

URBAN AGE ELECTRIC CITY CONFERENCE

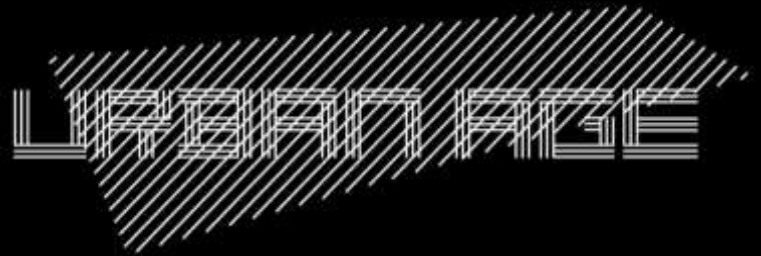
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*The green transition of ordinary cities:
the role of new technology*

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An aerial photograph of a city, likely Johannesburg, South Africa. The image shows a stark contrast between a dense, modern urban core with numerous high-rise apartment buildings and a sprawling, informal settlement (shanty town) in the foreground. The informal settlement is characterized by a dense packing of small, low-rise structures. The background shows a hilly landscape with more distant buildings.

City-Level Decoupling: Urban Resource Flows and the Governance of Infrastructure Transitions

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Case Studies

- Community-based: Auroville (India), Vauban (Germany), Accra (Ghana) – urban agriculture, Lilongwe (Malawi)-clay housing, Karachi (sanitation), Totnes & Transition Towns (UK)
- Green enclaves: gated communities in Bangalore, Masdar (Abu Dhabi), Songdo (S. Korea), Treasure Island (San Francisco)



- Infrastructure alternatives: Bangkok (transit), Durban (waste), Kampala (waste), Lagos (BRT), Medellin (Colombia) – cable car, Cape Town (energy efficient buildings), Linkoping (Sweden)-biogas, Seoul (highway replacement with the river)
- Municipal initiatives: Finnish municipalities, Kitakyushu Eco-Town (Japan), Melbourne, Portland (USA), San Jose (USA), Singapore (water), Vaxo (Sweden), Buenos Aires (food security), Chennai (India), Curitiba (waste), Dezhou (China), Ho Chi Minh City (waste)



Core Argument

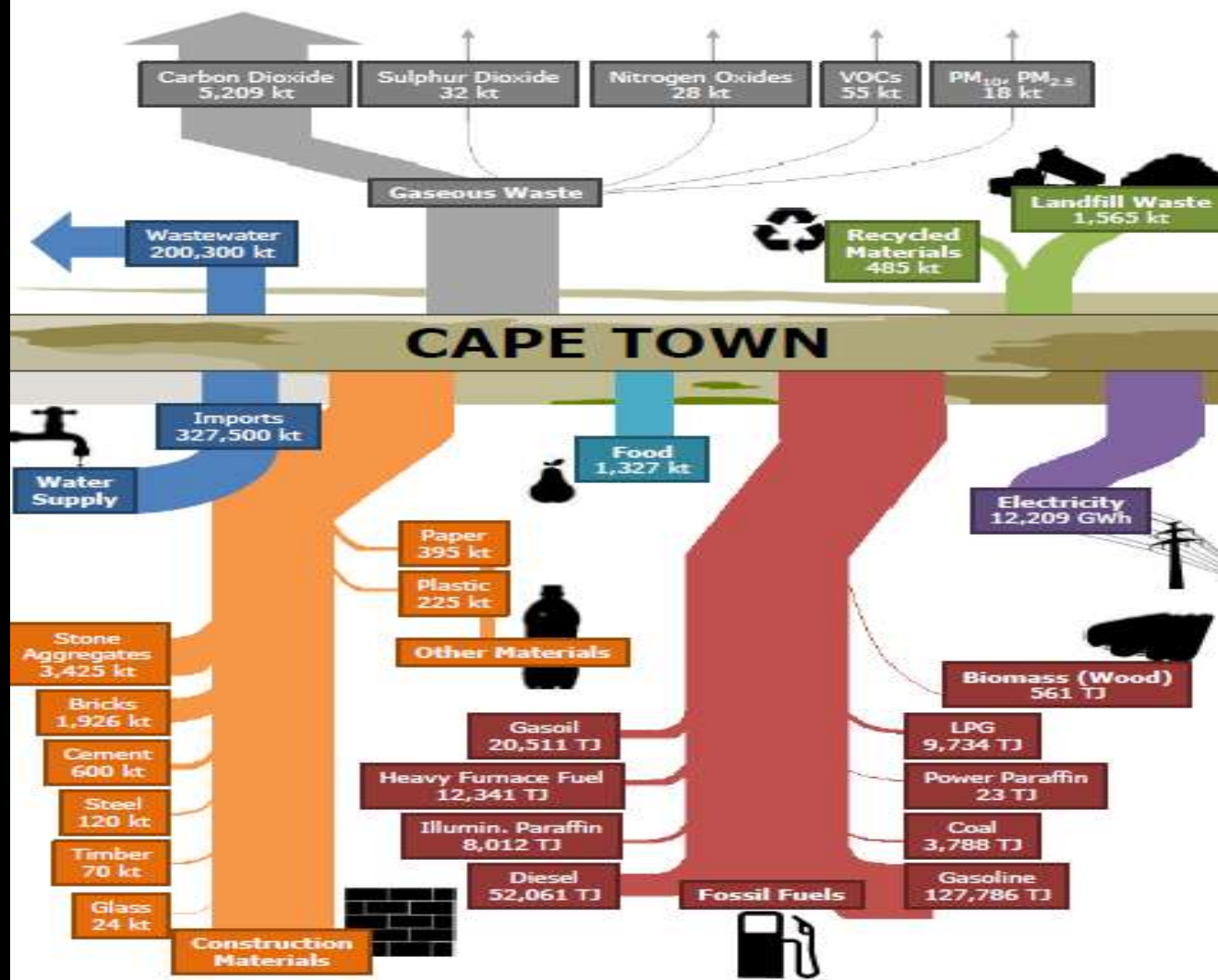
to shift from linear to circular socio-metabolic flows
in cities, it will be necessary to reconfigure urban
infrastructures

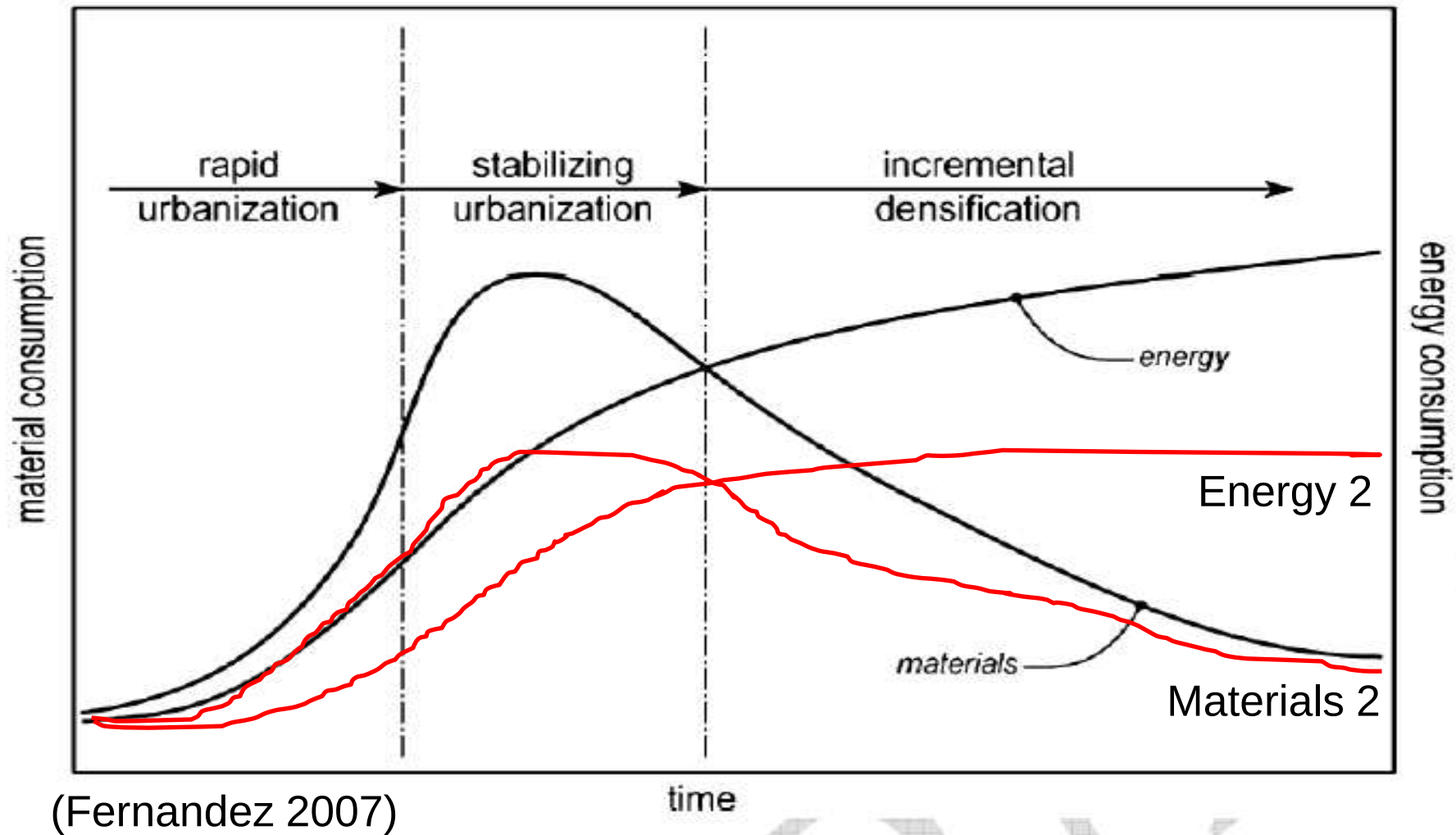


MFA in cities

- Industrial ecologists – metabolic flows, but no infrastructure, space or governance
- Urban sociology – governance, space & infrastructure, no flows
- Urbanists – integration of flows & infrastructure

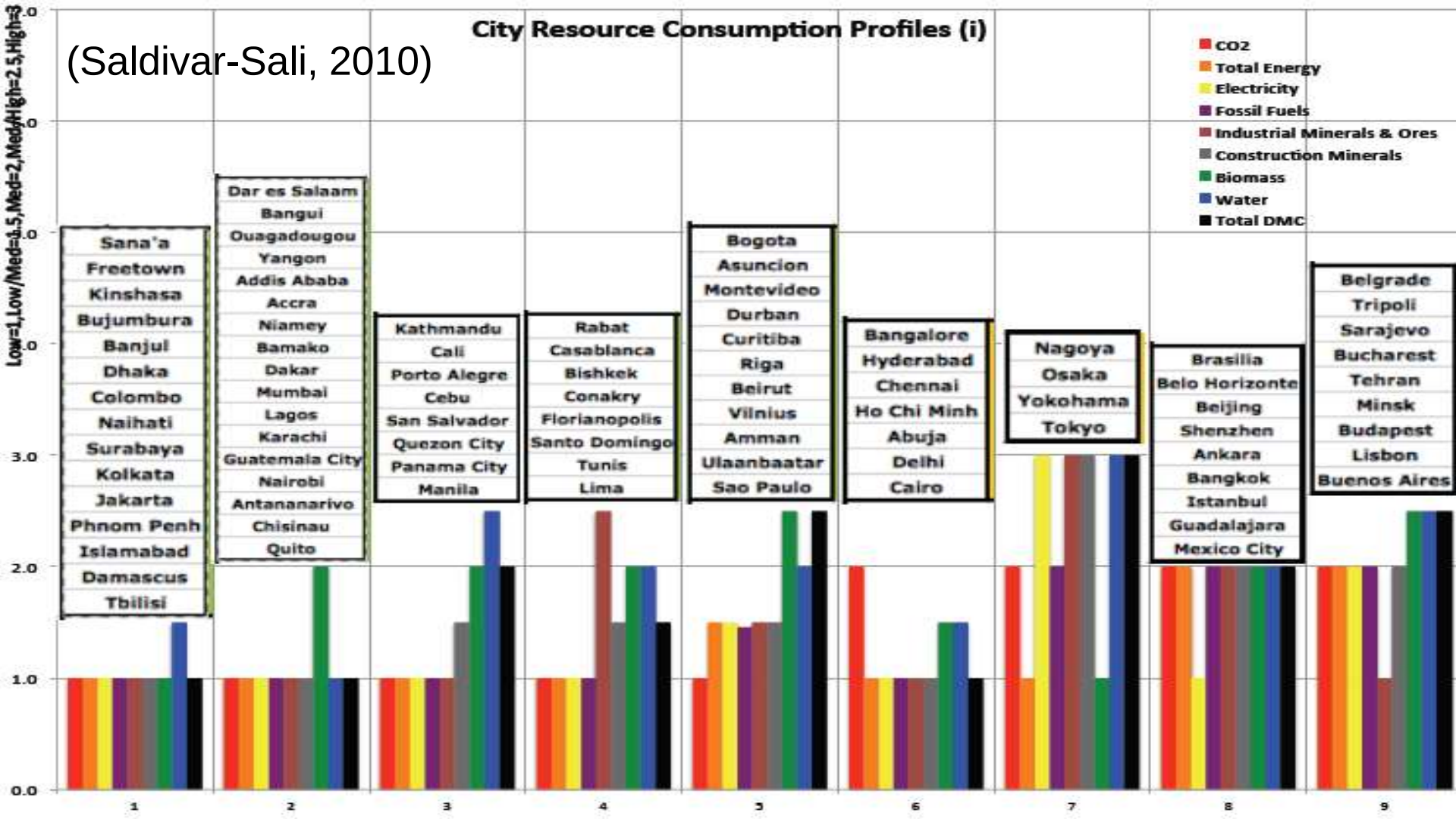






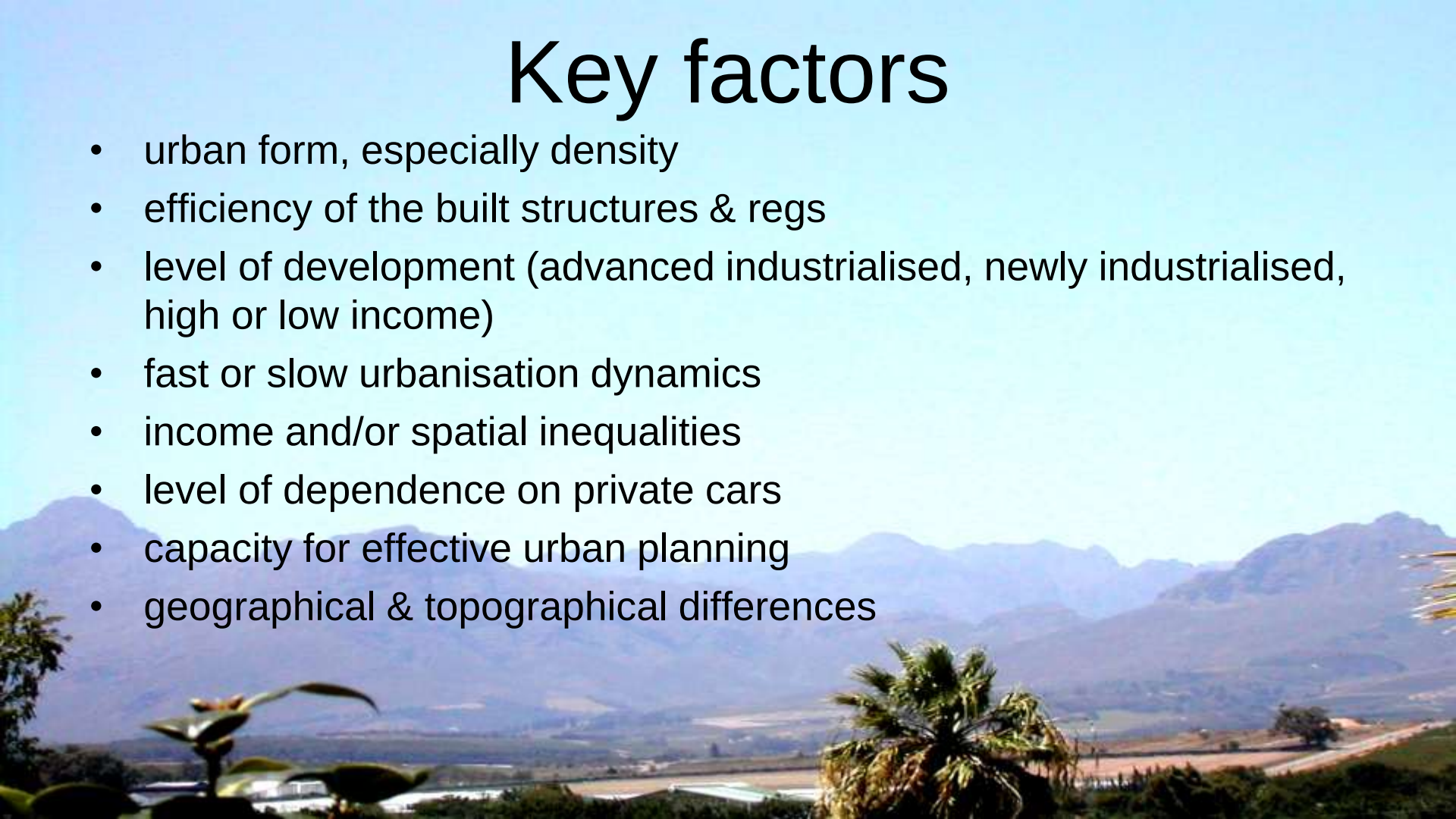
(Saldivar-Sali, 2010)

City Resource Consumption Profiles (i)



Key factors

- urban form, especially density
- efficiency of the built structures & regs
- level of development (advanced industrialised, newly industrialised, high or low income)
- fast or slow urbanisation dynamics
- income and/or spatial inequalities
- level of dependence on private cars
- capacity for effective urban planning
- geographical & topographical differences



Flows, Infrastructures & Space

- Infrastructures conduct flows through cities – how they are configured makes a huge difference to resource intensity
- Space structures infrastructures – infrastructures structure space
- Space, infrastructure and urban form have hitherto been designed to maximise flows
- Problem: they are ‘large technical systems’/‘socio-technical systems’/‘regimes’





THE BOSTON CONSULTING GROUP

The Global Infrastructure Challenge

Top Priorities for the Public and Private Sectors

Marco Airolidi, Lamberto Biscarini, and Vito Saracino

July 2010

Booz Allen Hamilton

- \$41 trillion – energy, water, transport
- Water = \$22.6 trillion
- Energy = \$9 trillion
- Road and rail = \$7.8
- Air/sea ports = \$1.6

What kind of urban infrastructure? What technologies? Who sets the criteria?

“...cities that ignore environmental impact will themselves face another collapse of infrastructure 30 or 40 years from now ...”

Booz Allen Hamilton, ***Strategy and Business***, 2007

Urban Transitions

- Whether city decision-makers can govern & shape infrastructures?
- What are the envisaged relationships between cities, infrastructures & flows?
- How can transitions in these relationships be realised?
- What is the geography of these transitions?
- How can a decoupling approach be applied?



(Smith, Sterling & Berkhout 2005)

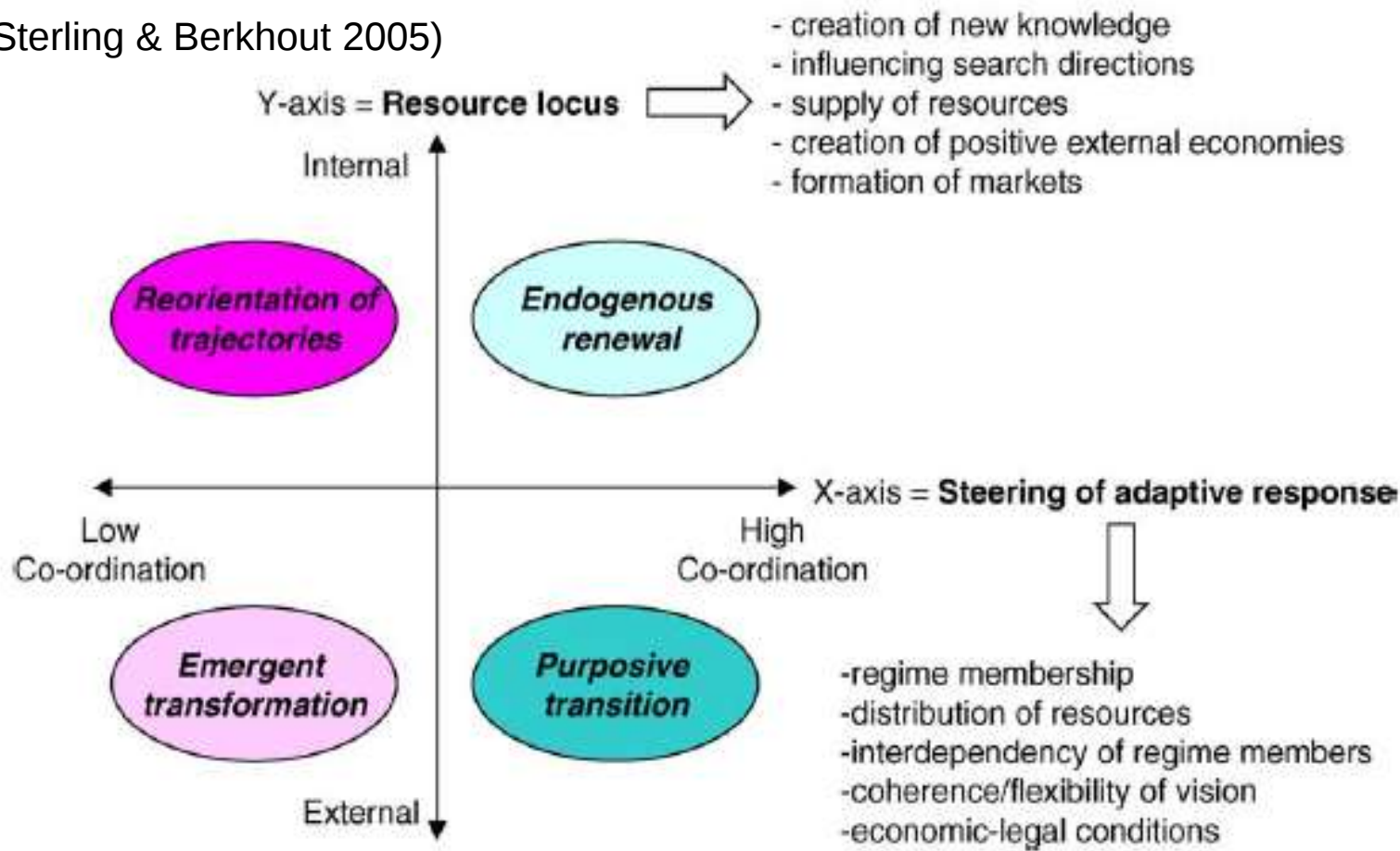


Fig. 1. Transition contexts as a function of degree of coordination to selection pressures and the locus of adaptive resources.

Treasure Island, Masdar,
Dongtan, Auroville, Gaviotas,
BedZED, UK eco-towns, eco-
blocks in China, global eco-
cities movement, eco-islands,
eco-industrial developments,
eco-villages, green 'burbs'

*New Build/
New Construction*

**Urban Developments as
Integrated Eco-Urbanism'**

**Constructing New 'Urban
Networked Technologies'**

hydrogen,
biofuels, DHC,
greywater/
recycled water
systems, new
solar PV
infrastructure,
SHW

*Integrated/
Systemic*

*Network
Based*

Low/post carbon
cities, peak oil
cities, solar cities,
liveable cities,
'TOP' cities,
Clinton C40
league, ICLEI,
transition towns,
progressive city
coalitions

**Reconfiguring Cities as
Eco-Urban Transitions'**

**Retrofitting Existing
'Urban Networked Infrastruct'**

Food, energy &
flood security;
desalinised water;
Curitiba BRT;
Orangi Pilot
Project; modern
rickshaw
technologies

*Existing Cities/
Retrofitting*

Mexico City - Ecobici



Lagos BRT



Medellin – cable car system

Parque La Candelaria



Seoul before ...



Seoul after highway removed...



Sweden - biogas



India - biogas



Lynedoch EcoVillage, Stellenbosch, South Africa



Biogas digester



Making clay bricks on site

2001 9 12



making clay bricks on site

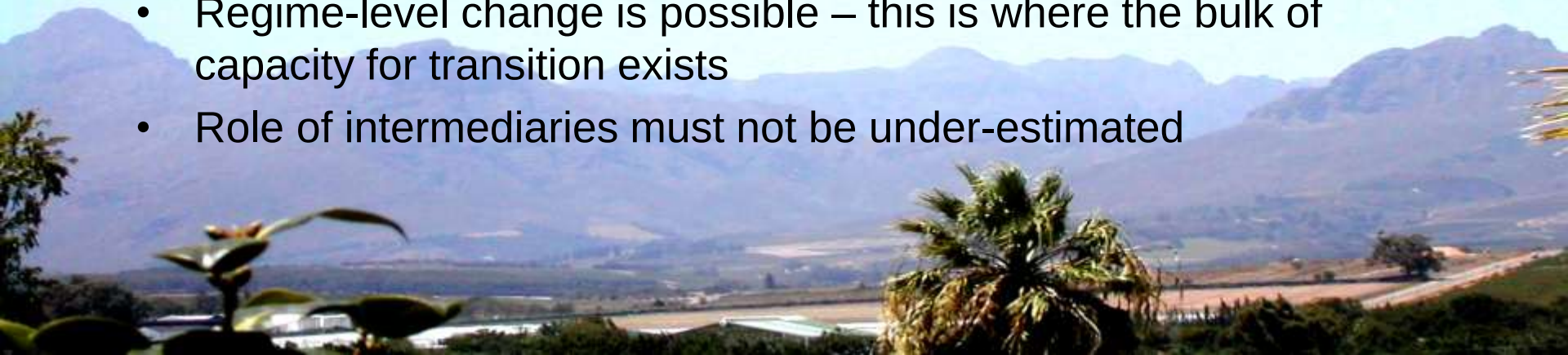
Intermediaries

- New capacity located outside of existing city governance & infrastructure management systems – must be institutionally stable & trusted
- Key to facilitating dialogue about competing visions & interests – not just ‘inside’ cities, but also the ‘outside’ actors whose decisions affect cities
- Facilitates learning, niche-innovations & dissemination



Conclusions

- Urban transitions are spreading & taking many forms – a new generation of learning cases needed
- Vision building is key, but no ‘one-size-fits-all’ – authenticity through facilitated learning
- Niche-level innovations are pointers, for impact they need to coalesce
- Regime-level change is possible – this is where the bulk of capacity for transition exists
- Role of intermediaries must not be under-estimated



Policy-Relevant Recommendations

- Infrastructure investments must not only target growth, but also decoupling
- City visions must incorporate urban infrastructures no matter who manages them – break down the separations
- Stimulate & promote niche-level innovations
- Recognise the key role of intermediaries, especially wrt to capacity constraints



- the biggest investments in urban infrastructure will be made in developing country cities, often with involvement by external funders & expertise – developing country governments must impose strict criteria to prevent a BAU approach
- while many motives exist for implementing alternatives, decoupling is a clearer & simpler metric for assessing success

