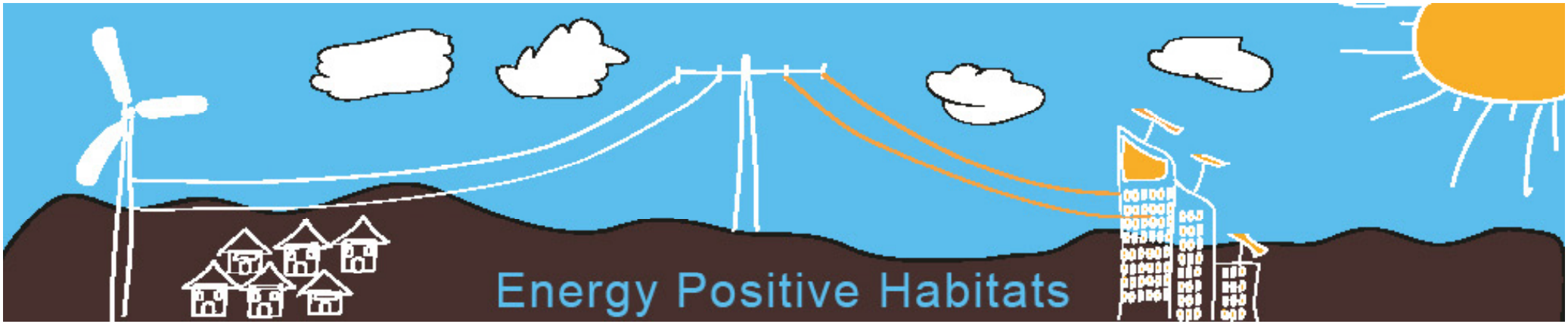
# Auroville Green Practices

A Hands-on-Workshop
30 Aug to 1 Sept, 2012
Auroville (near Pondicherry)




‘Human Habitats today have become centers of energy consumption. By conserving energy with appropriate building design, reducing energy by efficient energy management and producing energy with decentralized systems that allows feeding surplus energy into the grid, we can create a shift towards energy positive habitats. Essential to this movement is the fact that humans have to change their life styles to consume less energy.‘

htpp://agp.aurovilleconsulting.com

# Energy, Habitats and Lifestyles: The Quest for *Regenerative Cities*

**Herbert Girardet**

# Presentation Outline

**1. From “Agropolis“ to “Petropolis“**

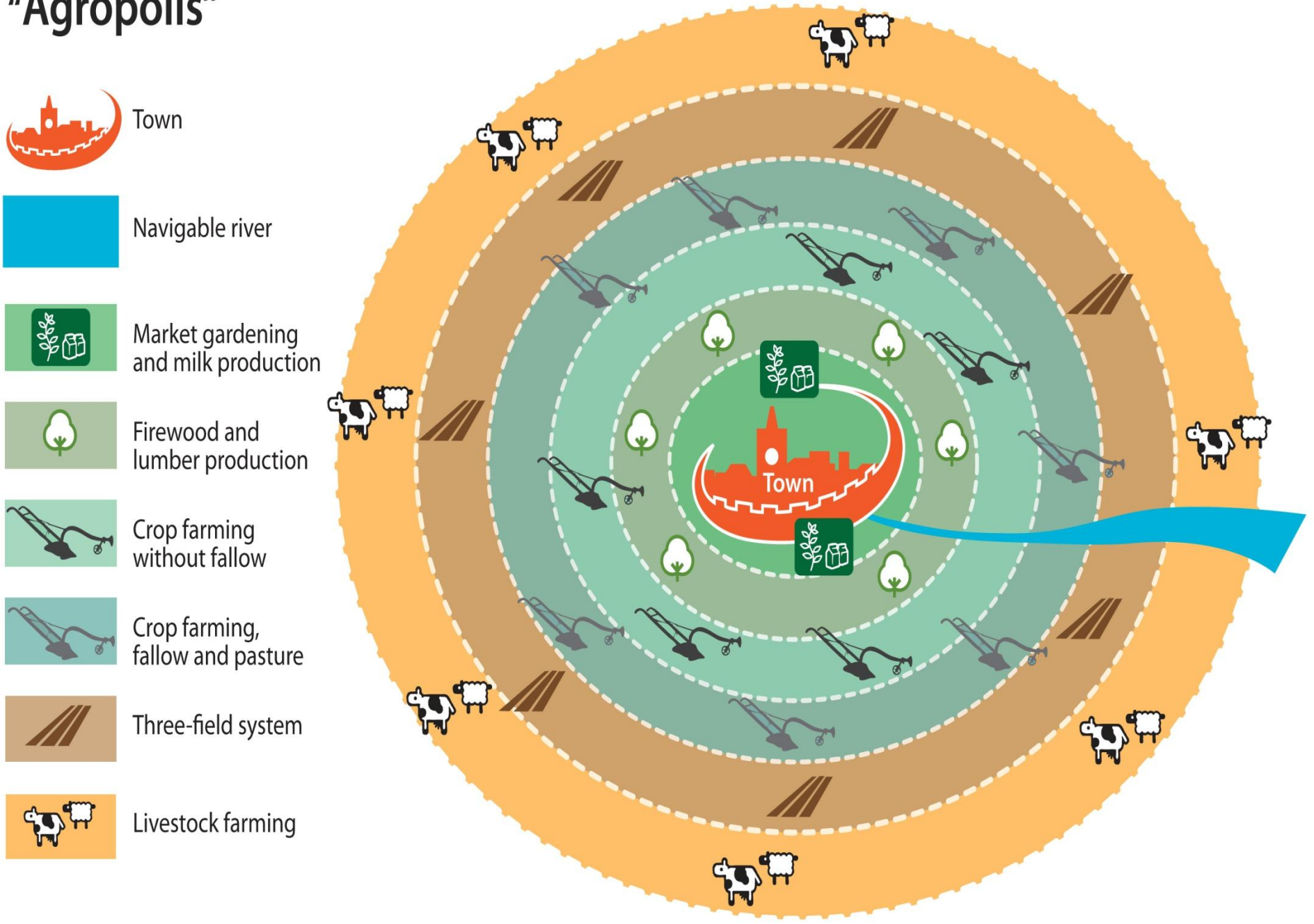
**2. The city as eco-predator**

- Fossil fuels and urban growth
- Cities and the climate crisis

**3. *Sustainable* or *regenerative* urbanisation?**

- Towards “Ecopolis“
- The renewable energy revolution
- Towards a circular metabolism
- Integrated urban planning
- Creating the regenerative city

# "Agropolis"

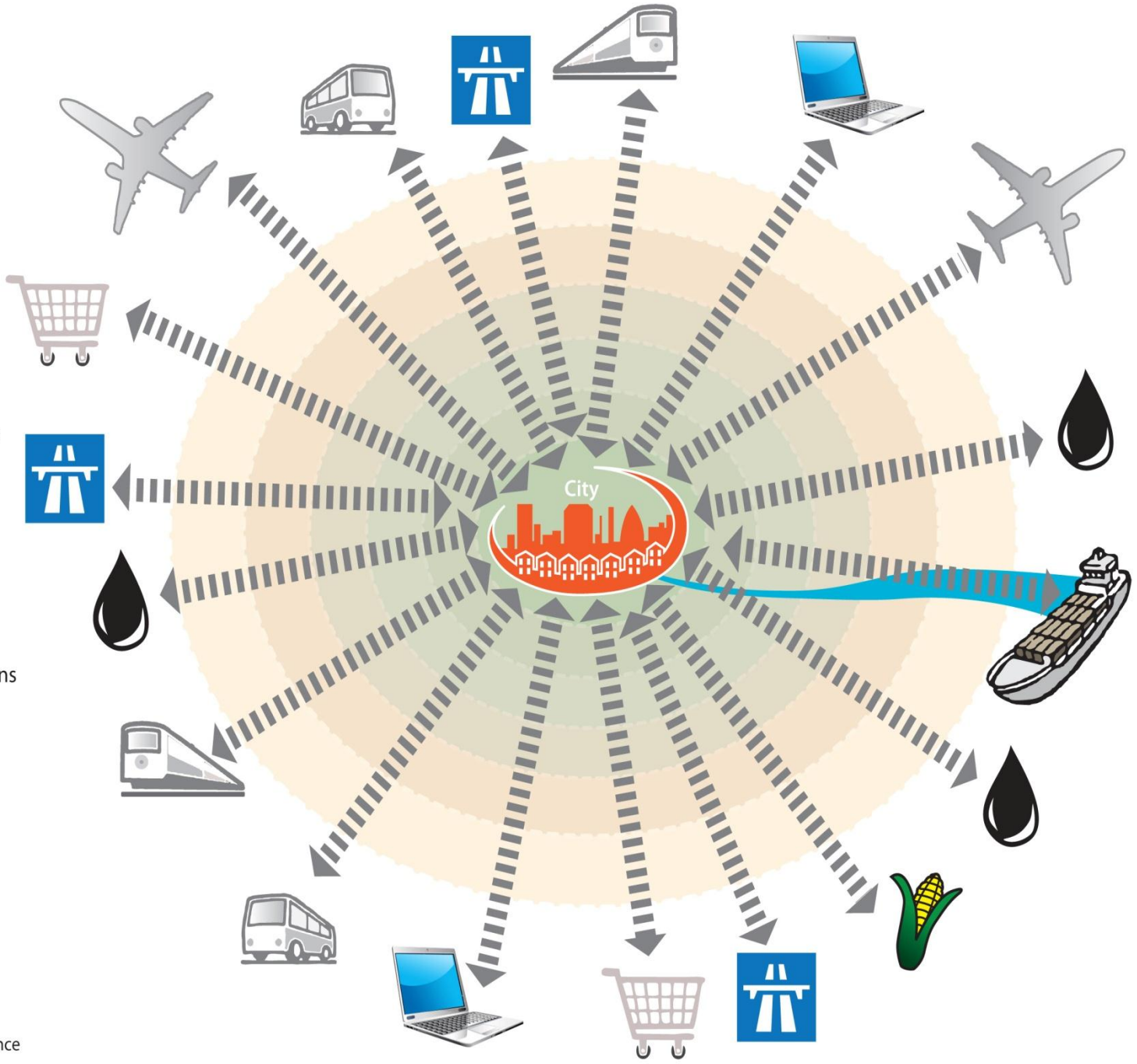


# Montereggioni, Tuscany


SEVIL LA
RIO DE GVADALQVEVIR

# Delhi

# "Petropolis"

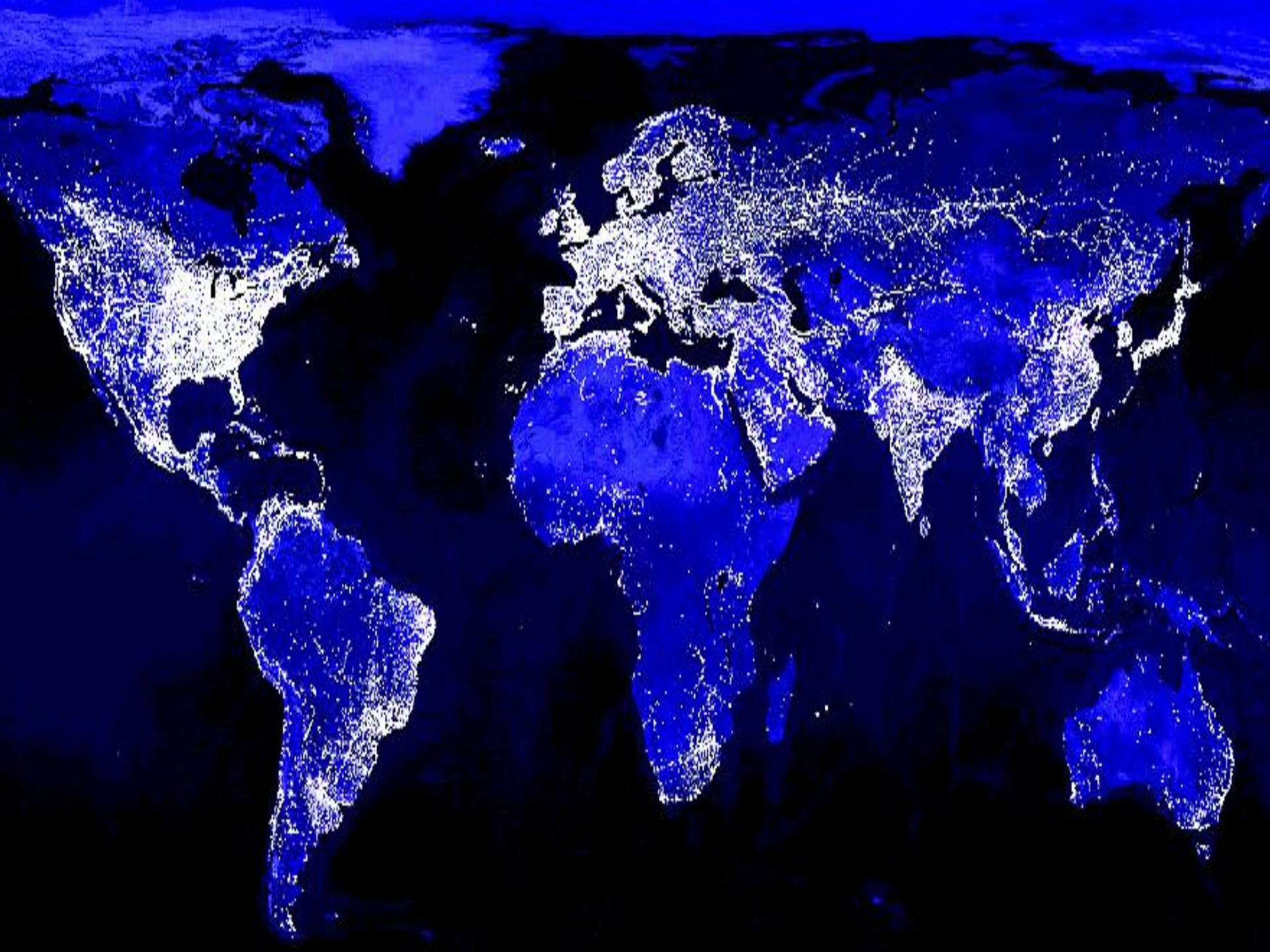
# London


BLACK MARLIN

# The Great Acceleration

1950 marked the beginning of a massive acceleration in human activity and large-scale changes in the Earth system.


SOURCE: igbp.net | Steffen et al., 2005, Global Change and the Earth System, Springer, pp. 132-133
DESIGN: Globaia.org



# Urban growth & resource use

- From 1900 to 2000 human numbers increased four fold – from 1.5 to 6 billion
- Resource consumption and urban populations went up sixteen fold
- By 2050 two thirds of humanity are expected to be urban dwellers
- Already cities, on 3-4% of the world's land surface, use 80% of its resources, and discharge most wastes
- What will further urbanisation mean for the condition of the biosphere?
- Can large, modern cities be a viable, resilient home for humanity?


Ecological footprint

# Atlanta

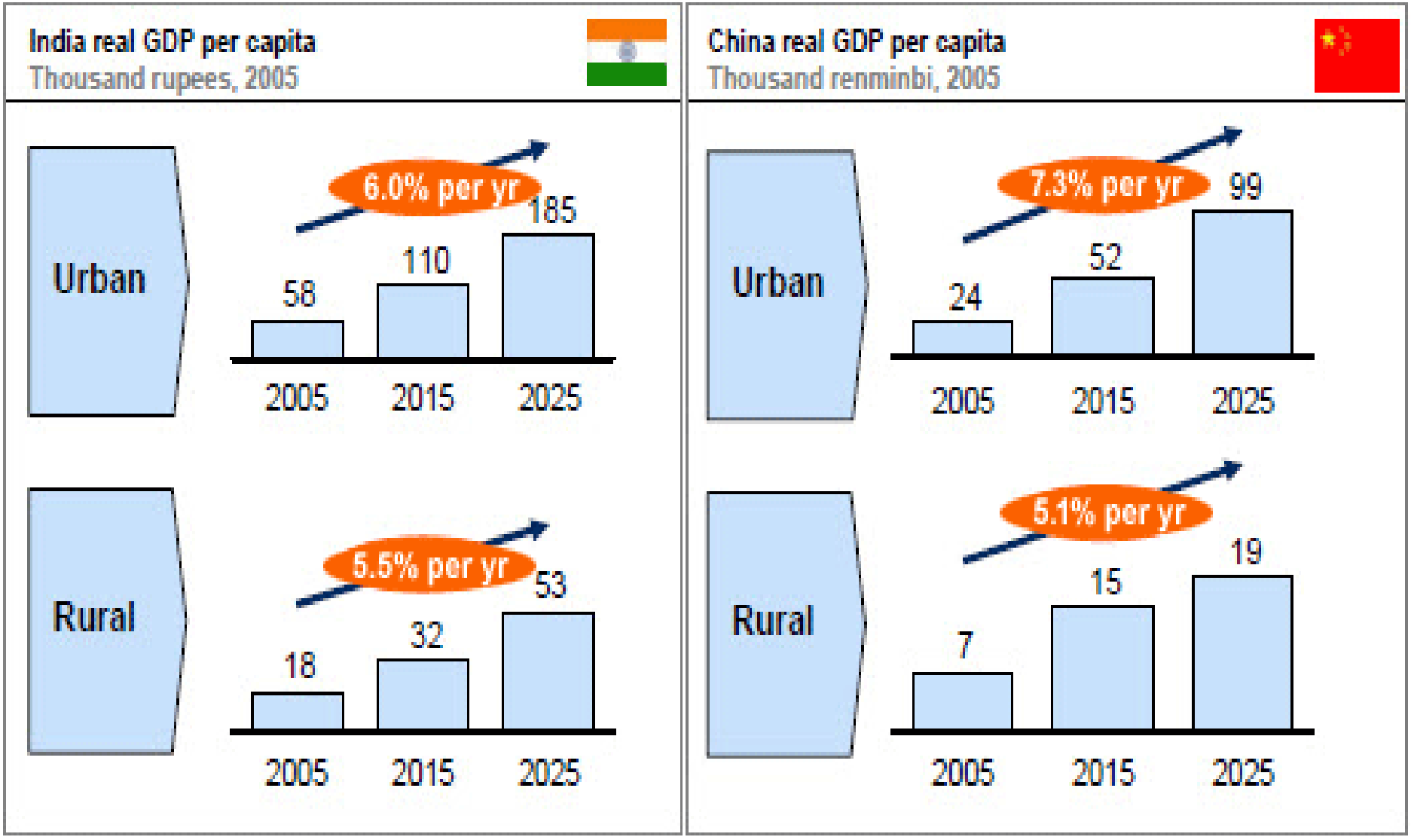
# Dubai


646-001

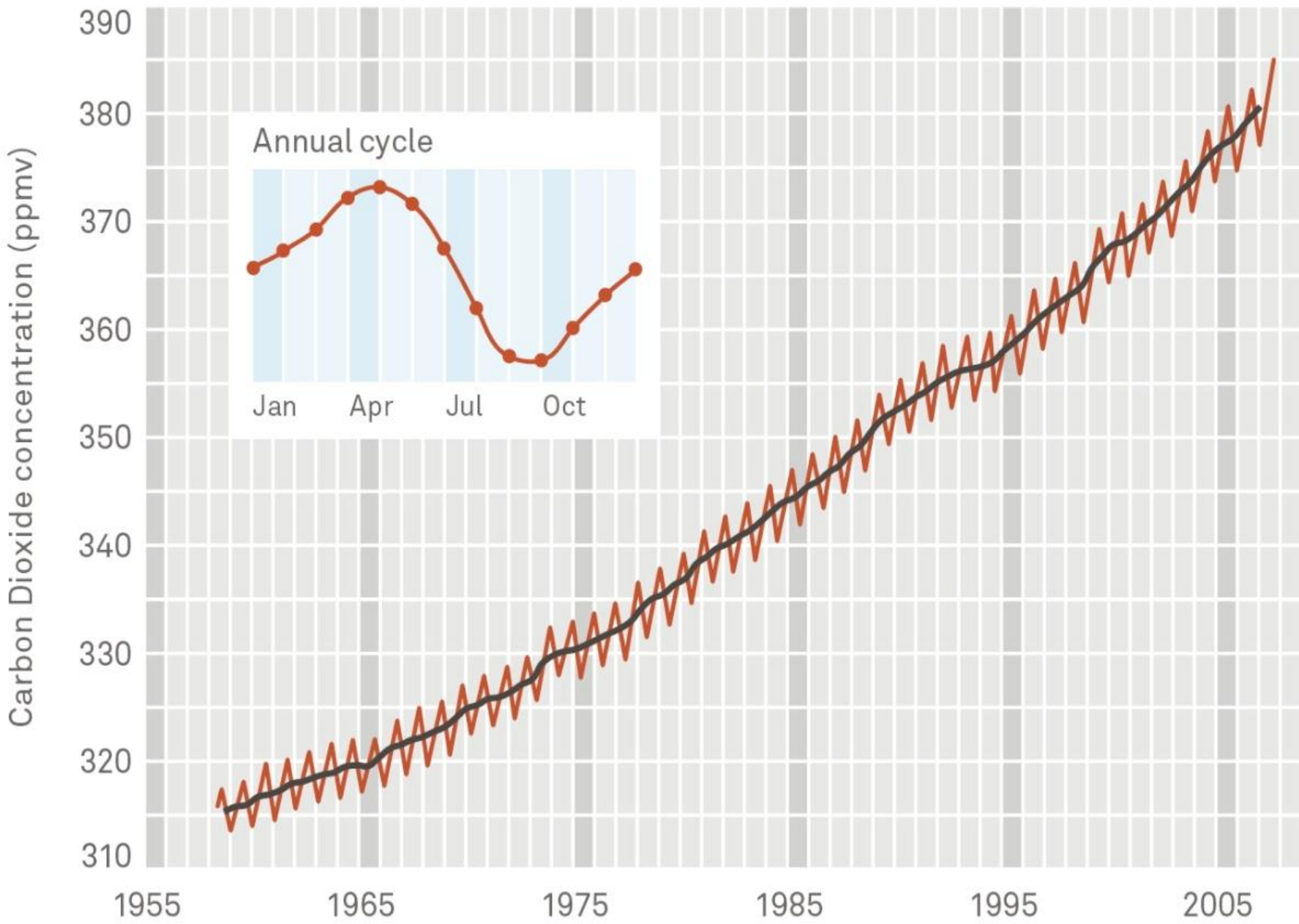

SQUASH

# Darawi, Mumbai

# Urban GDP Growth to Outpace Rural




**Source:** India Urbanization Model; McKinsey Global Institute China All City Model, January 2010; McKinsey Global Institute analysis

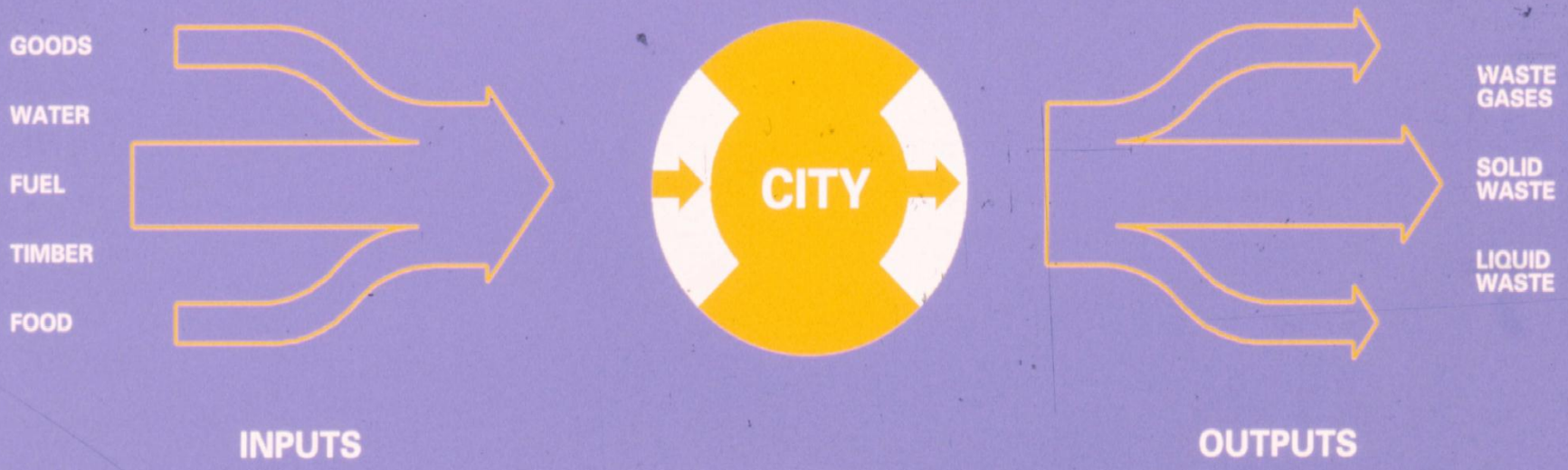

Atmospheric Carbon Dioxide
Measured at Mauna Loa, Hawaii
Carbon Dioxide concentration (ppmv)
390
380
370
360
350
340
330
320
310
1955
1965
1975
1985
1995
2005
Annual cycle
Jan
Apr
Jul
Oct

# Our Shrinking Earth

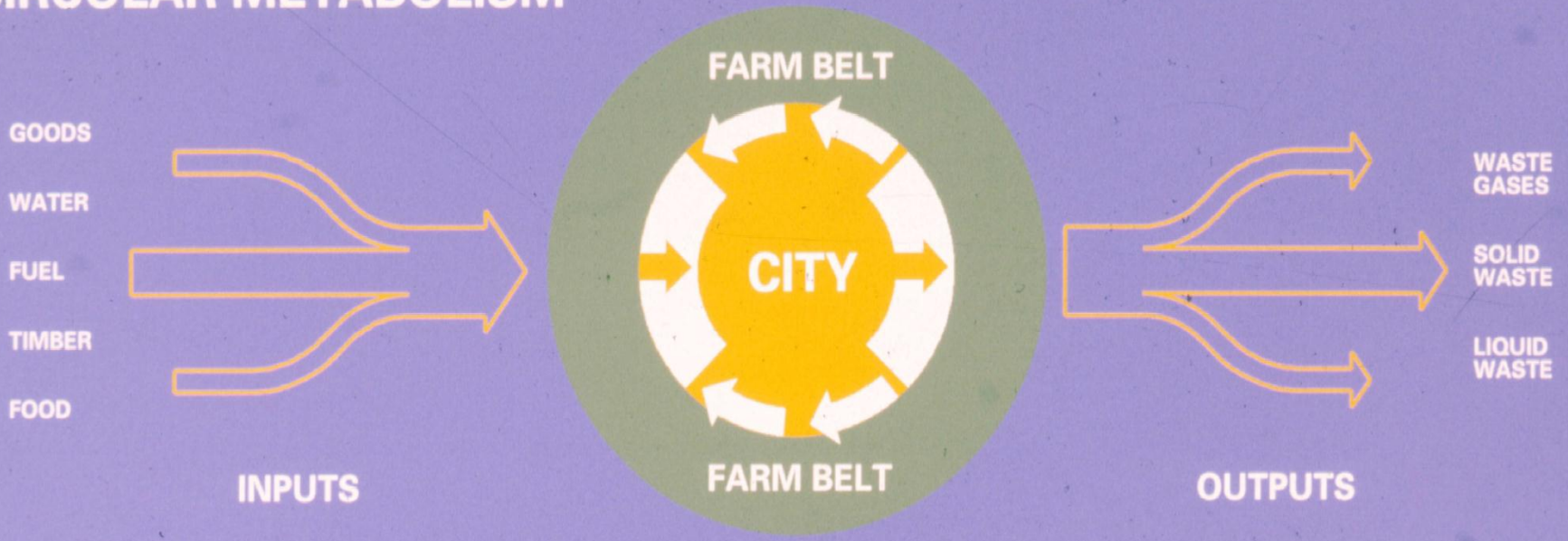

YEAR

**Hectares of Land Per Capita**

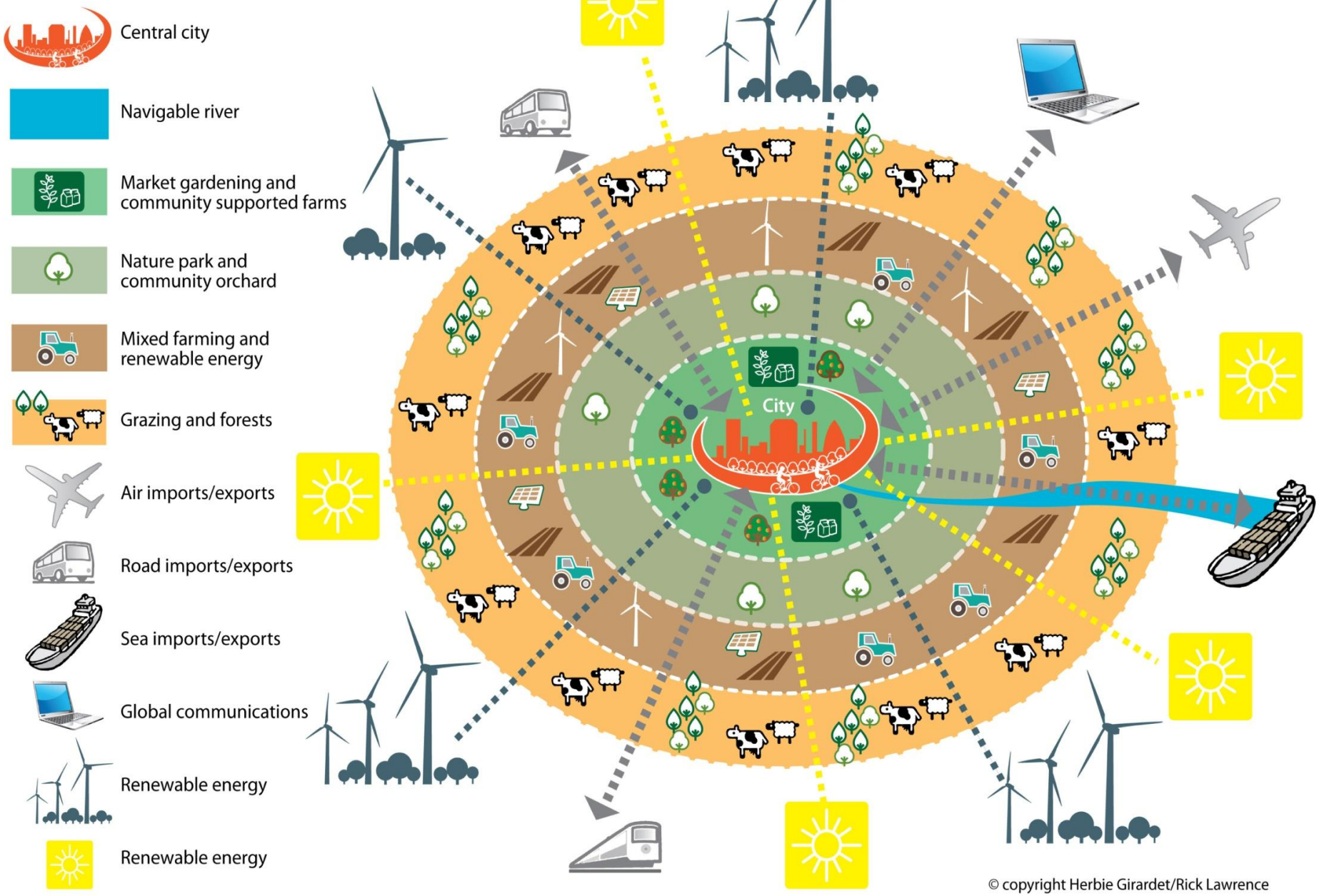
## LINEAR METABOLISM




## CIRCULAR METABOLISM



# "Ecopolis"

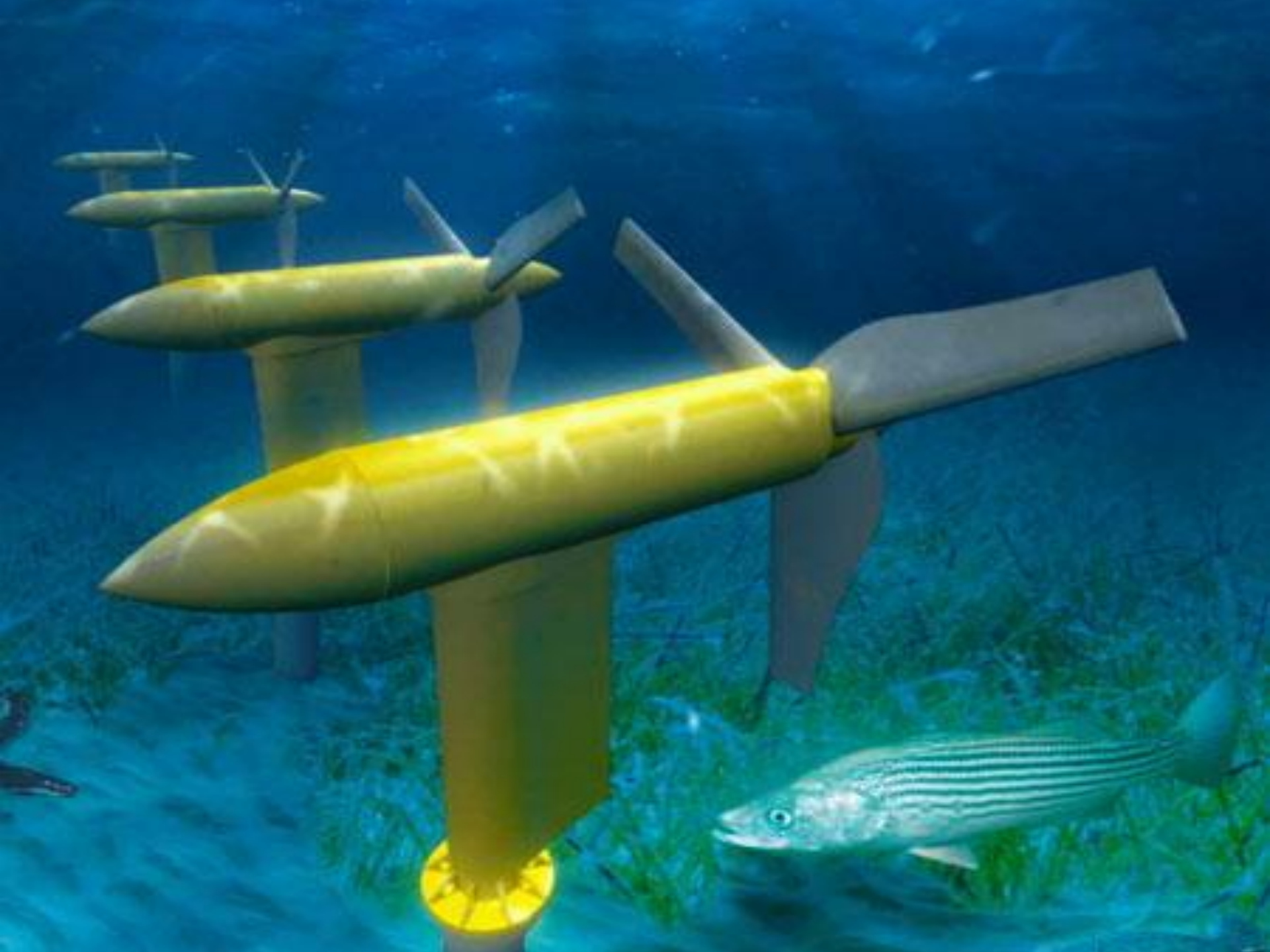


# Taipei

# Dezhou

# Sevilla

# Glasgow



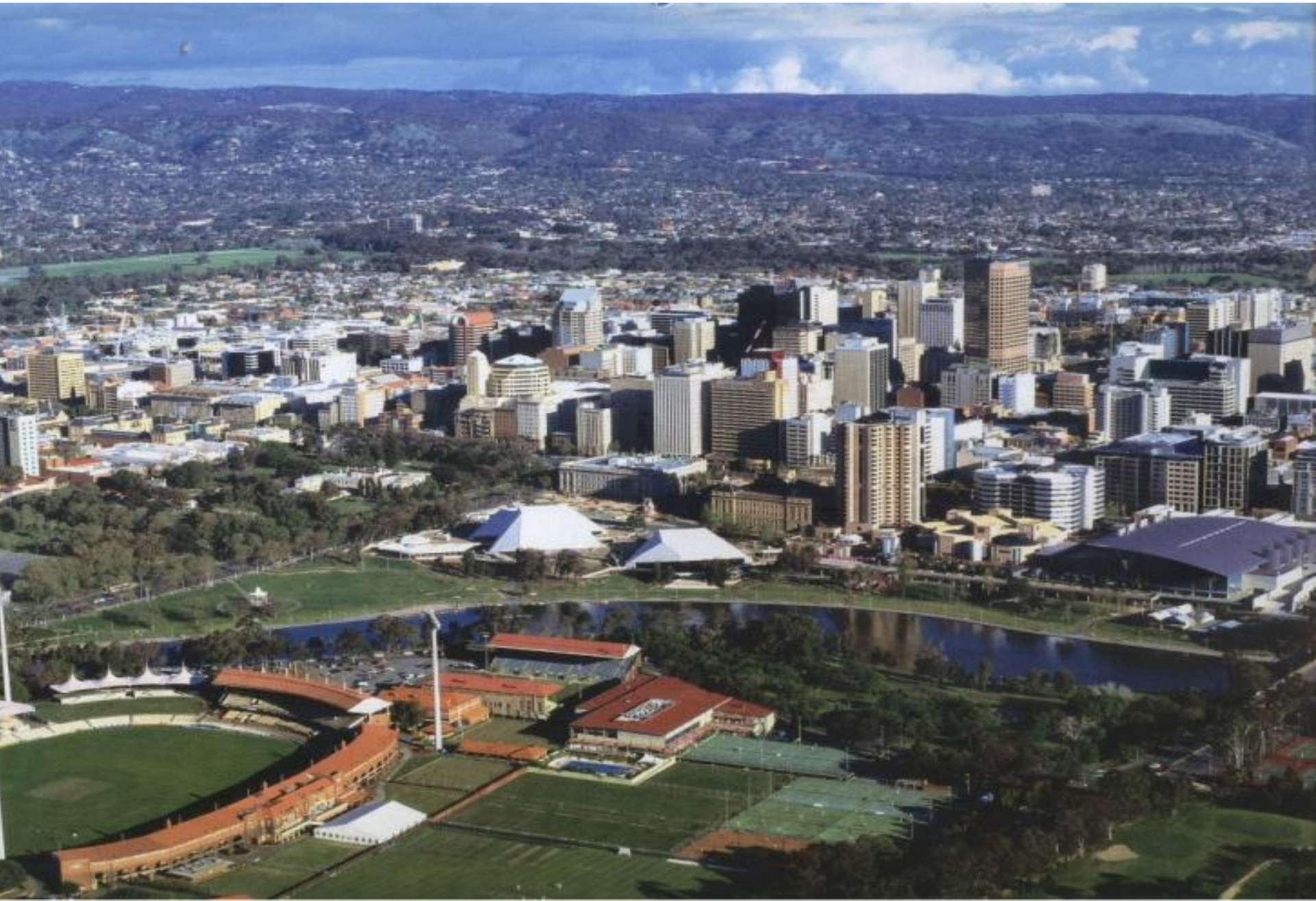
# Munich

# Germany‘s Feed-In Tariffs, 2000 – 2012

- **Secure investment in renewable energy with 7% return**
- **380,000 jobs created, €27.5bn turnover for RE companies, €10bn investment per year**
- **Reduced imports: €8 billion euro fuel imports avoided**
- **Reduced emissions: 120 million tonnes of CO2 saved**
- **Eco-benefit: €5.40 less environmental damage per household/ month**
- **Total cost: €6.00 per household/ month**
- **Growing share of power: 2008: 18% of electricity supply**
- **At current growth rates renewables will provide 40% of electricity by 2020, or 100% by 2050**


7
Freising-Mitte
1000 m

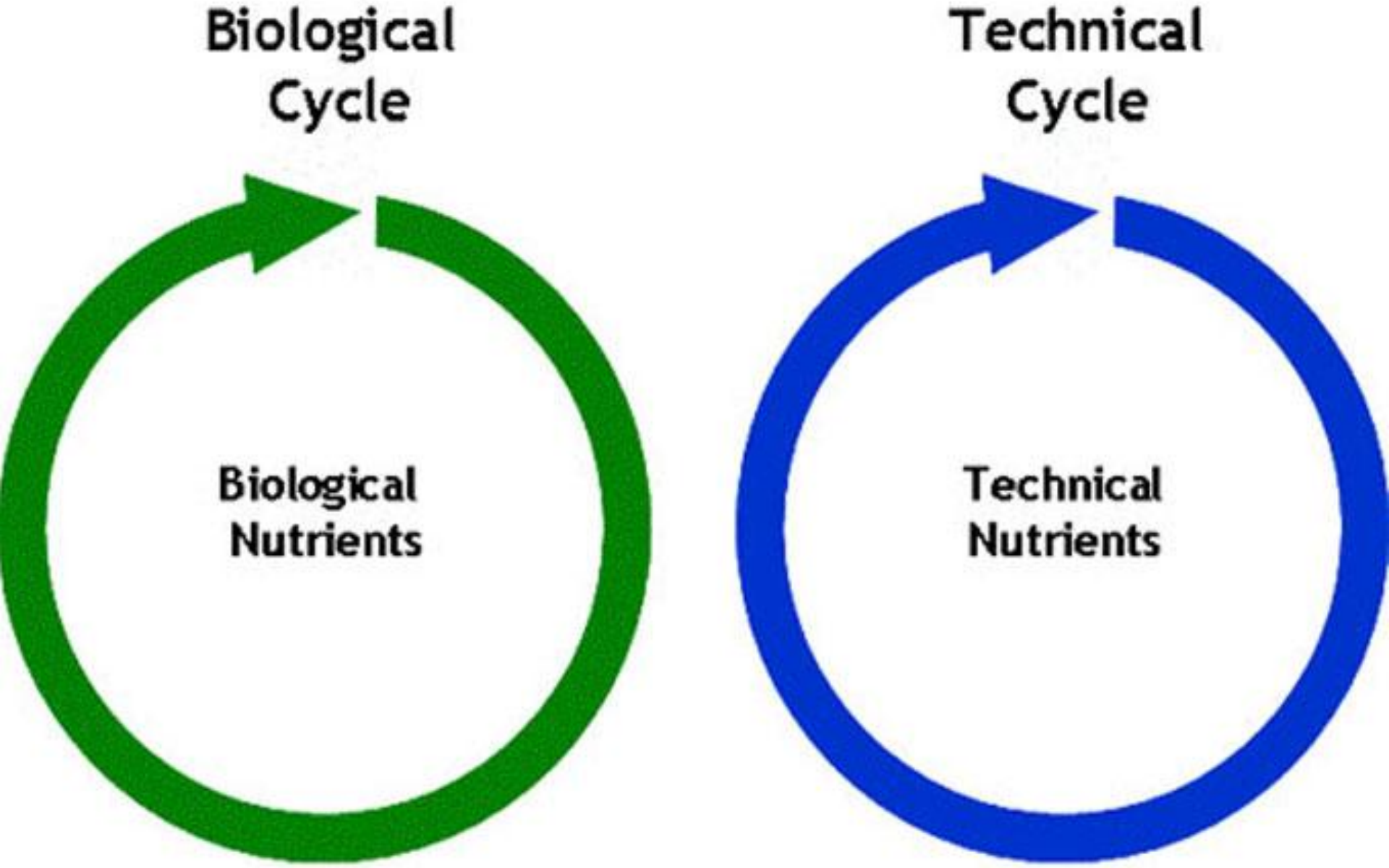
# Adelaide, S. Australia




VIA JARDIN
118
metro ligero
metro ligero


zero emission


Tindo
Tindo


Biological
Cycle
Biological
Nutrients
Technical
Cycle
Technical
Nutrients


VIRGINIA
DISTRIBUTION NETWORK
Market gardens
Effluent flow
ANGLE VALE
Effluent flow
Effluent discharge channel
Bolivar Treatment Plant
Wastewater flow
Gulf St Vincent
ADELAIDE
(NORTHERN SUBURBS)


QUALITY FRUIT
eftpos
available here
eftpos
available here
GOLD
PINEAPPLE
$3.95
$4.50
$2.99
$3.99


GREEN
JOBS

# Adelaide 2012

- Over 20% of renewable electricity, 40% by 2020
- 120,000 PV roofs (of 600,000 houses) = 250 mw
- 20,000 ha of peri-urban  horticulture
- Recyled waste water used in crop irrigation
- Nearly 100% composting of organic waste
- Water sensitive development
- 60% carbon reduction by municipal buildings
- 1000s of new green jobs
- Nearly 3 million trees planted on 2000 ha

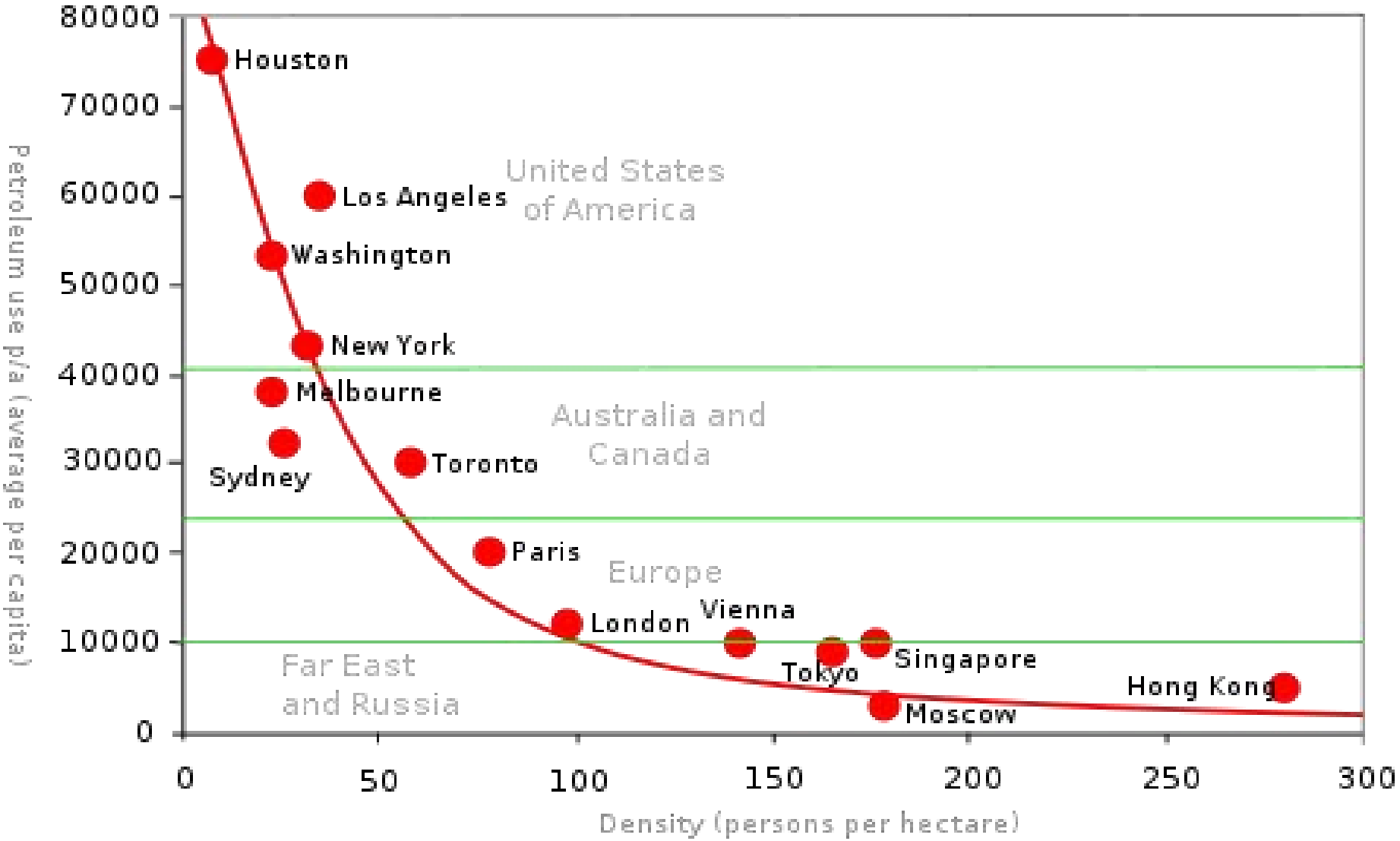
# Shanghai


3
Vauban
VAG
259

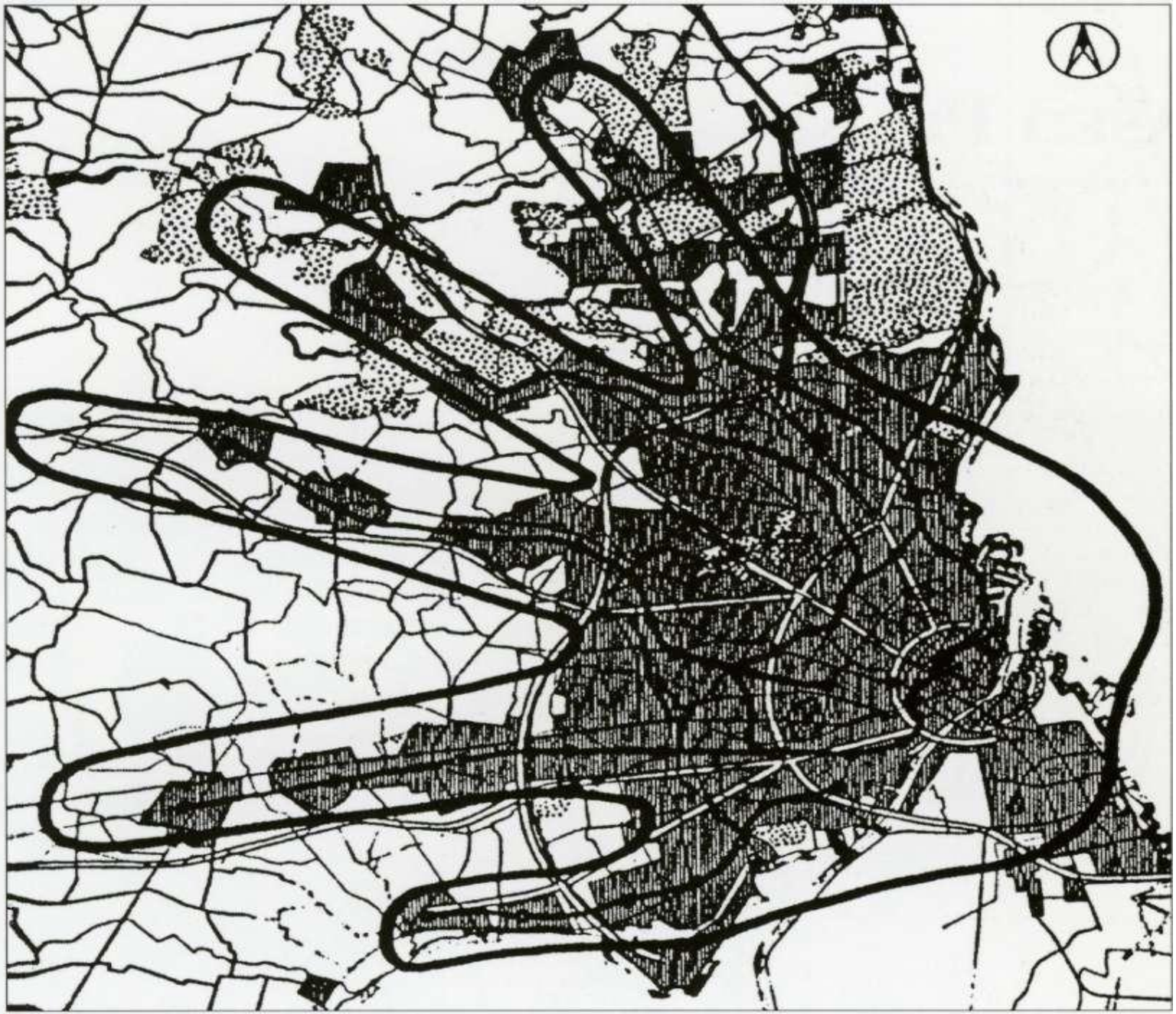

bicing
bicing
1307
794

# Relationship between Transport and Land Use

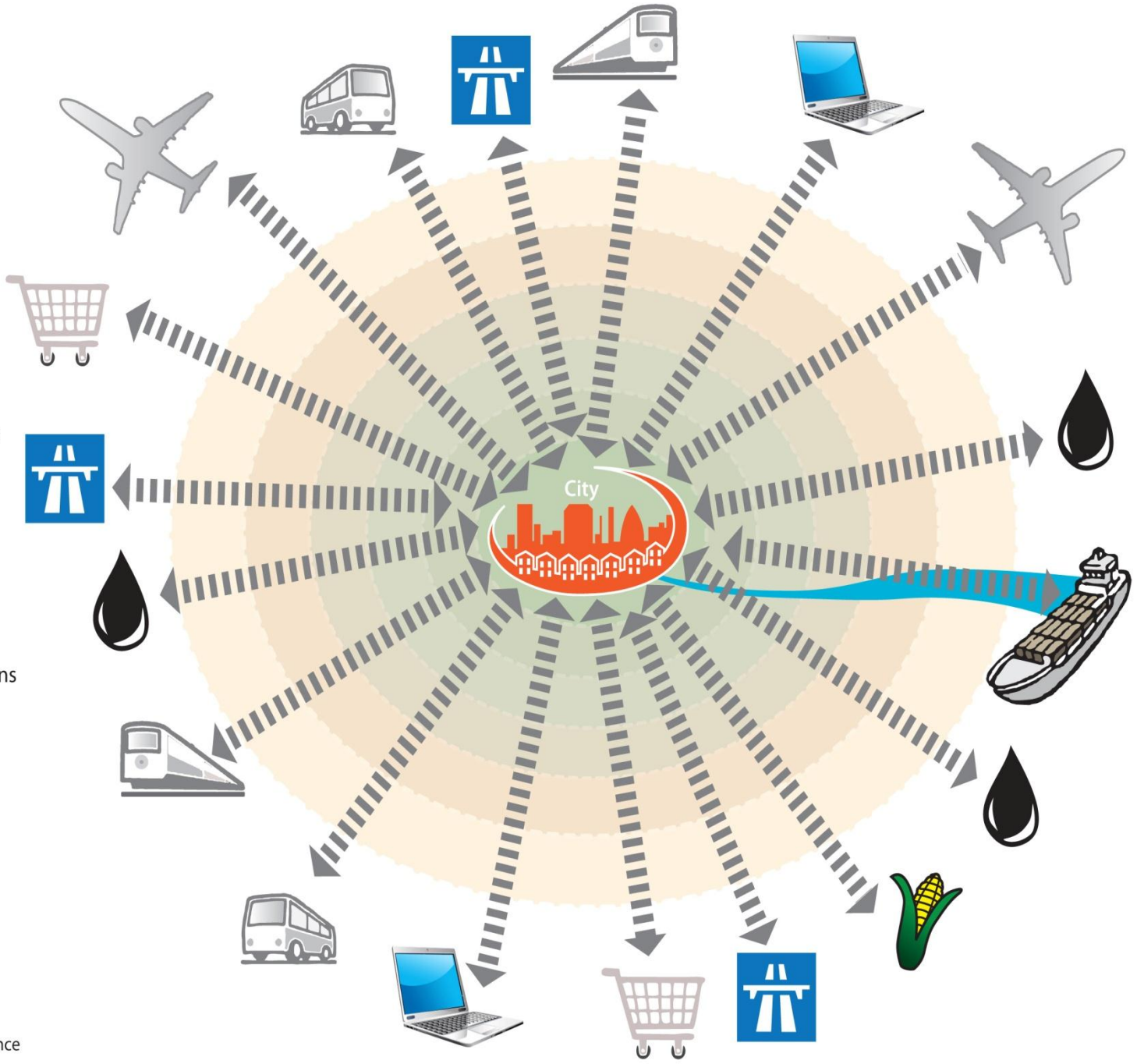
A commonly used study of 32 cities by Newman & Kenworthy in 1989 concluded that there was a strong link between urban development densities and petroleum consumption.



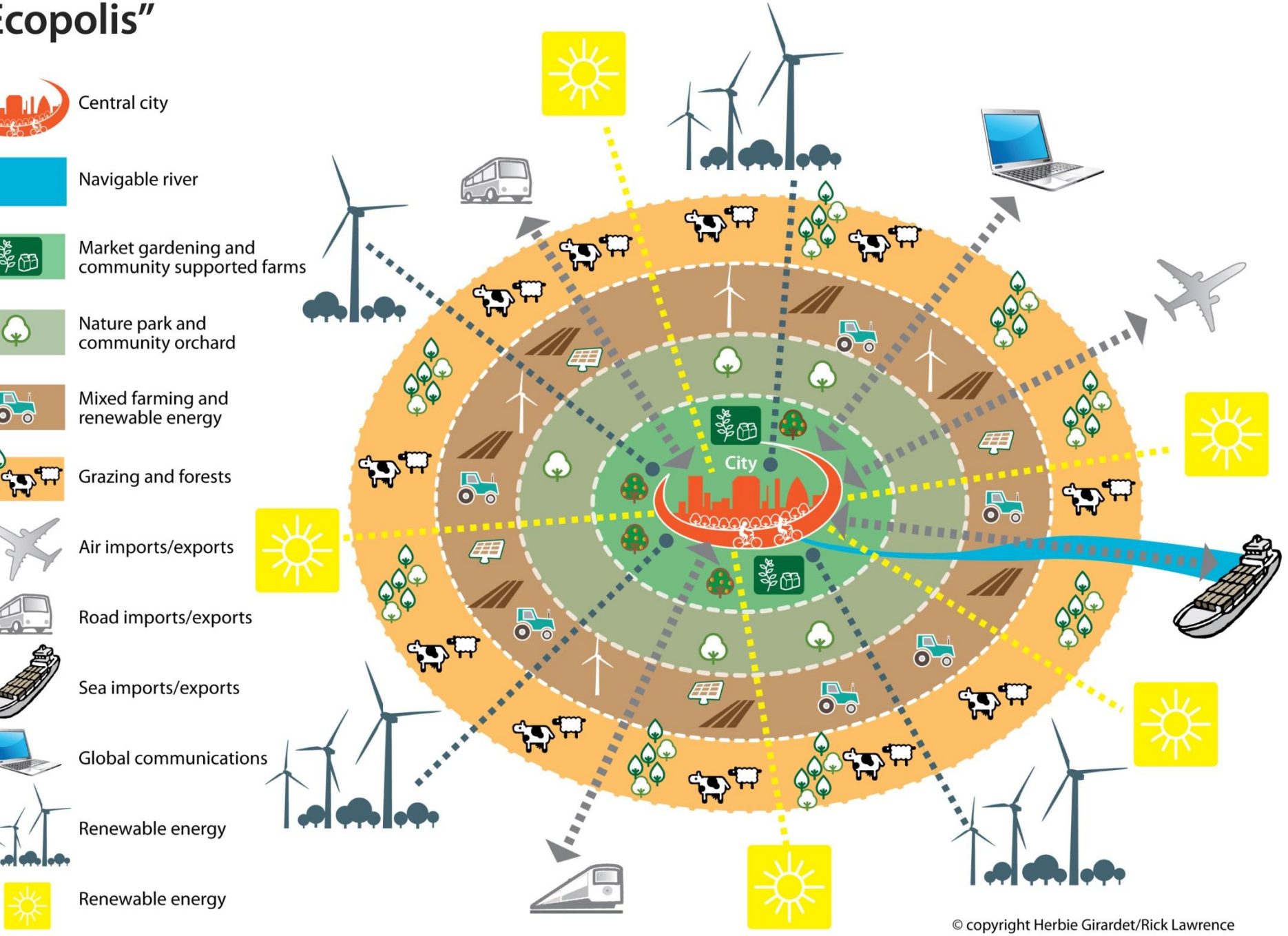
# Copenhagen



# "Petropolis"

# Ecopolis"



# Tianjin, Singapore

# Masdar, Abu Dhabi

# Food City, Dubai

# Regenerative cities: The key issues

- Making urban systems compatible with the world's ecosystems
- Regenerative energy systems
- Regenerating soils
- Replenishing plants nutrients
- Regenerating forests
- Regenerating water courses and lakes
- Regenerating community life

## A GIANT FOOTPRINT

The city on the left wastes resources:

*It gorges itself on meat,with animals fed mainly on imported feeds*

*It uses timber and paper products without concern about their forest origins*

*It emits vast amounts of CO2, requiring vast areas of vegetation to reabsorb it*

## A NIMBLE FOOTPRINT

The city on the right takes another chance:

*It citizens limit their meat consumption, preferring vegetable foods*

*Timber and paper are used frugally and efficiently*

*Tree planting schemes assure assure reabsorption of its limited CO2 output*

# Books and Reports

- **Creating a Sustainable Adelaide, 2003,**
*www.thinkers.sa.gov.au/lib/pdf/Girardet_Report.pdf*

**- Cities, People Planet, 2004 & 2008**

**- A Renewable world, 2009**

**- Regenerative Cities, 2010**

**- Regenerative Adelaide, 2012**

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