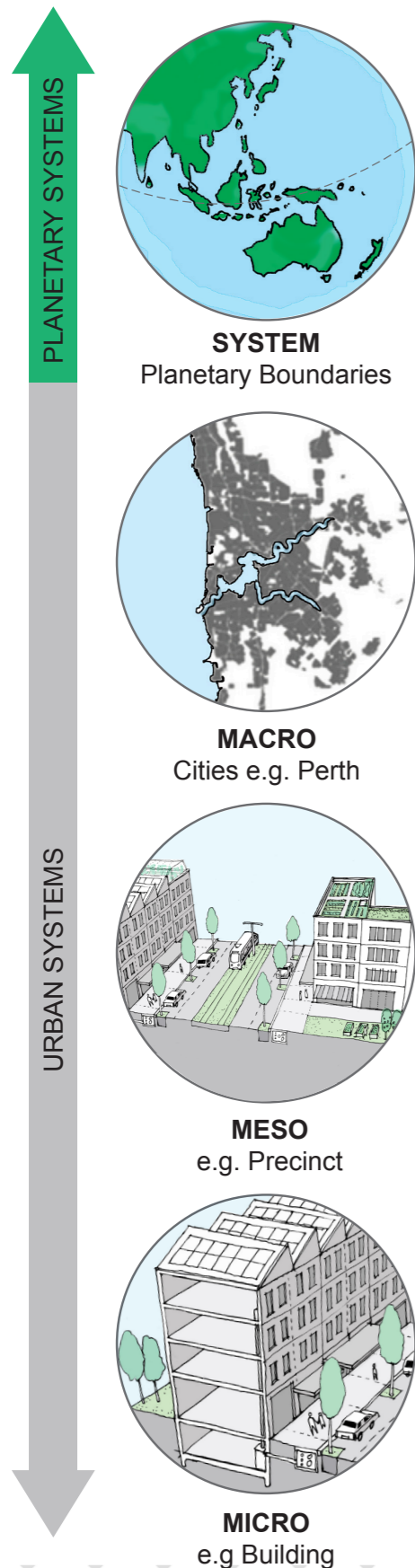


REVIEW OF NATIONAL & INTERNATIONAL LOW CARBON PRECINCTS



Research Questions

To investigate ways in which cities can be designed to accommodate an expanding population while reducing ecological footprint:

1. What component parts/systems enable optimal urban metabolism?
2. What policies/processes can facilitate market acceptable (politically/ financially viable) design and delivery?
3. What replicable models can deliver sustainable (regenerative) cities?

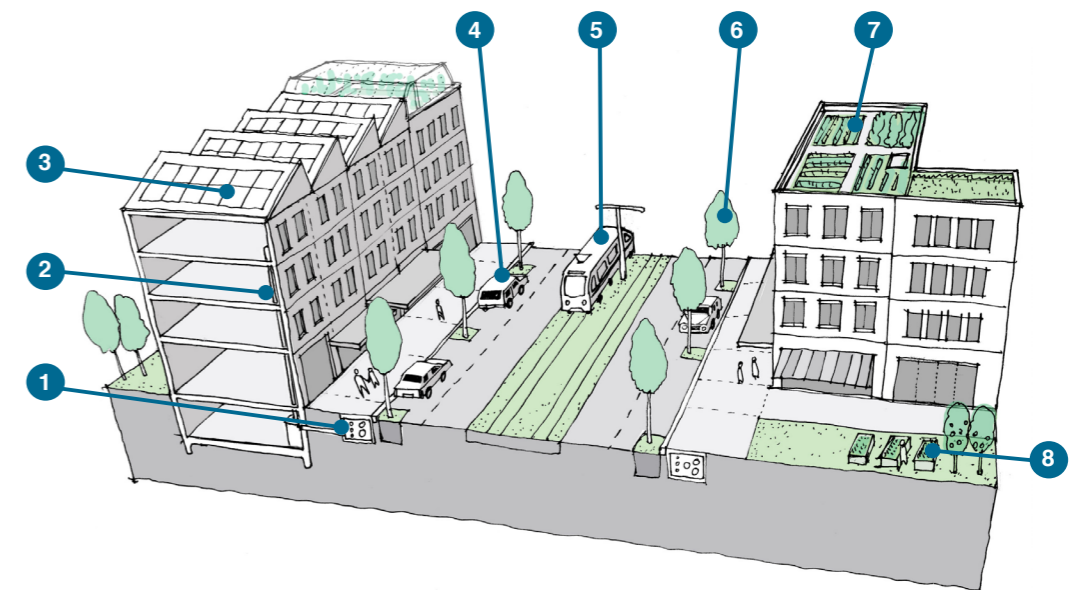
Methodology

Urban metabolism (material inputs & outputs) was used to understand how a holistic approach to regenerative (biosphere enhancing) cities might be achieved. While technological solutions already exist, policies & public acceptance are critical for large scale change. Therefore a case study approach was chosen to understand best practice, key lessons were taken from 70 exemplar precincts.

Results

Precinct planning allows for efficient distributed infrastructure to optimise urban fabric & services (goal: circular metabolism). If coupled with good design, quality of life may be enhanced; & good governance can ensure continuous improvement. Fig.1 (left) illustrates how policies need to be nested across system scales to achieve global objectives. Fig. 2 (right) illustrates several policy considerations that reduce urban metabolism while improving liveability.

- 1 Combined Services corridor
- 2 Demand management (eg. Highly efficient thermal envelopes)
- 3 Community Solar on 'Solar-ready roofs'
- 4 Parking district revenue (for public realm improvements)
- 5 Value capture (e.g. to fund light rail)
- 6 Eco-systems services (to mitigate UHI etc.)
- 7 Green Roofs (insulation & stormwater management)
- 8 Urban Agriculture policy



Conclusions

Cities provide the best chance for accommodating rapid global population growth while reducing ecological footprint through 'regenerative' urban (re)development, but to be successful requires:

Leadership: vision & management.

Densification: dense, integrated land use and transit to create economies of scale to make local (eco-)infrastructure viable.

New business models: to support rapid uptake of sustainability innovation.

'Urban geoengineering': Energy demand management, and hydrocarbon fuel substitution, with the goal of 'negative emissions' (renewables + sequestration)

New governance models: New models for enabling co-ordinated precinct scale governance (e.g. Quangos, Development Corporations, BIDs).

Anticipated impacts

This research will be useful to city makers and policy writers seeking to use urban transitions to achieve the goals of the Paris Agreement and the SDGs.

Optimising urban metabolism will require integrated policy bundling across urban scales that support entrepreneurial models for precinct governance.

Contact

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