# Sustainable

## communities

## The sustainability challenge of emerging cities

19th EAROPH Conference
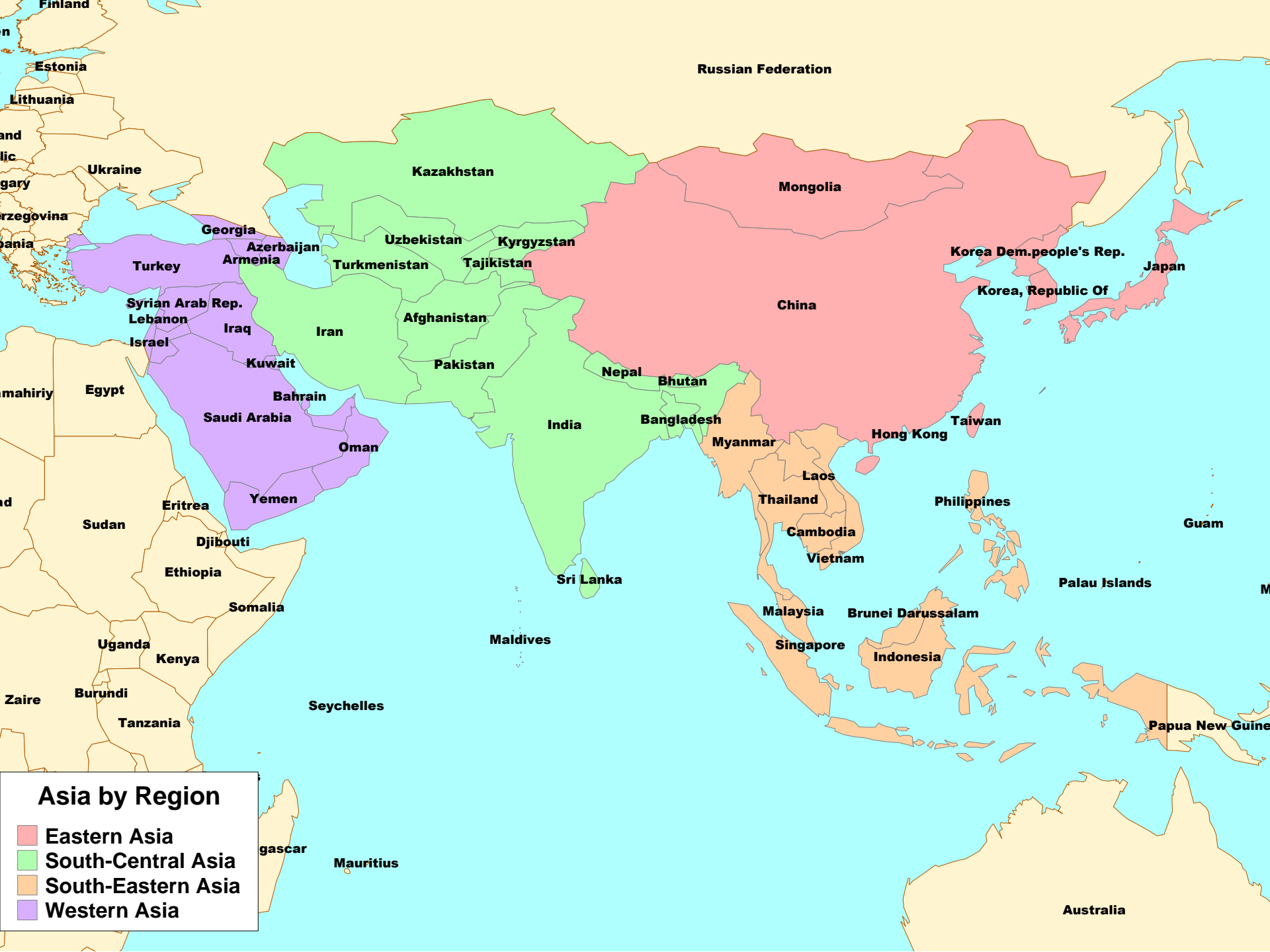Melbourne
Lyndsay Neilson
Secretary
Department of Sustainability and Environment
Victoria

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# Asia by Region

Finland
Estonia
Lithuania
Ukraine
Hungary
Herzegovina
Albania

Russian Federation

Georgia
Azerbaijan
Armenia
Turkey
Syrian Arab Rep.
Lebanon
Israel
Iraq
Kuwait
Bahrain
Saudi Arabia
Oman
Yemen

Kazakhstan
Uzbekistan
Turkmenistan
Kyrgyzstan
Tajikistan
Afghanistan
Iran
Pakistan
Nepal
Bhutan
India
Bangladesh
Sri Lanka
Maldives

Mongolia
China
Korea Dem.people's Rep.
Korea, Republic Of
Japan
Taiwan
Hong Kong

Myanmar
Laos
Thailand
Cambodia
Vietnam
Philippines
Malaysia
Brunei Darussalam
Singapore
Indonesia
Papua New Guinea
Palau Islands
Guam

Egypt
Jamahiriy
Eritrea
Sudan
Djibouti
Ethiopia
Somalia
Uganda
Kenya
Zaire
Burundi
Tanzania
Seychelles
Mauritius
Madagascar

Australia

Asia by Region

- Eastern Asia
- South-Central Asia
- South-Eastern Asia
- Western Asia

# World Urbanisation Trends 1970-2030

| Region | Urban Population (millions) | | | Urban Share of Total Population (%) | | |
|---|---|---|---|---|---|---|
| | 1970 | 2000 | 2030 | 1970 | 2000 | 2030 |
| World | 1329 | 2856 | 4944 | 36.0 | 47.0 | 60.8 |
| More Developed Regions | 652 | 882 | 1014 | 64.7 | 73.9 | 81.6 |
| Less Developed Regions | 677 | 1974 | 3929 | 25.2 | 40.5 | 57.0 |
| | | | | | | |
| Europe | 413 | 529 | 545 | 63.0 | 72.7 | 79.6 |
| North America | 171 | 250 | 354 | 73.7 | 79.1 | 86.8 |
| Latin America | 163 | 392 | 602 | 57.2 | 75.4 | 84.7 |
| Africa | 83 | 295 | 748 | 23.2 | 37.1 | 53.5 |
| Asia Total | 486 | 1367 | 2664 | 22.7 | 37.1 | 54.5 |
| Eastern Asia (incl China) | 225 | 598 | 1039 | 22.8 | 40.4 | 62.6 |
| South-Cental Asia (incl India) | 161 | 439 | 959 | 20.6 | 29.5 | 43.8 |
| Western Asia (incl Turkey) | 39 | 124 | 234 | 44.8 | 64.6 | 72.2 |
| South-Eastern Asia (incl Indonesia) | 61 | 206 | 432 | 21.3 | 39.6 | 60.8 |
| Oceania (incl Australia and New Zealand) | 14 | 23 | 31 | 70.6 | 72.7 | 74.9 |
| Australia and New Zealand | 13 | 21 | 27 | 84.4 | 89.9 | |

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# Urban Population by Region 1970, 2000 and 2030
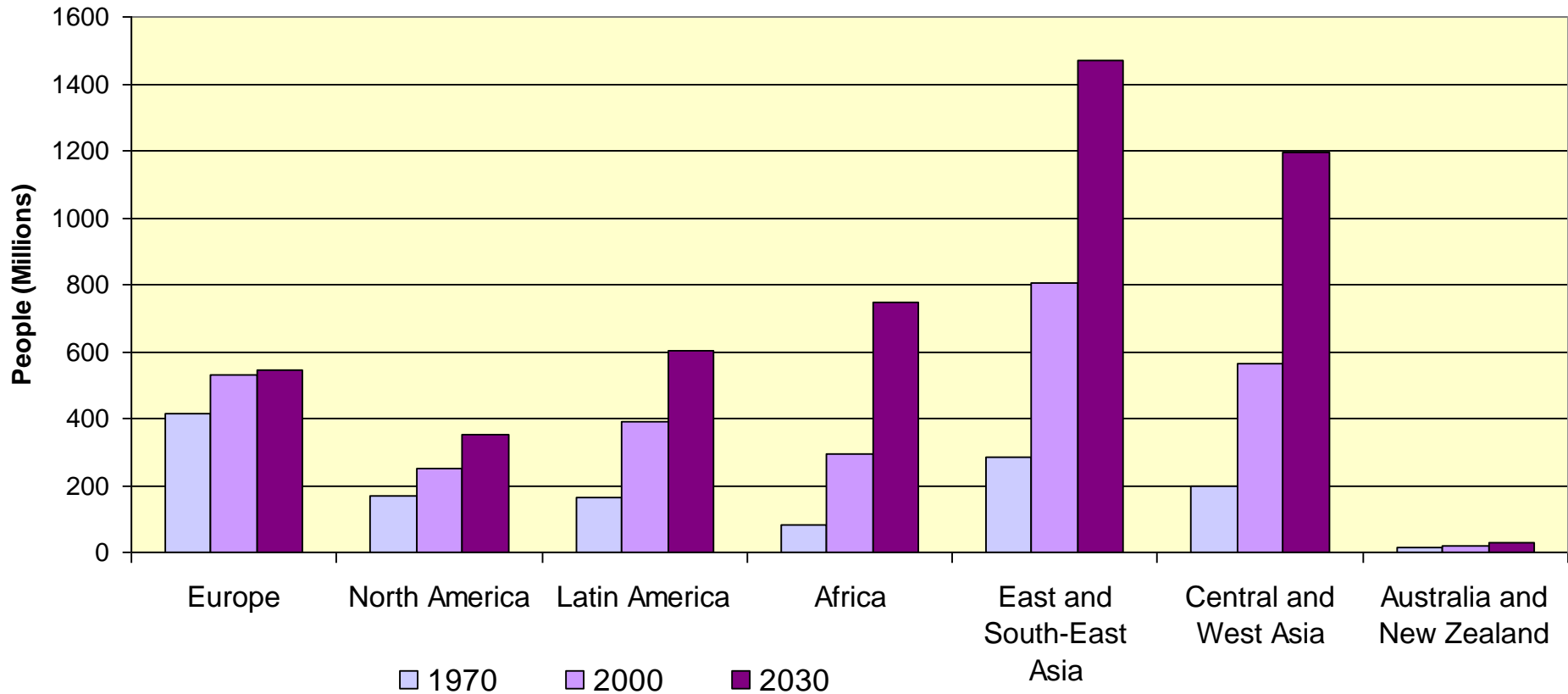


Source: United Nations, World Urbanisation Prospects, 2003

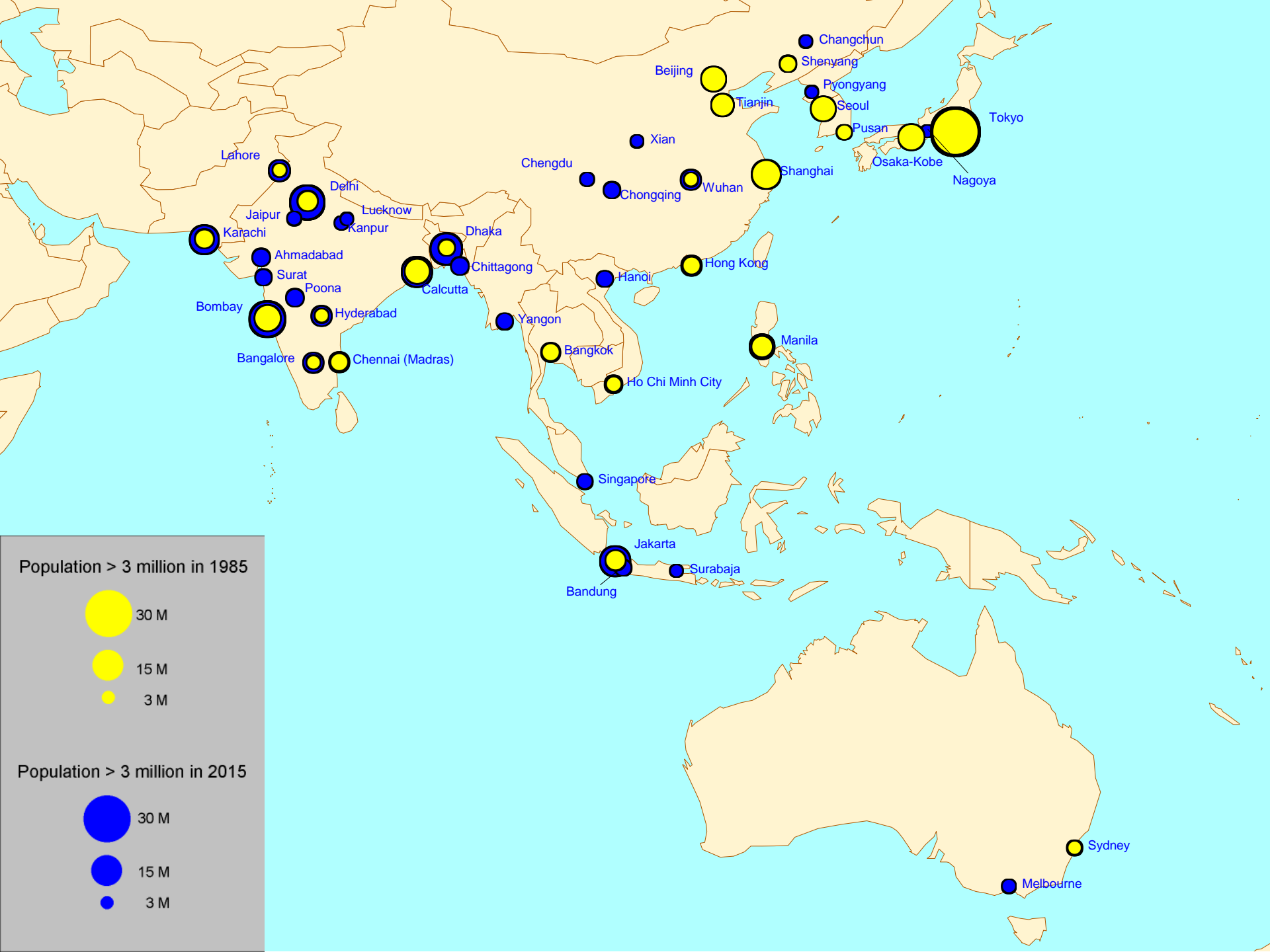# Number of cities by size, World 1950 to 2015.



**Number of cities** (y-axis, 0 to 1200)

X-axis: 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015

Legend:
- ■ 10 million +
- ■ 5 to 10 million
- ■ 1 to 5 million
- □ 0.5 to 1 million

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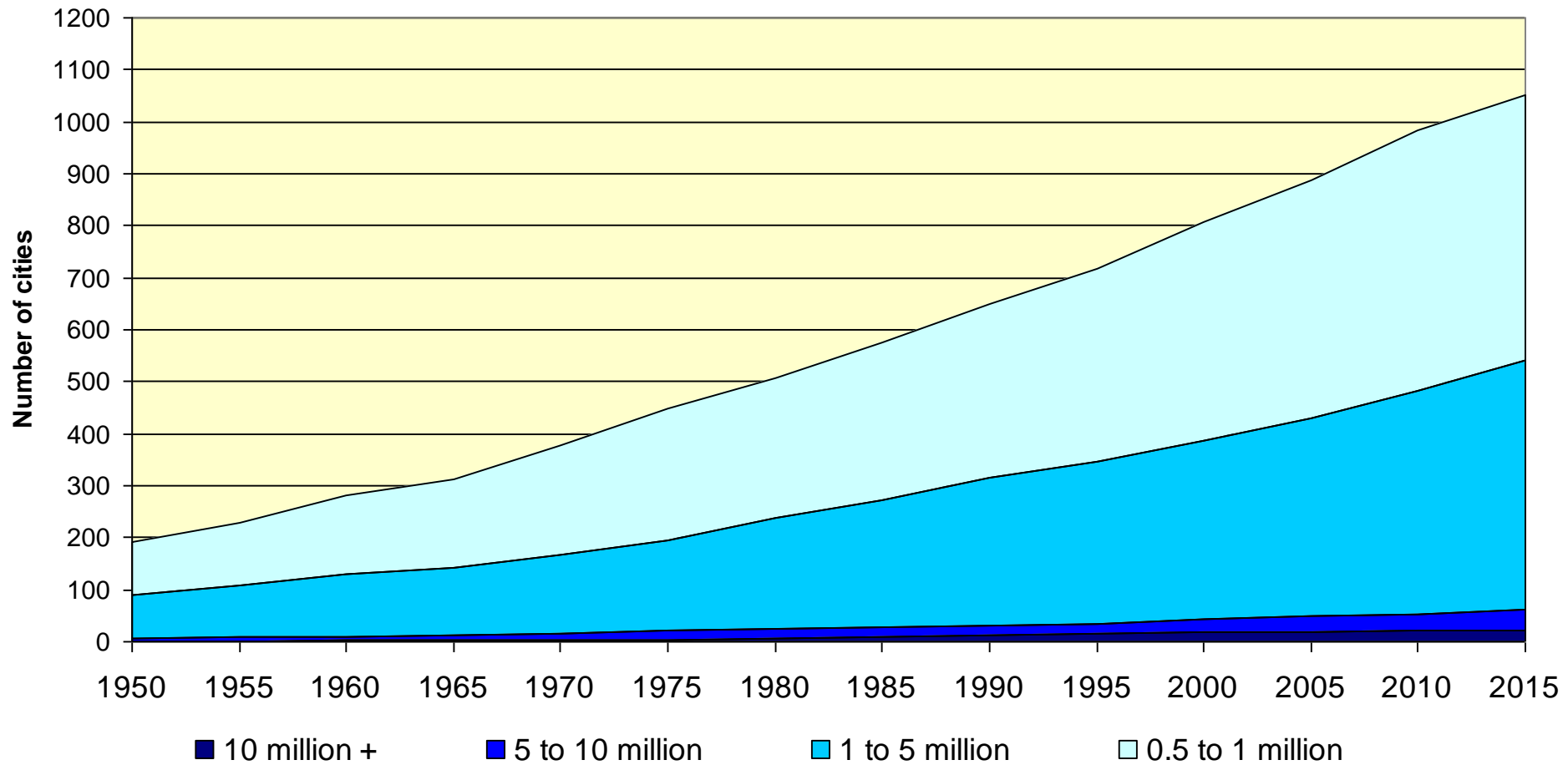
# Urban agglomerations of 1 to 5 million people, EAROPH region



Source: United Nations, World Urbanisation Prospects, 2003

Changchun

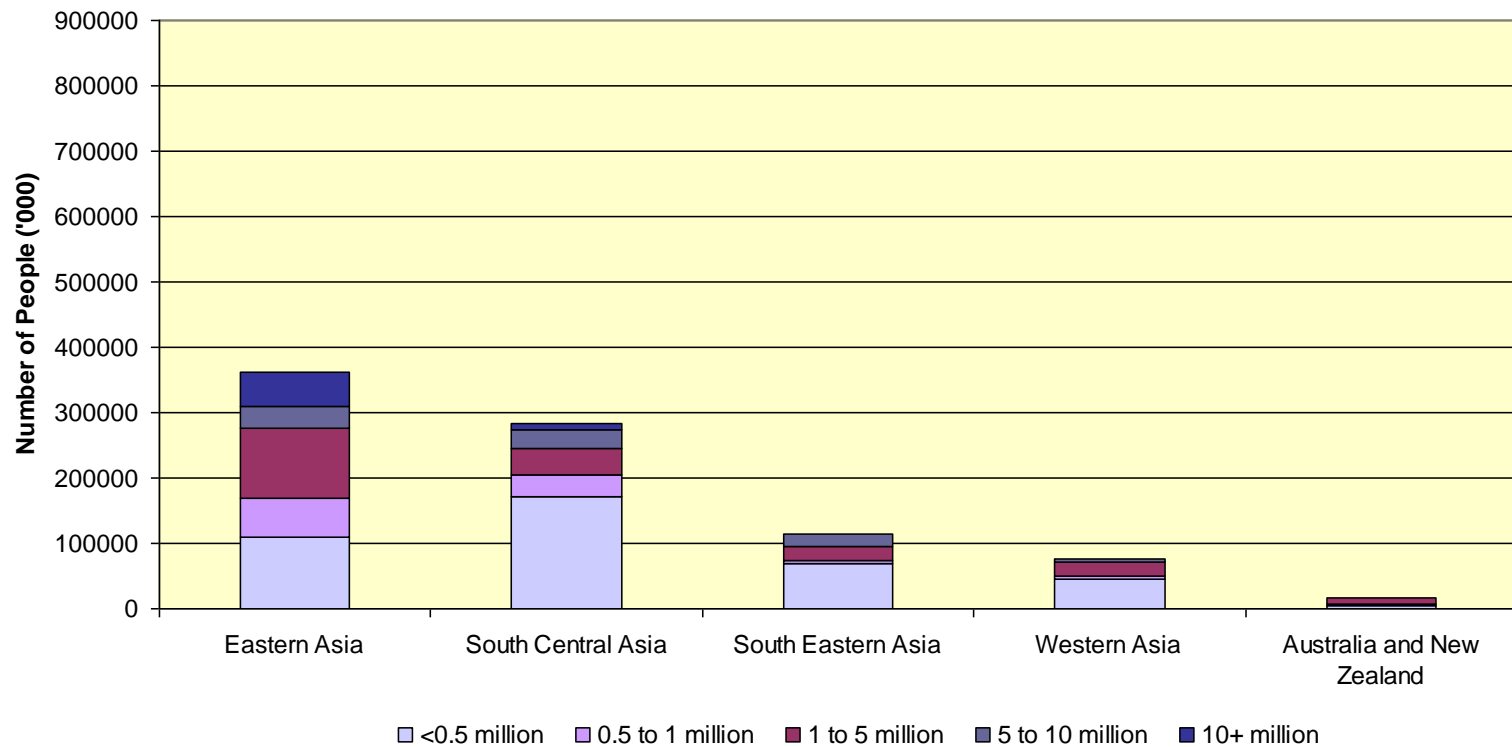Beijing  Shenyang  Pyongyang

Tianjin  Seoul  Tokyo

Pusan

Xian  Nagoya

Osaka-Kobe

Lahore  Chengdu  Shanghai

Delhi  Chongqing  Wuhan

Jaipur  Lucknow

Karachi  Kanpur  Dhaka

Ahmadabad  Chittagong  Hong Kong

Surat  Calcutta

Poona  Hanoi

Bombay  Hyderabad  Yangon

Bangalore  Chennai (Madras)  Bangkok  Manila

Ho Chi Minh City

Singapore

Jakarta

Surabaja

Bandung
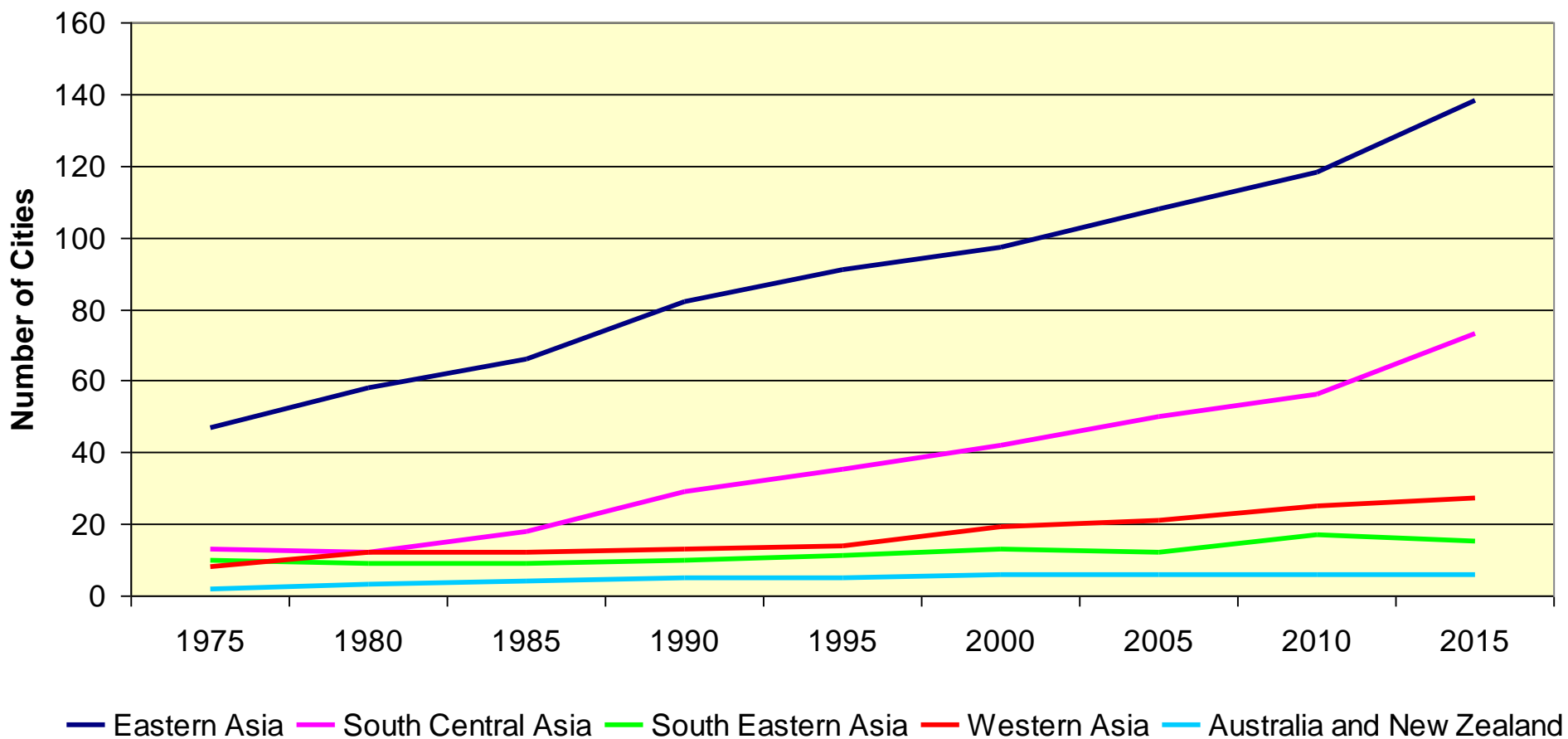
Population > 3 million in 1985

30 M

15 M

3 M

Population > 3 million in 2015

30 M

15 M

3 M

Sydney

Melbourne
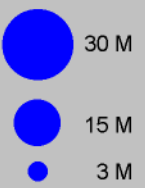
# Urban population by city size, 2015.
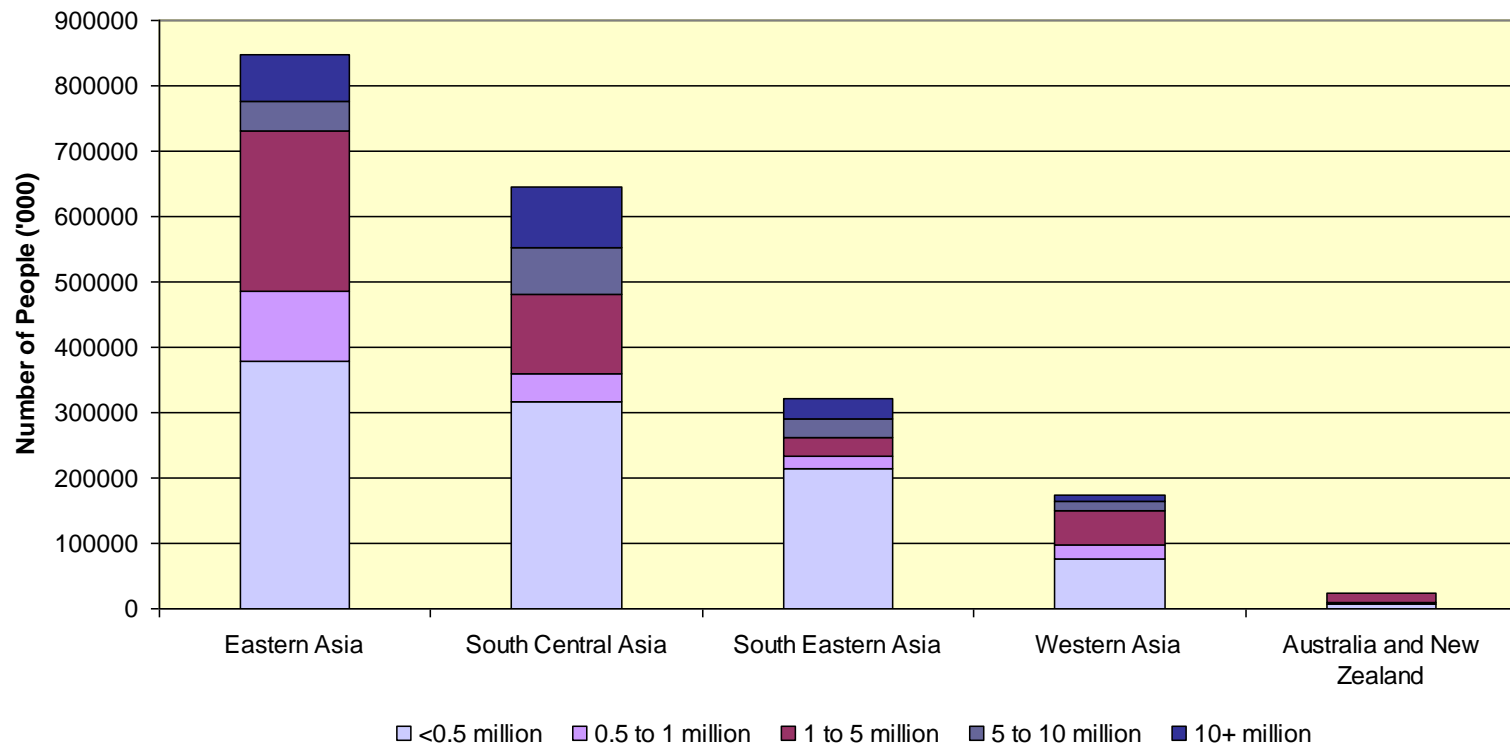
# Population growth, selected East Asian cities.



Source: United Nations, World Urbanisation Prospects, 2003
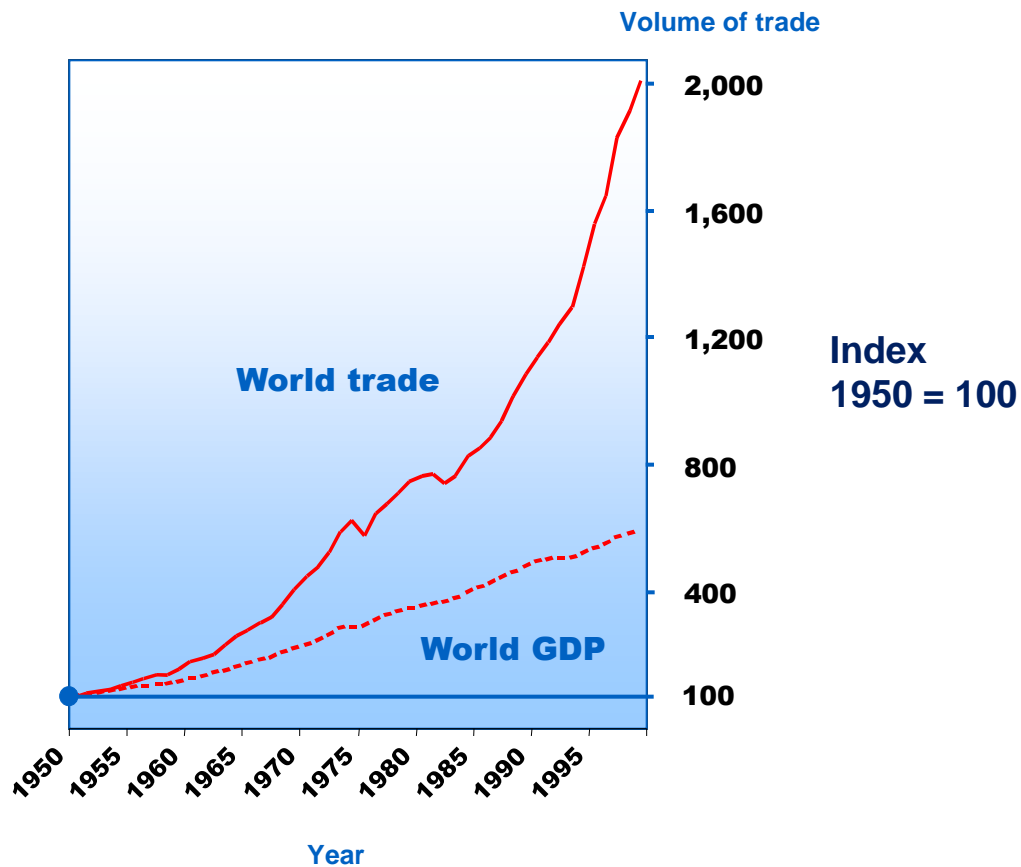
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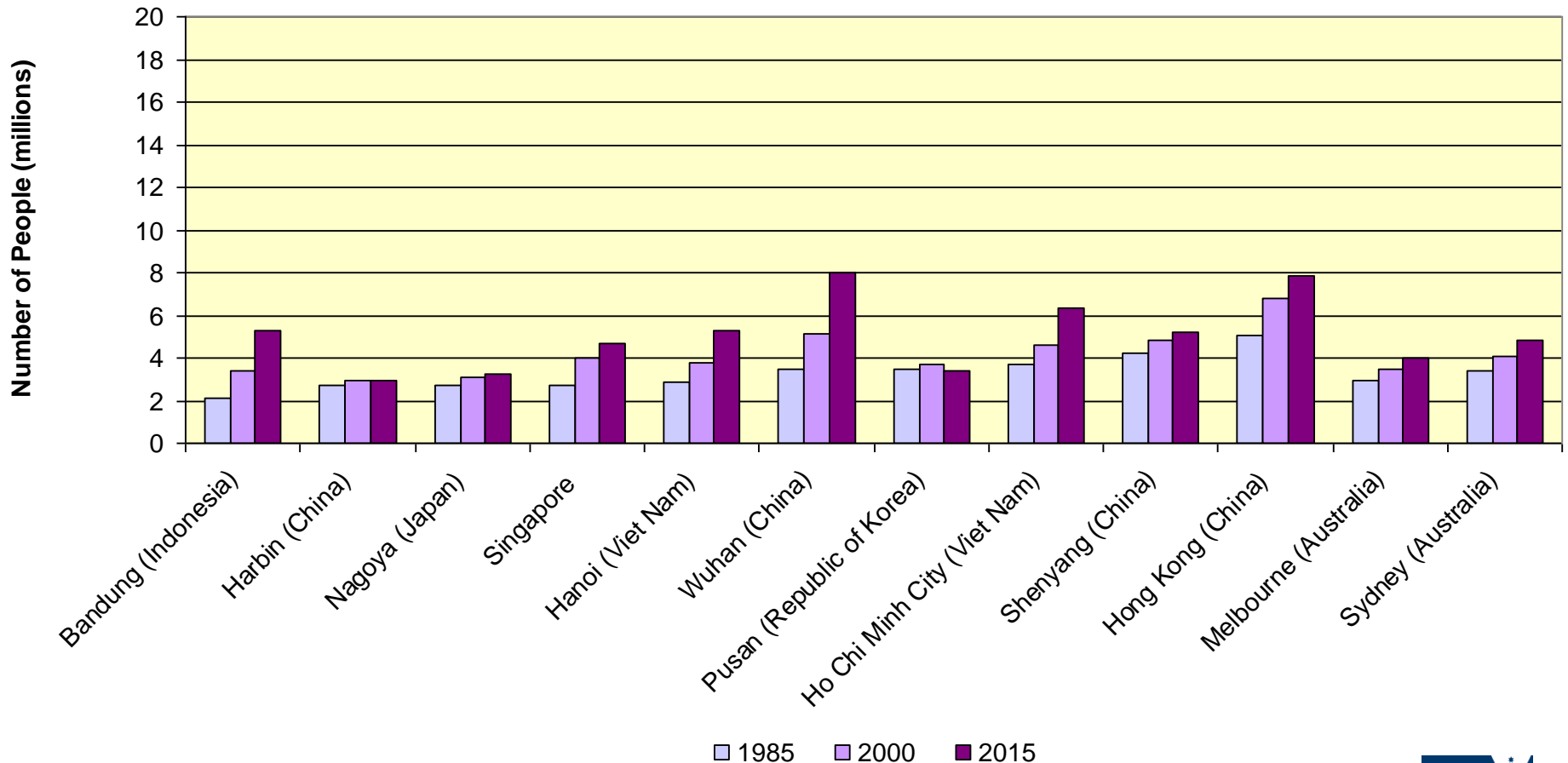
# Population growth, Selected West Asian cities.
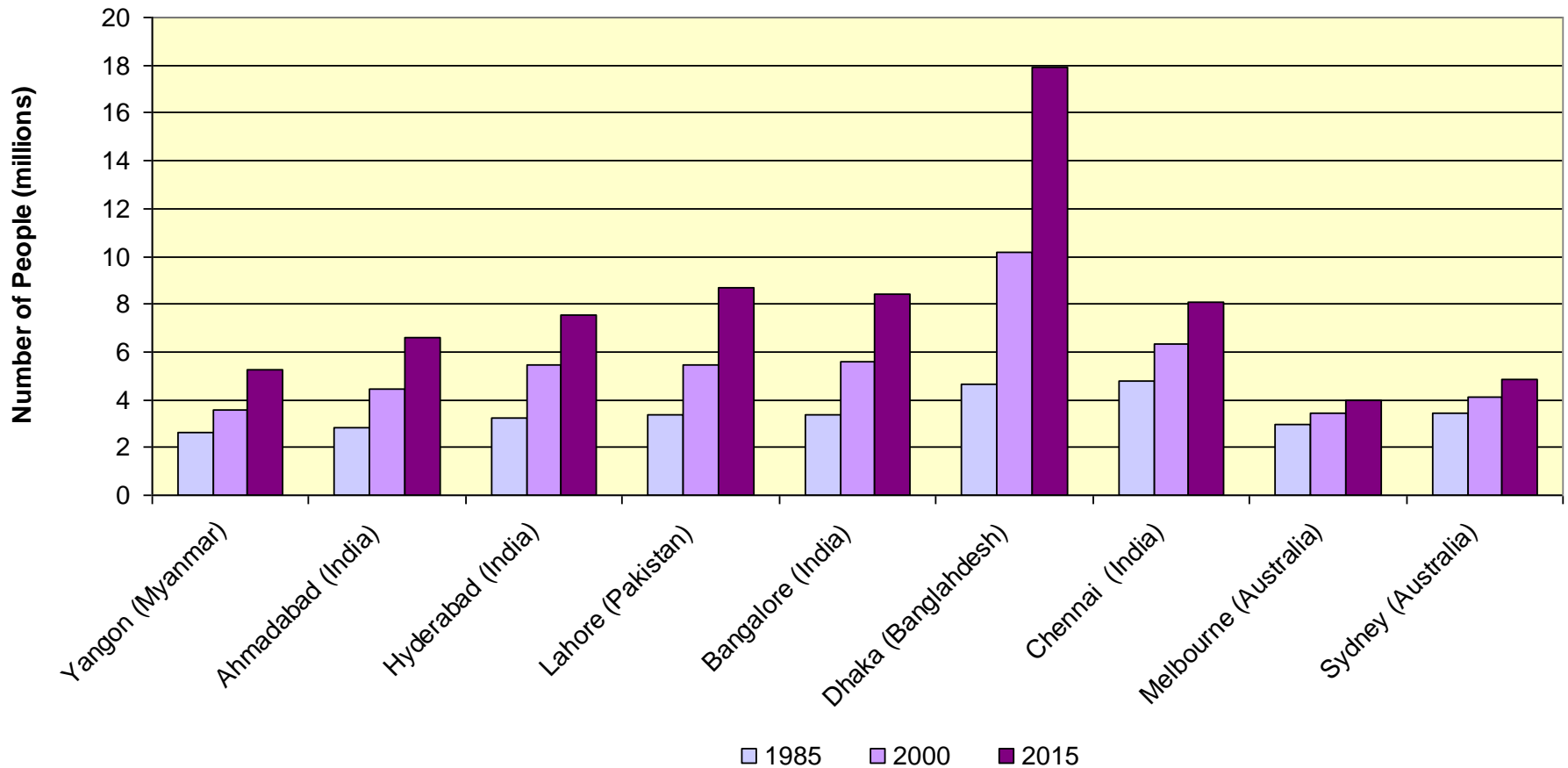


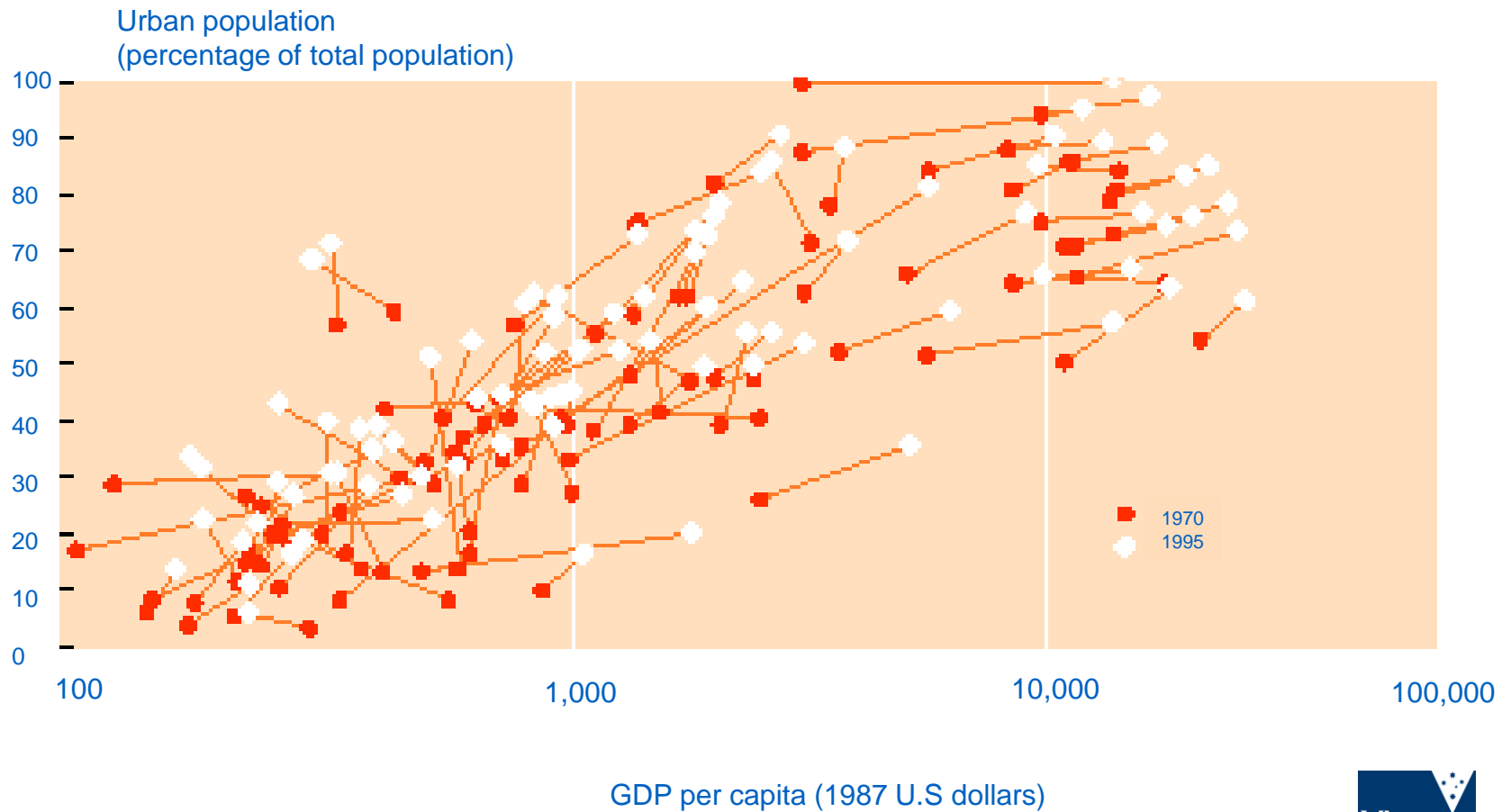Source: United Nations, World Urbanisation Prospects, 2003

# Globalisation

## Volume of World trade, 1950 to 1999
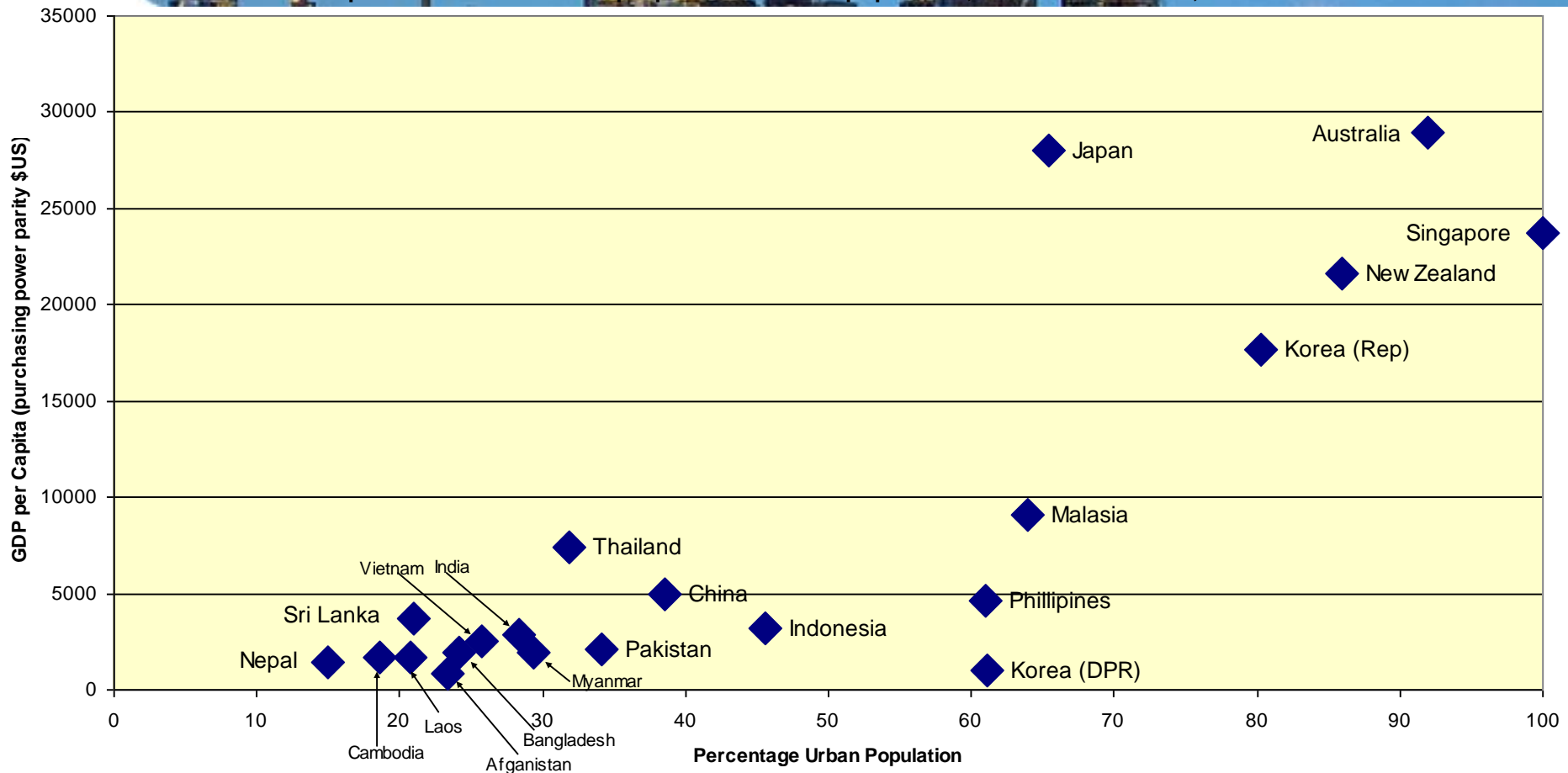


Source: World Trade Organisation

# Urbanisation & economic growth



Urban population
(percentage of total population)

GDP per capita (1987 U.S dollars)

■ 1970
◻ 1995

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# Comparison of per capita GDP and urbanisation, selected countries



Comparison of GDP and the proportion of urban population, selected countries, 2003.

# Are these changes sustainable?

▶ ## Definition

➢ "development that meets the needs of the present, without compromising the ability of future generations to meet their own needs"
Brundtland Commission

➢ Essential aspects
  ➢ Provide for economic progress for all, including next generations
  ➢ Enable ongoing social development
  ➢ Protect integrity of our natural resources and environment
  ➢ Maintaining cultural values

▶ ## Achieving sustainability

➢ Whole of community approach - government alone can't do it
➢ Innovation to the fore - especially in the private sector
➢ Research & development challenge
➢ Strong leadership is essential
➢ Empowered local communities can make a major contribution

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# The sustainability challenge for EAROPH

- **Economic growth and poverty reduction**
  - creating sources of employment and wealth
  - addressing the problems of the poorest in the community
- **Human development and social progress**
  - education, health and housing
  - participation and empowerment
  - the development of civil society institutions
- **Management of the environment and of scarce resources**
  - water supply, energy and building materials
  - maintaining valuable agricultural land
  - minimising the impacts of human development on natural resources
- **Maintaining cultural identity and values**
  - hollywood or bollywood

# The concept of the Ecological Footprint is useful in addressing *environmental sustainability*

**Mathis Wackernagel**

**www.FootprintNetwork.org**

# Ecological Footprint
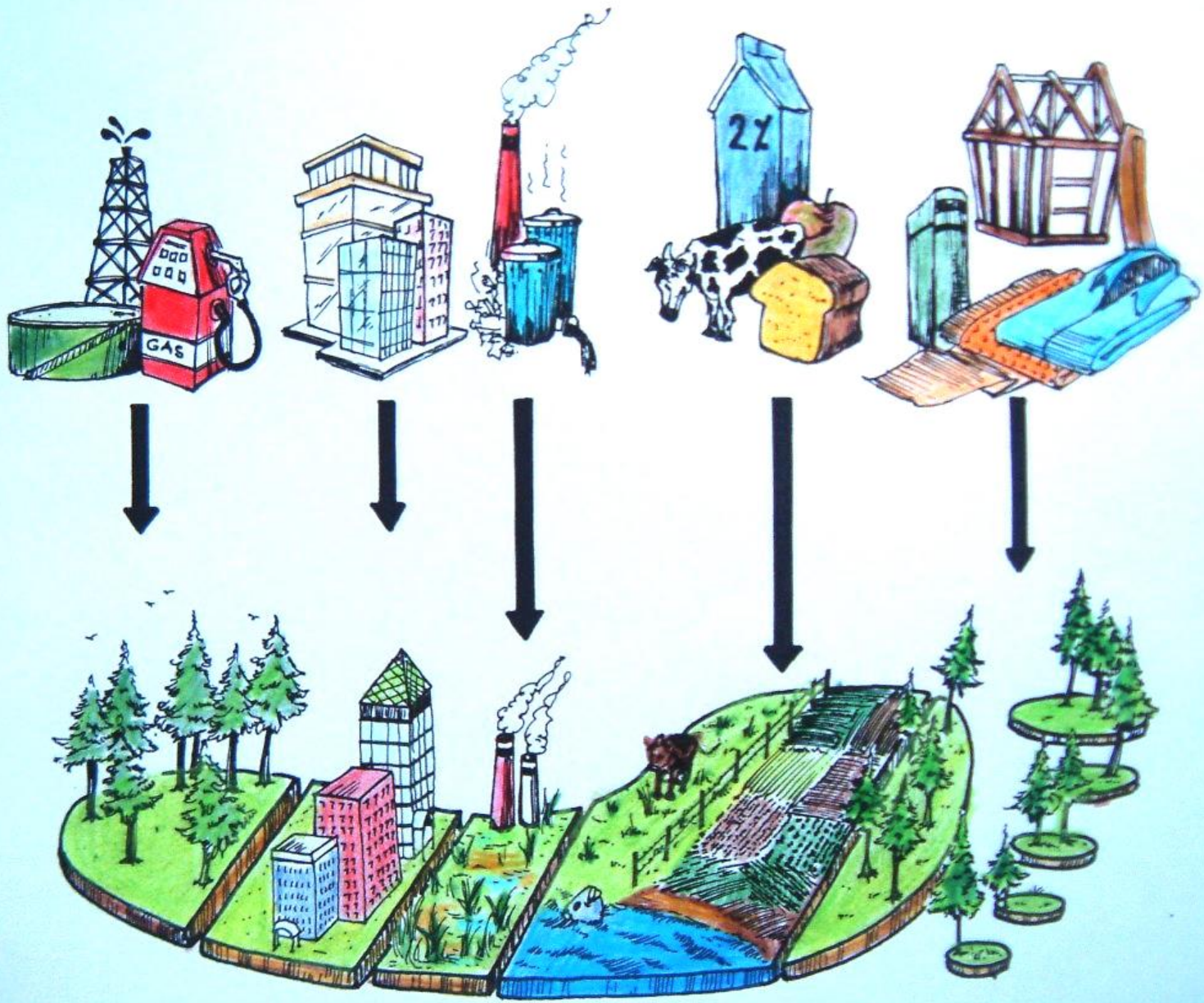
Fossil Fuel  Built-up  Waste          Food                    Fibres
                       absorption

# Global Footprint Accounts (in global hectares/person, 1999 data) - Wackernagel

**Ecological Demand** *(Ecological Footprint)*

**Footprint Areas for:**

| | |
|---|---|
| Growing Crops | 0.53 |
| Grazing Animals | 0.12 |
| Settlements & infrastructure | 0.10 |
| Producing timber & fuelwood | 0.33 |
| Absorbing excess $CO_2$ | 1.07 |
| Harvesting Fish | 0.14 |

**Total Global Demand** **2.29**

**Demand Exceeds Supply By 20% >**

**Ecological Supply** *(Biocapacity)*

**Biocapacity Areas:**

| | |
|---|---|
| Crop land | 0.53 |
| Grazing land | 0.27 |
| Built-up area | 0.10 |
| Forest | 0.86 |
| Fishing Grounds | 0.14 |

**Total Global Supply** **1.90**

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# The Footprint over time - the number of 'earths' we need (Wackernagel)
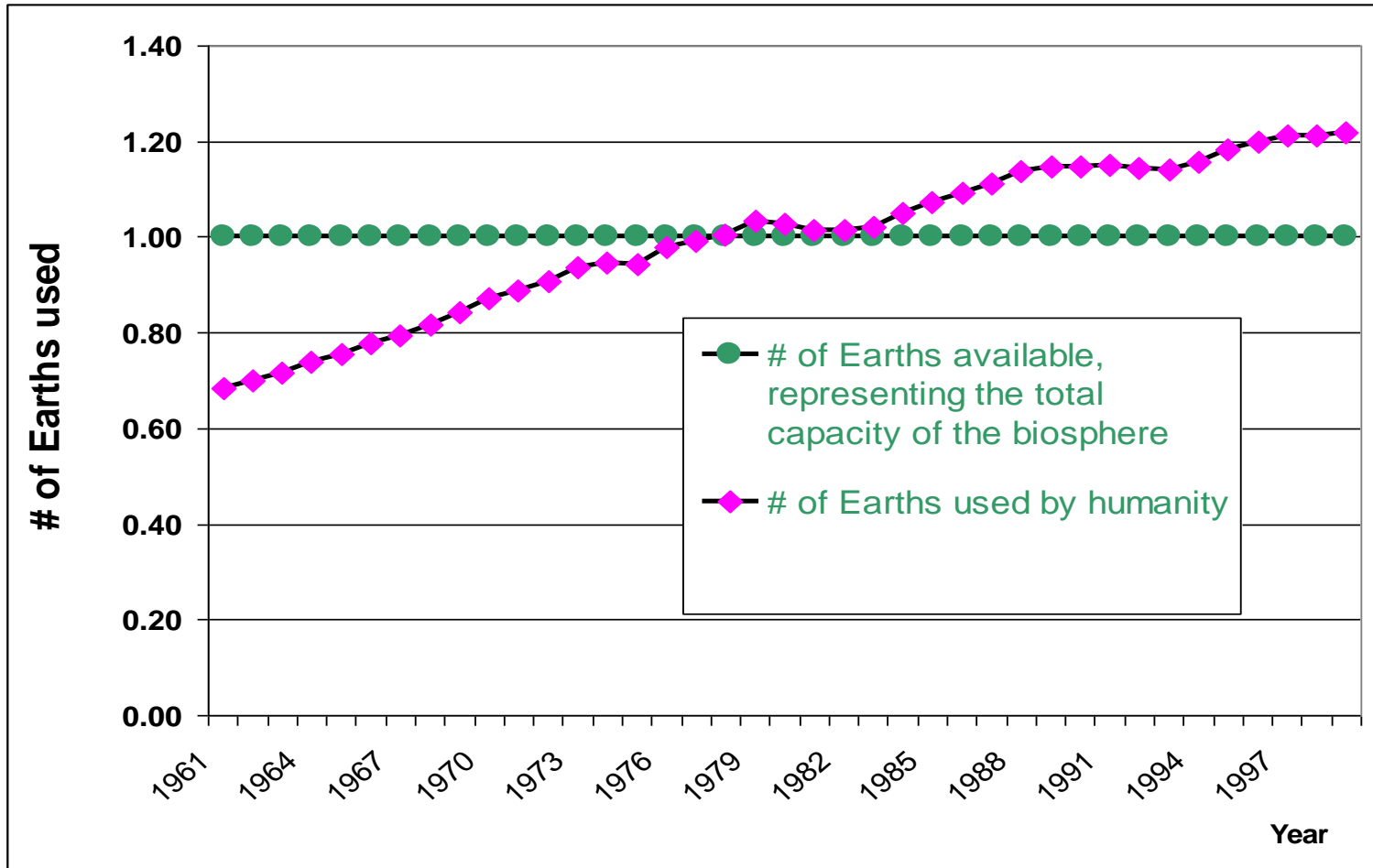
# Footprint data for selected countries (Wackernagel)

| Data for 1999 | Eco-Footprint [global ha /cap] | Biocapacity [global ha/cap] |
|---|---|---|
| Australia | 7.6 | 14.6 |
| China | 1.6 | 1.1 |
| Germany | 4.7 | 1.8 |
| Italy | 3.8 | 1.3 |
| Japan | 4.6 | 0.8 |
| Russia | 4.2 | 5.1 |
| South Africa | 4.0 | 2.5 |
| US | 9.6 | 5.8 |
| **WORLD** | **2.3** | **1.9** |

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# Ecological footprint for Asian countries, 1999.
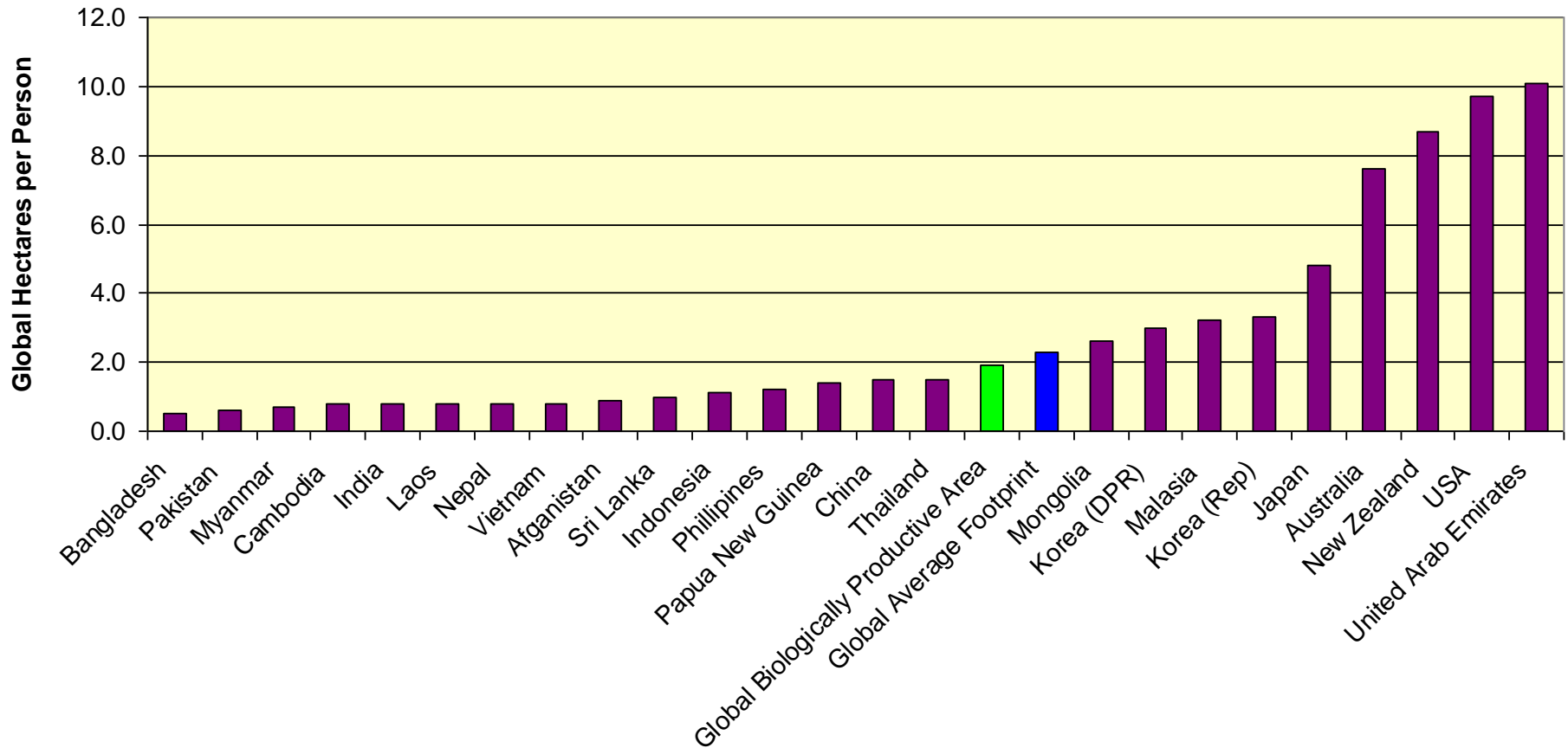


Source: Redefining Progress, Ecological Footprint of Nations, 2002.

# Melbourne's ecological footprint



The population of metropolitan Melbourne requires the equivalent land area of the State of Victoria and an additional 3 million hectares to support it.

23 million hectares

3 million hectares

Ecological footprint = 26 million global hectares
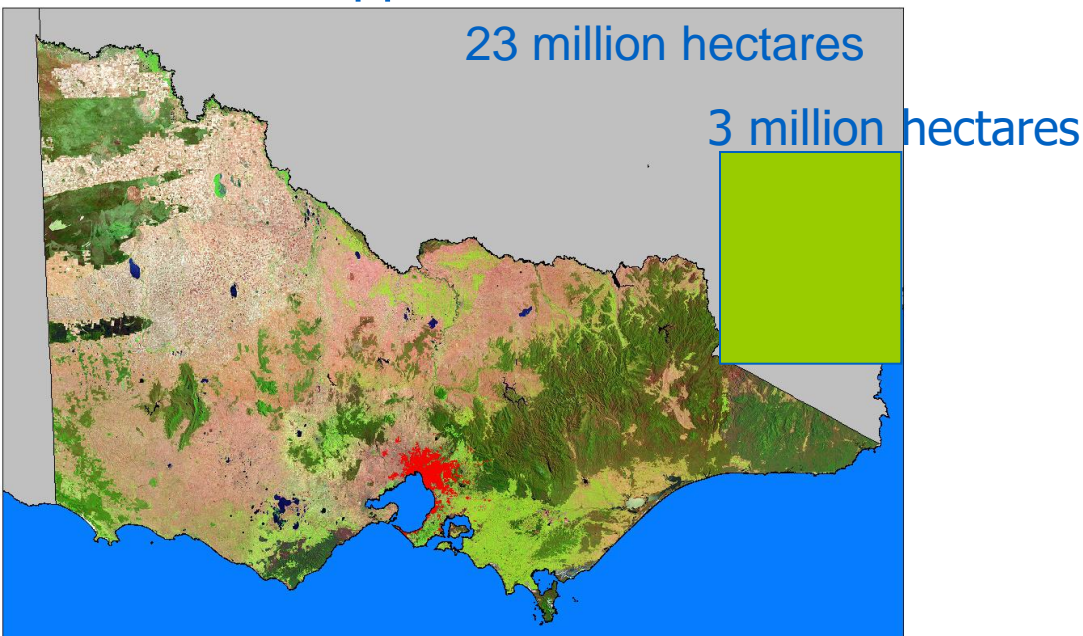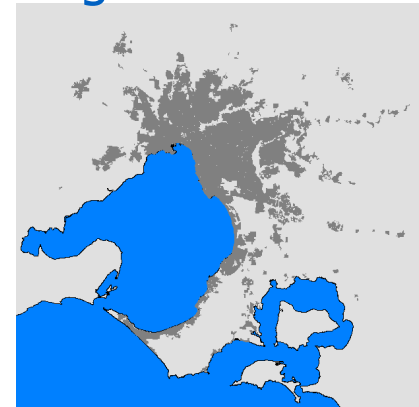
# Why do we need sustainability?

'*What was utopian ten years ago is now a matter of practical policy implementation.*

*Remaining with the status quo is not an option: doing nothing different translates into lost opportunities, higher transaction costs, and higher costs to cope with social distress and environmental problems.*'

-OECD Territorial Review of Melbourne 2003

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# Sustainability framework

- Victoria is developing a framework for **_environmental sustainability_** around three key themes

- **Maintaining and enhancing natural capital**
  - ➢ this involves managing the State's natural resources so they are not depleted or destroyed (healthy rivers, biodiversity, soils, fish stocks)

- **Increasing productivity of resource use**
  - ➢ this involves doing more with less - using fewer resources to meet our needs and producing less waste (water conservation, energy conservation, greenhouse gas management, solid waste reduction and recycling)

- **Reducing the impact of our activities and settlements**
  - ➢ this involves reducing our ecological footprint (less urban sprawl, higher densities, more public transport, reduced impact of farming)

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# Key environmental issues

- Water
- Greenhouse gas
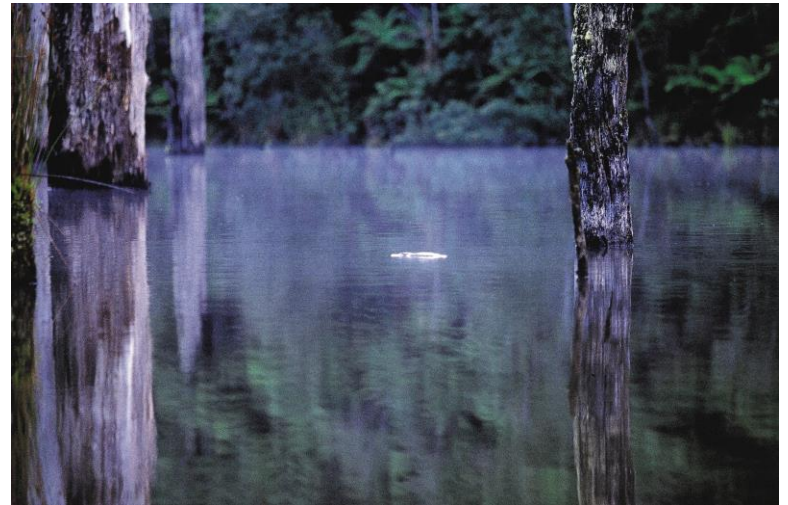
# Greenhouse

- 20% increase in greenhouse gas emissions by 2020.

- By 2070, Victoria is likely to be 5.0°C warmer than it was in 1990, rainfall decreases are likely and frosts are likely to decrease in frequency

- World Wildlife Fund report demonstrates that climate change is a key reason why the current Australian drought is so severe

- Snow cover duration in the Victorian and NSW alps is likely to reduce by between 18 and 66% by 2030



Annual Mean Temperature Anomalies For Australia

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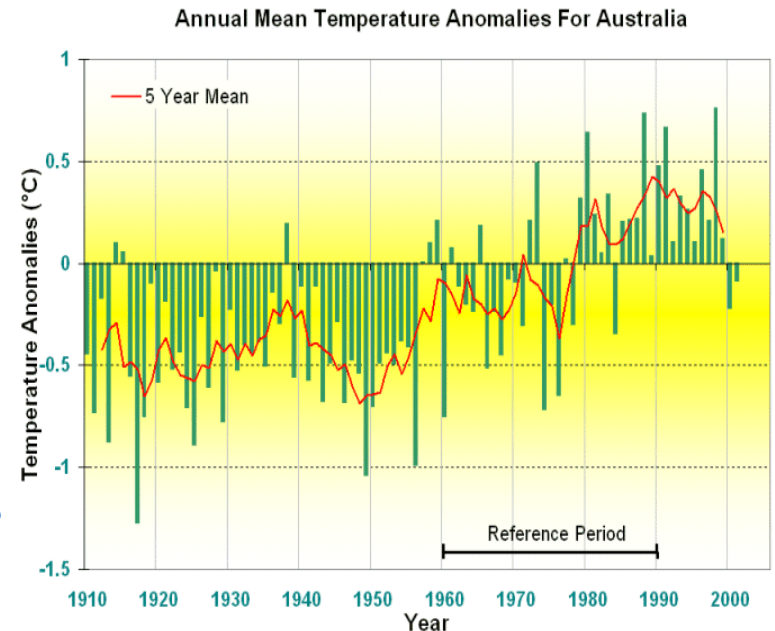
# Water

## Key facts:

- Australia is the driest inhabited continent
- We consume the most water in the world per capita
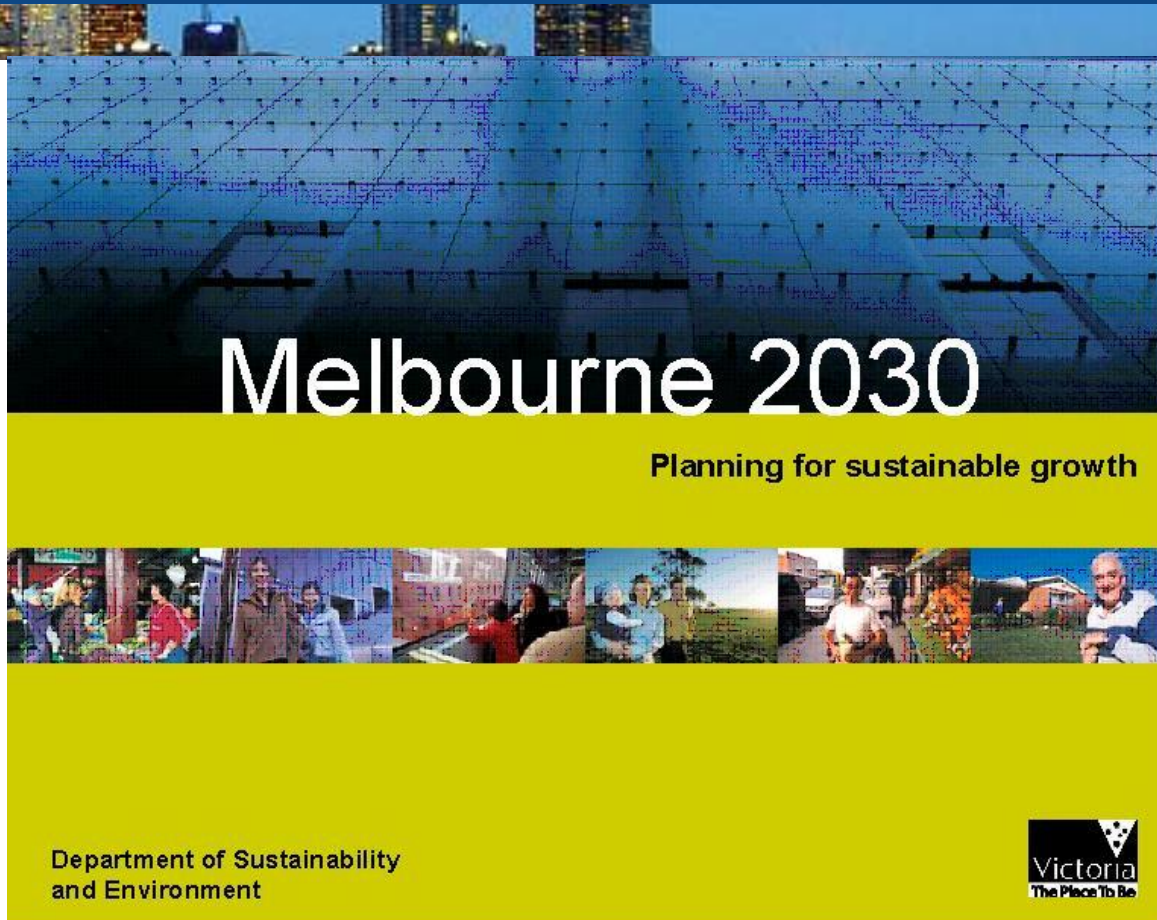- Every Melbournian consumes 400L of water a day.

## Key targets:

- Reduce Melbourne's drinking water use per capita by 15 per cent by 2010
- Recycle 20 per cent of Melbourne's "waste" water by 2010.
- Increase the efficiency of irrigation systems across the State by 25 per cent by 2020.

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# Melbourne 2030

▶ **Planning for sustainable growth**

- ➢ Vision
- ➢ Key Principles
  - ➢ Sustainability
  - ➢ Innovation
  - ➢ Leadership
  - ➢ Partnership
- ➢ Key directions
  - ➢ More compact city
  - ➢ Better management of metropolitan growth
  - ➢ A greener city
  - ➢ Better transport links



Melbourne 2030

Planning for sustainable growth

Department of Sustainability and Environment
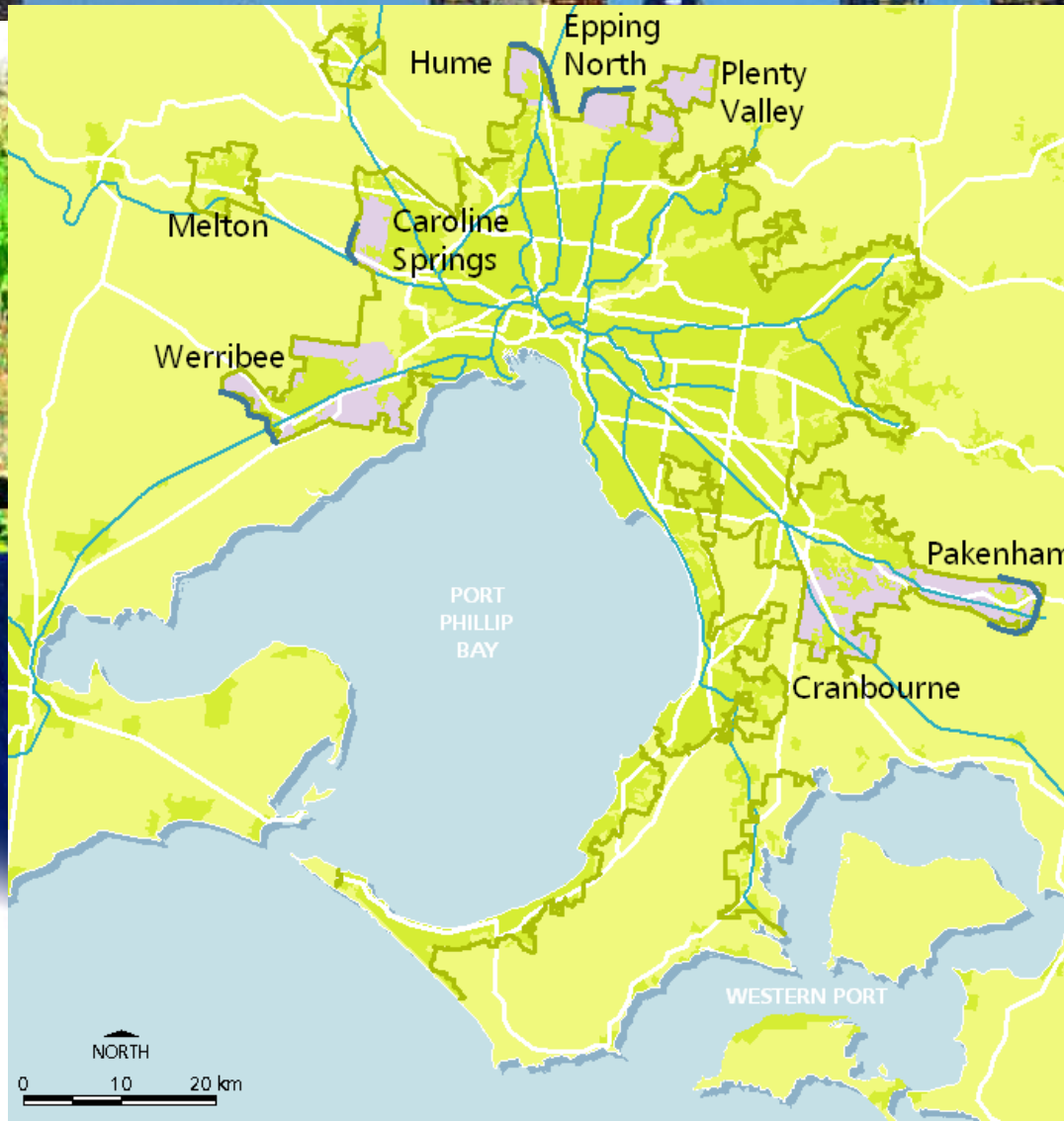
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# Managing Urban Development



## Urban Growth Planning

- Urban Growth Boundaries
- Melbourne is catching up

# Managing Urban Development



Legend:
- Growth area
- Possible future development front
- Urban growth boundary
- Existing urban area

# Managing Urban Development

▶ **Urban Growth Planning**

  ➢ Urban Growth Boundaries

  ➢ Melbourne is catching up

▶ **Major aspects to address**

  ➢ Integrated land release, supporting infrastructure provision

  ➢ Achieving increased density in established areas

  ➢ Reduced demand for resources (water and energy)

  ➢ Reducing car dependency - providing alternatives

  ➢ Waste minimisation

  ➢ Effectiveness of planning and regulatory frameworks

# Urban Development Program

- **Key process for achieving benefits of directed growth**

- **Ongoing ability to provide residential and industrial land**
  - Integrated with supporting infrastructure requirements
  - Extensive stakeholder participation
  - Evidence-based
  - Consistent with Melbourne 2030 outcomes

- **Key outcomes**
  - Shared understanding of land supply and demand
  - Recognised as the most comprehensive and reliable source of information
  - Early warning of potential supply pressures and infrastructure shortfalls
  - Action triggered to address potential problems.

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# Activity Centres/Transit Cities



## Objectives

- ➢ More efficient use of urban infrastructure through higher density / activity
- ➢ Lead sustainable city development
- ➢ Integration of public / private sector investment to generate an overall better outcome
- ➢ Develop high density housing near transit centres
- ➢ Protect residential character in established areas
- ➢ Build stronger communities with fair and equitable access to services and job opportunities

## Achievements

- ➢ 13 Transit Cities
- ➢ Active public / private partnerships
- ➢ High quality urban centres

# Melbourne 2030 maps a network of activity centres
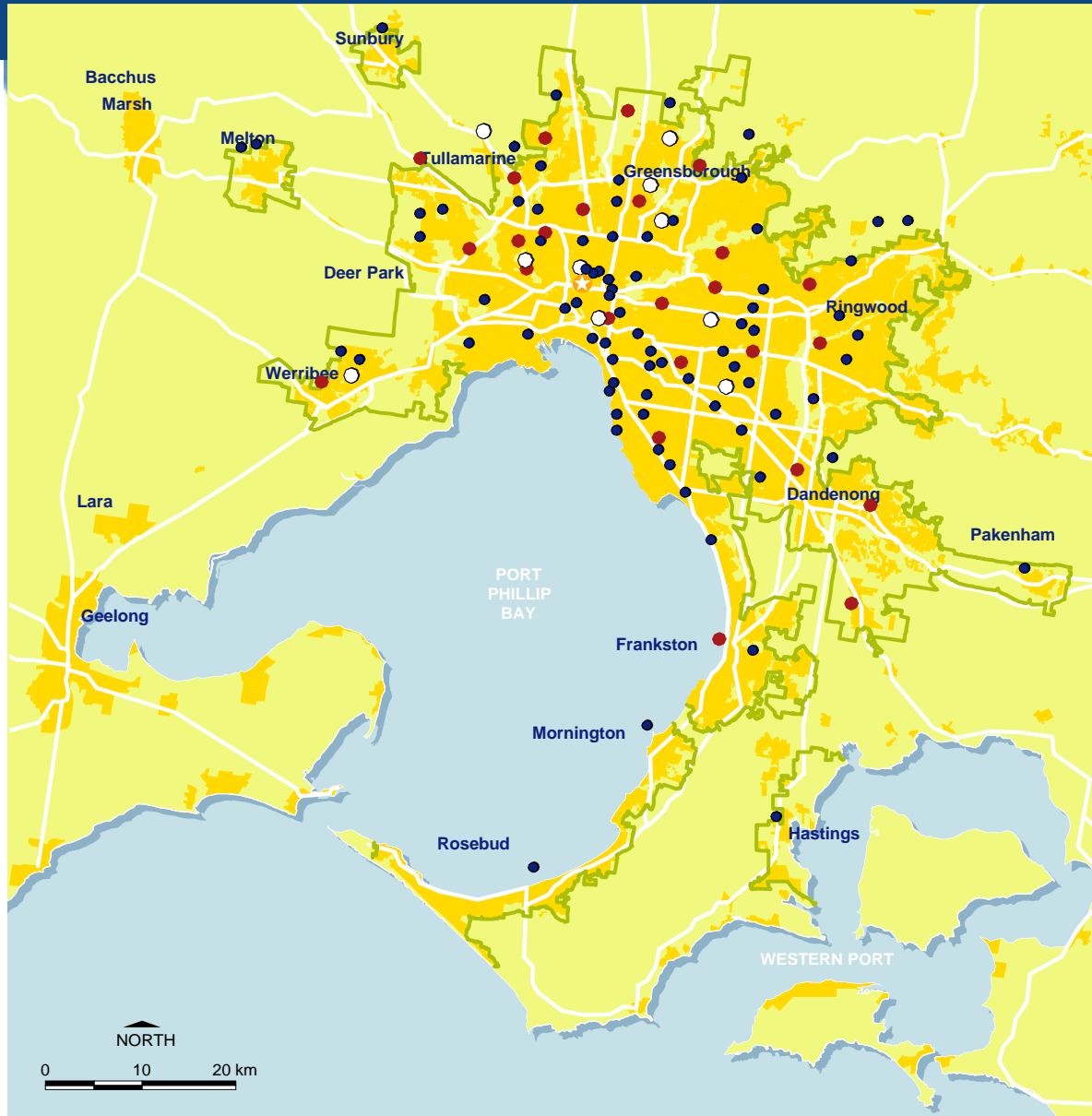


**Network of activity Centres**

- ⭐ Central Activities District
- 🔴 Principal Activity Centre
- 🔵 Major Activity Centre
- ⚪ Specialised Activity Centre

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# Integrated Transport Networks

▶ **Public transport**

- ➢ Reduced car dependency
- ➢ 20% of motorised trips by public transport by 2020
- ➢ Principal Public Transport Network
- ➢ Integrated Regional Transport Strategies
- ➢ Cycling and walking strategy

# Principal Public Transport Network



**Network of activity Centres**

⭐ Central Activities District

🔴 Principal Activity Centre

🔵 Major Activity Centre

⚪ Specialised Activity Centre

**Principal public transport network**

— Tram and principal bus network (existing and proposed)

— Melbourne metropolitan rail network

🟧 Potential new rail station

— Proposed network extension

···· Potential network option

# Integrated Transport Networks

- ## Public transport
  - Reduced car dependency
  - 20% of motorised trips by public transport by 2020
  - Principal Public Transport Network
  - Integrated Regional Transport Strategies

- ## Freight and logistics
  - 30% of freight by rail by 2030

- ## Multi-year transport infrastructure strategy
  - Long-term infrastructure funding program
  - Integrated transport network
  - Determination of priorities

# Resource use/Waste minimisation

- **Energy conservation**
  - Building energy efficiency targets
  - Renewable energy targets

- **Water conservation**
  - Reduced demand for potable water
  - Water reuse targets
  - Water sensitive urban design

- **Waste management**
  - Reduce waste generation
  - Treat waste as a resource
    - Werribee vision

# Meeting the sustainability challenge

- Strong and stable economy

- Good governance and strong civil society institutions

- Capacity for strategic planning and effective implementation of plans

- A responsible private sector

- Educated and engaged communities

- A supportive international community

# The tools governments can use in the challenge

- Governments have available the following 'tools'

  - Policy
  - Legislation and regulations
  - Fiscal
  - Financial
  - Institutional
  - Asset management
  - Knowledge management
  - Advocacy

- In managing sustainable urban growth we need them all in place.

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# Policy

- Policies operate at many levels, from very high order down to levels of detail, but in each case they are the statements which frame strategies, action and behaviour.

- Policies are also statements which define a government's position on matters where there are choices to be made

- Plan making for urban development can be one form of policy making.

- In our cities, strategic plans at the level of the whole urban area are an essential instrument of policy

- Melbourne 2030 is such a plan

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# Legislation/Regulations

- Governments make laws and regulations guiding/ constraining (and sometimes rewarding) behaviour and actions by other players in society - including business and the operation of markets – in the interests of all of us as citizens

- Most 'town planning' activity arises from legislation

- Regulation of development, including the capacity to identify property ownership and property rights is a major need in managing urban growth

- Governance systems need to have property title systems embedded

- Economic and social progress is also significantly shaped by the regulatory environment

# Fiscal



- Governments raise taxes and set fees or prices for services. This revenue side of government can have important governance implications.

- The way municipal property taxes are structured can have vastly divergent impacts on urban development, as the contrast between American cities and others illustrates.

- The capacity of city governments to levy fees and charge for services is a fundamental feature of successful urban management and must be addressed if development is to be sustainable

- In particular, the pricing of basic services such as water and energy supplies is a major influence on how cities perform from the viewpoint of sustainability.

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# Financial

- Governments spend the monies they raise, and their patterns of and priorities for expenditure impact on society and on urban and regional development.

- The impact of infrastructure expenditure by government (or on behalf of government) in shaping the economy of either cities or regions is undeniably significant.

- Generating the capital necessary for investment in urban growth will undoubtedly require significant private sector investment in infrastructure - but it needs to be managed carefully

# Institutional



- Institutional arrangements set in place by governments and other civil society actors are crucial in establishing how our societies and hence our cities and regions operate.

- Decisions about how much power to give to markets in allocating resources are critical institutional decisions.

- The forms and responsibilities of the agencies of government can be very powerful determinants of urban development outcomes.

- The wide trends towards devolution of responsibility and authority for local governance across our region is important

- Given the significance of small cities and towns in our future urban growth, it is probably essential that empowerment of local communities proceeds rapidly to support the challenge of sustainability

# Asset management

- Governments manage vast assets on behalf of society. The approach they take to that responsibility has economic, environmental and social impacts.

- For example, the design and management of the public realm in our cities can have profound impacts on competitiveness and on social equity and the development of social capital.

- Improved asset management has been a key theme of EAROPH for several years
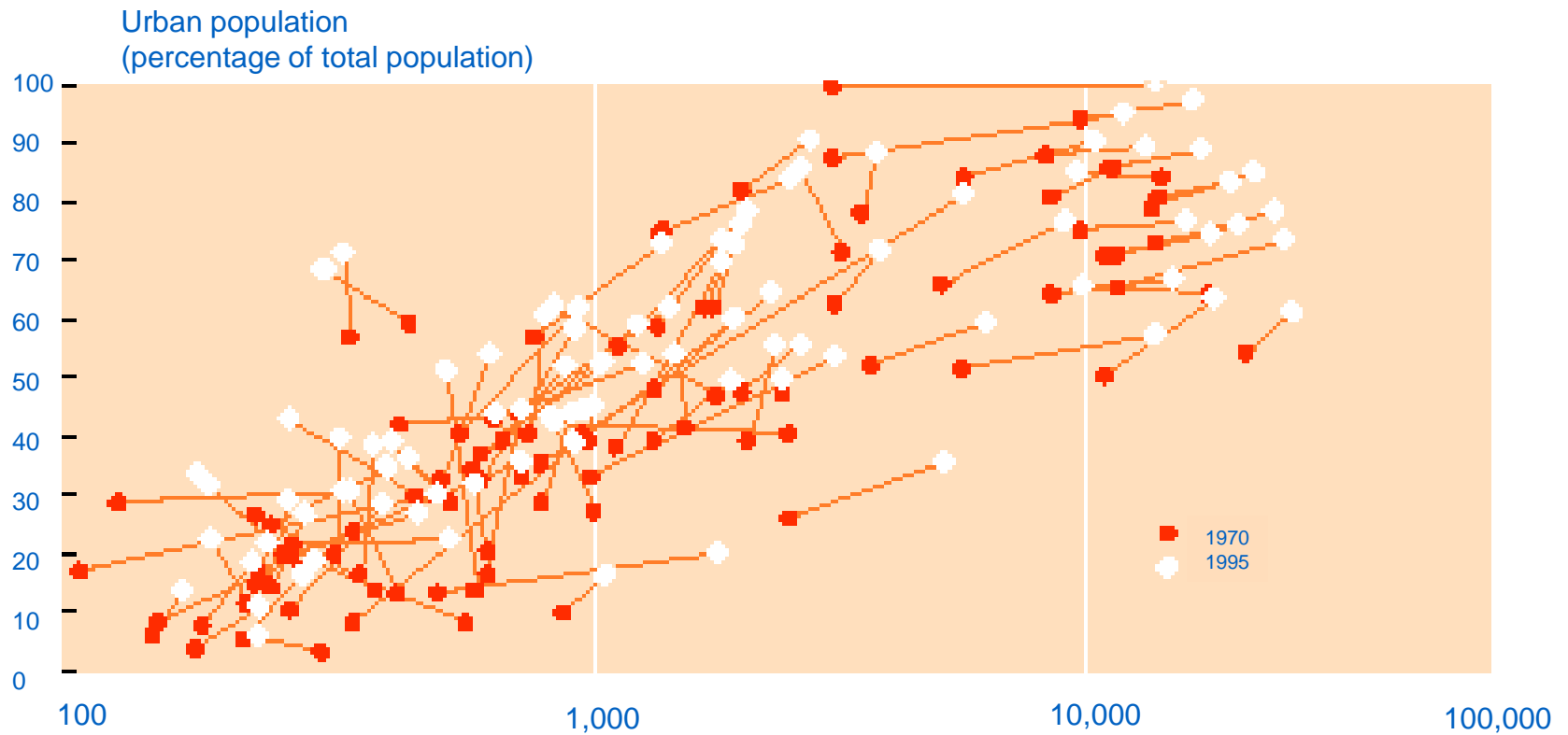
# Advocacy

- Governments lead, and they lead by taking positions on key issues of importance to society and by expressing views – the 'bully pulpit' principle.

- Organisations like EAROPH are essential advocates of improved urban management in meeting the challenge of sustainable urban development for the coming decades

# Number of cities by size, World 1950 to 2015.
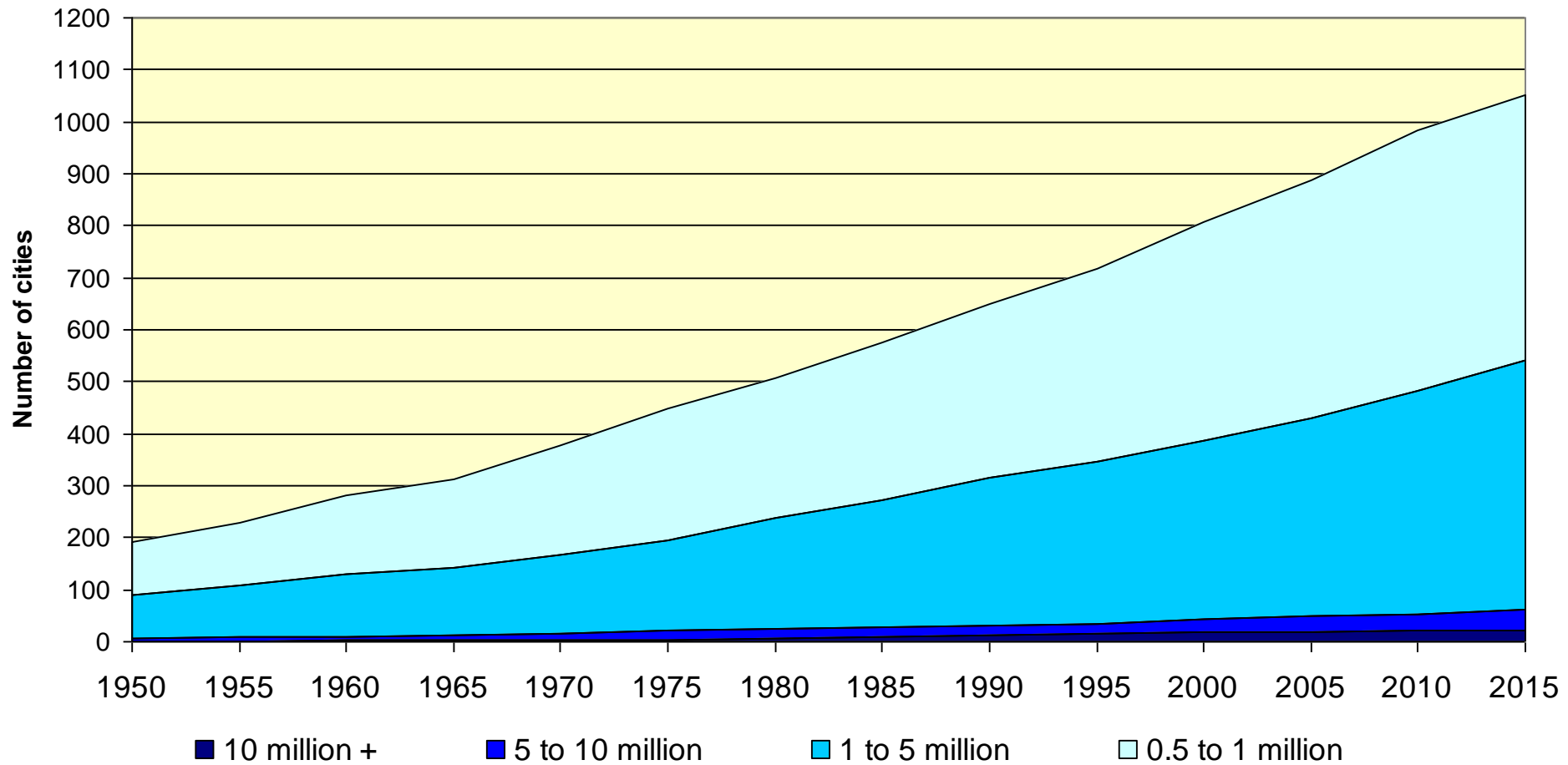


Source: United Nations, World Urbanisation Prospects, 1996 and 2003

# Urbanisation & economic growth



Urban population
(percentage of total population)

GDP per capita (1987 U.S dollars)

■ 1970
◇ 1995

Source: World Bank

# Sustainable

## communities