



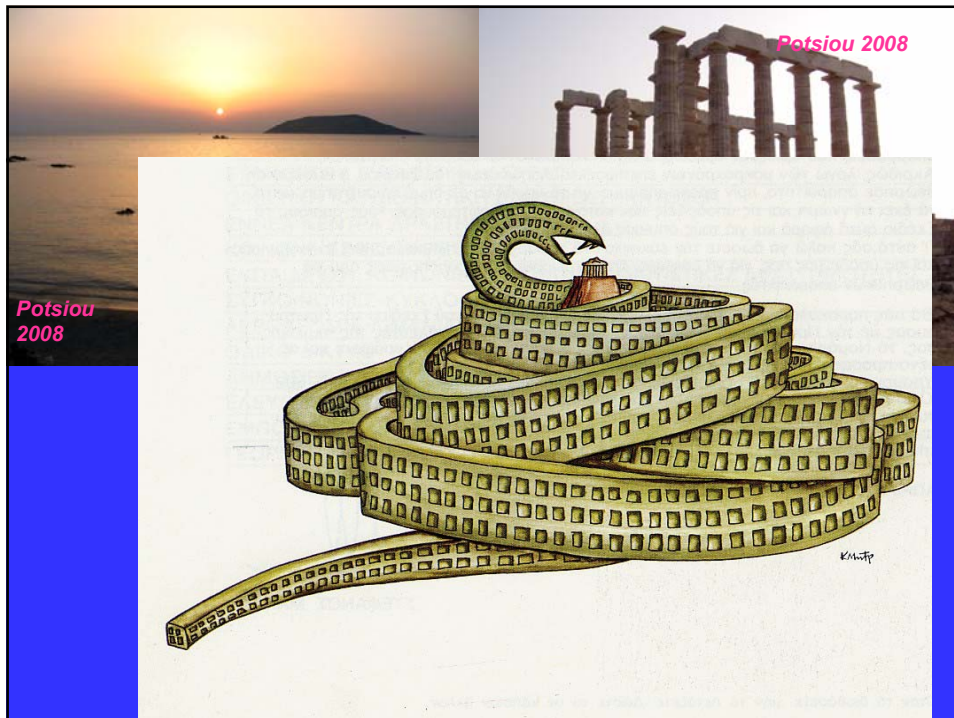
National Technical University of Athens
School of Rural and Surveying Engineering

**Resolutions of FIG Com3 Workshop on:
Spatial Information Management toward
Environmental Management of Mega cities**



Dr Chryssy A Potsiou
Chair of FIG Com3
chryssyp@survey.ntua.gr

*FIG Working Week 2008 – Integrating Generations & FIG/UN –HABITAT Seminar
Improving Slum Conditions through Innovative Financing*

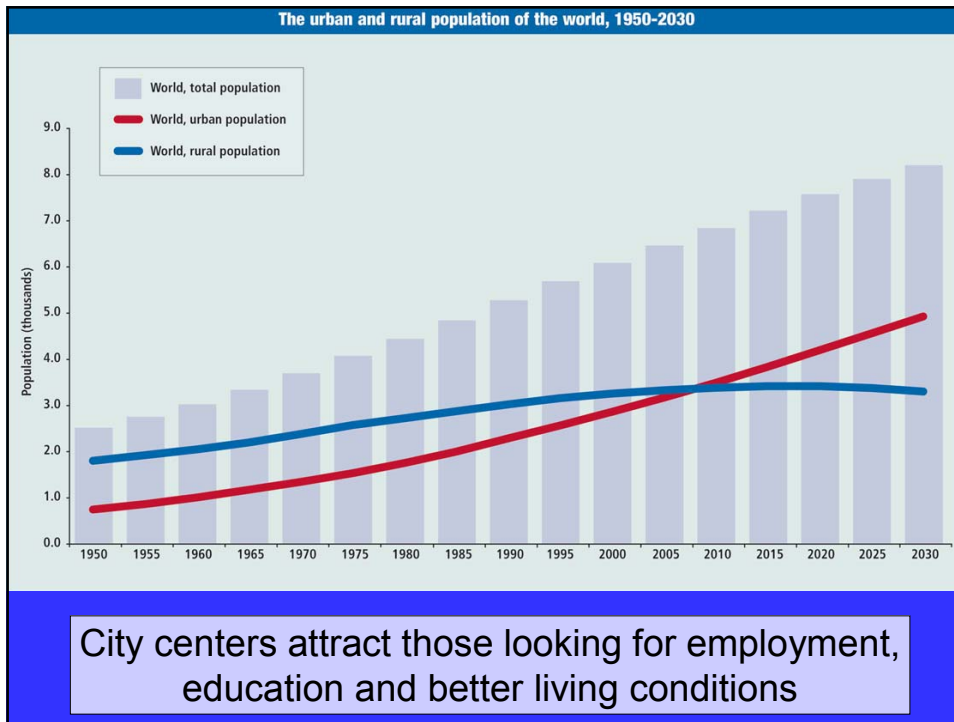


Content-Resolutions of the 2008 FIG Com3 Valencia Workshop

- Rapid urbanization
- Causes and results of urbanization
- Environmental & economic impacts of unplanned rapid development
- The role of the Surveyor & of SIM in good governance
- Concept of the current (2006-2010 term) FIG Commission 3 Workshops

The World Goes to Town

- **Since the days of classical antiquity:**
Living together meant security
People came to settlements to trade, worship, exchange goods and ideas
- **City:** A center of learning, innovation and sophistication
- **Technological developments:**
Transportation, fresh water and sanitation services provision in the first towns
- **Industrial revolution:**
Lots of jobs, the beginning of a new urban era
By 1900 13% of the world's population became urban
- **Within the next 107 years:** 50% of the world's population lives in the cities. Improvements in medicine and science



Global proportion of the urban population increase

Year	Urban population	Proportion
1900	220 million	13 %
1950	732 million	29 %
2005	3.2 billion	49 %
2030	4.9 billion	60 %

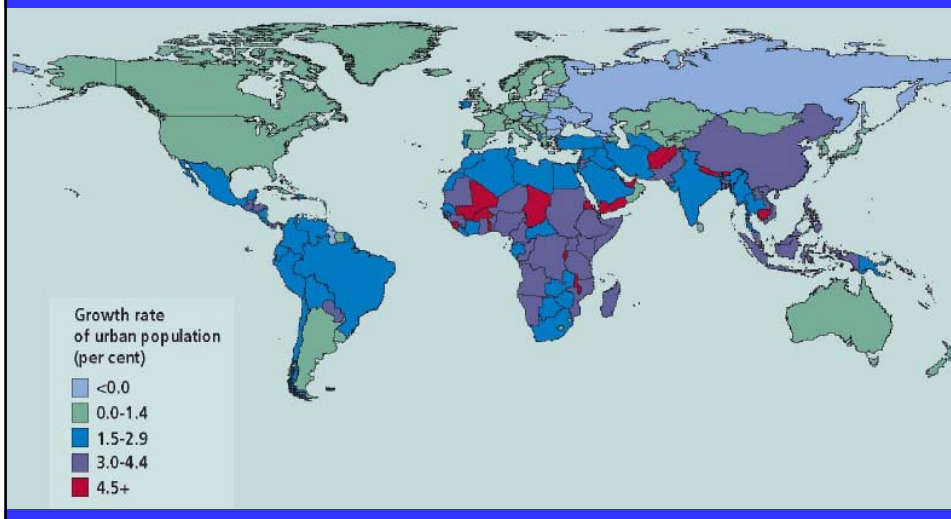
Source: UN Population Division

Differences in urban population change

Year	More developed regions		Less developed regions	
	Population (billion)	Per cent	Population (billion)	Per cent
1900	0.15		0.07	14 %
2005	0.9	74 %	2.3	43 %
2030	1.0	81 %	3.9	56 %

Source: UN Population Division

Growth rate of urban population



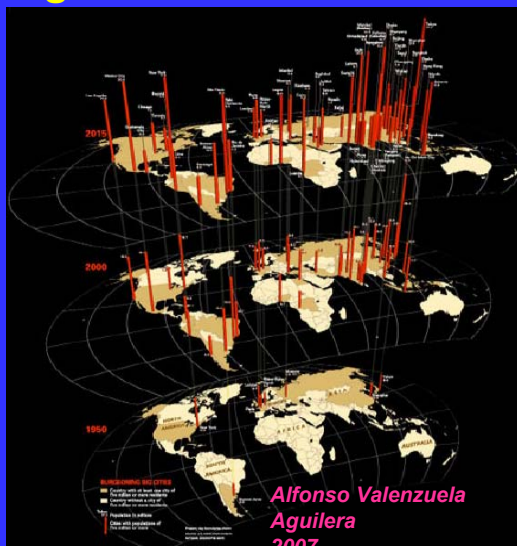
The scale and speed of the current urban expansion make it unlike any of the big changes that have punctuated urban history

Much of the world's current urban expansion is caused by the poor migrating in unprecedented numbers. This situation is found in low- or middle- income areas and results in an overwhelming capacity in certain places.

Some of the results:

- *unplanned urban development, markets cannot function*
- *high urban density,*
- *traffic congestion,*
- *crime,*
- *pollution, hazards (floods, fires, earthquakes, etc)*
- *lack of services e.g., for public transportation,*
- *fresh water & energy supply, parking areas*
- *waste management, sanitation, public toilets*
- *creation of informal development at the urban fringe*

Megacities: home to 10 million or more inhabitants



2015 Latin America,
Central Africa,
Asia

2000 Latin America,
India, North
America, Asia

1950s New York,
Tokyo, Buenos
Aires, European
Capitals

2005 : 20 Megacities - 15 located in the less developed regions

2015 : 22 Megacities - 17 located in the less developed regions

Informal Settlements- Informal Real Estate Markets



“Informal” Settlements: they do not officially exist!

Government provides nothing

- One of every three city residents lives in inadequate housing with few or no basic services (fresh water, sanitation, schools, hospital, security)
- The world’s slum population is expected to reach 1.4 billion by 2020
- People seem to prefer to live in urban squalor to rural hopelessness



Kibera, Nairobi, Kenya



The situation is not going to change easily

Both sides enjoy benefits:

- Many people make lots of money from the informal construction
- Slums provide cheap labour, that enables city to operate
- The situation suits the authorities nicely
- Several Politicians and civil servants are reputed to be landlords in slums areas
- Poor rural people are offered hope for employment in the formal economy of the city
- They are well placed: if they do find a job they can walk to work

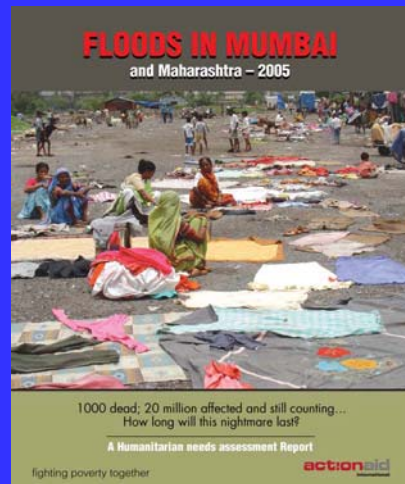


Dharavi, Mumbai, India

The results of rapid urbanization hit rich and poor alike



TCG 2007



Humanity has lived with floods for centuries but the impact of floods was not felt to the same extent in the past as is experienced now

Due to the inability of the State to ensure the effective zoning and planning regulations and the multiplicity of organizations involved in forest management and public protection, the 2007 forest fires have destroyed more than 2,000 km² of forest land; several villages were burnt and 70 people were killed in Greece



Fresh water is very expensive. Most cities in the developing world discharge their sewage untreated into rivers or the sea

Delhi draws 75% of its drinking water from Yamuna river into which the city dumps quantities of sewage to join a cocktail of farm chemicals and industrial effluents, including arsenic

Delhi alone contributes around 3,296 MLD (million litres per day) of sewage.

10-15 years ago, a large quantity of Delhi's sewage was used for irrigating agricultural lands. Today agricultural lands have been converted into residential colonies



In 500 BC the city of Athens organizes the first municipal dump in the Western world. Citizens are required to dispose their waste at least one mile from the city walls

Athens has become the metropolitan area of the South eastern Europe

Today, Athens is in the grip of a garbage crisis. 6,000 tons of trash are produced daily in this city of >4M people



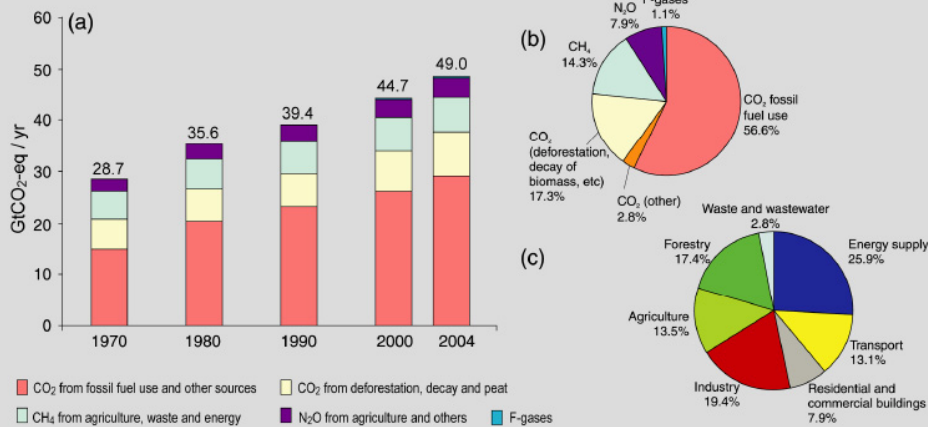
Ano Liosia landfill is often unable to accommodate the mountains of Athens's garbage



The Public Power Corporation's (PPC) plant in Kozani, Greece has been found to be one of the most polluting in Europe.

PPC will pay up to 2,2 billion euros a year for carbon emission licenses unless it shifts away from its dependence on lignite. Consumers could expect a rise in electricity bills of 45% by 2013.

**The most important threat is the climate change
Greenhouse gas emissions have been increased
70% between 1970 - 2004**



The economic effects of unplanned development

Unplanned or illegal development often involves serious economic & legal problems besides the environmental & social impact, like:

- Uncertainty in land tenure, no access to land-ownership rights
- Complicated land-use rights that affect ownership rights and land values
- A considerable amount of capital is tied up in illegal buildings. High construction costs, poor construction quality, lack of access to public services, properties cannot be transferred or mortgaged.
- Dense use of the urban areas within formal plans results to overwhelming of the city's capacity: illegalities in construction, inadequate provision of services (mass transportation, waste management, energy & water supply), soil, air and water pollution

Urbanization can be viewed as an indicator of development

- Concentration of the most dynamic economic activities in urban areas often produces economies of scale and leads to social and economic benefits
- It is a matter of human rights that people are free to choose where they will live
- Nobody wants to live in a city which is congested, suffers constant blackouts and frequent floods, with few parks, awful schools and clinics, devoid of any buildings of charm and character, governed by incompetent public sector
- It is a matter of good governance to achieve sustainable urban growth
- Restrictions on private rights in the use of land in terms of air, soil and water pollution have to be applied and accepted by all market participants. All must share the costs of the natural resources they consume

The speed and scale of urban population growth generate important challenges for surveyors, planners and governments

- *Why do surveyors and land administrators care?*
- *How are they involved?*
- *They are the experts who provide the necessary tools for planning & monitoring land development, support real estate markets, support land-related public administration and good governance.*
- *What is the role of the surveyor in good governance as cities expand beyond their administrative boundaries and thus lack the financial or jurisdictional capacity to provide the necessary services to all city's inhabitants?*

Education - Training

Increase our skills to

- Improve access to land, legal rights, zoning regulations
- Improve NSDIs
- use modern technologies, 3D cadastre, 3D city models, topographic data derived from various sources, national/international standards, portals
- plan functioning environmental networks,
- Develop techniques to support environmental improvements (e.g., last 20 years 100% increase of maritime transportation)
- Improve training to solve problems, e.g., urban agglomeration, training the citizen,
- Develop portals for citizen access to all public registers
- Identify high risk areas & develop risk management strategies for technical hazards coming out of natural hazards

FIG Commission 3 2006-2010 Work Plan Spatial Information Management

- *Spatial Information Management Toward Legalization of Informal Settlements- Real Estate Markets needs for Good Land Administration and Planning*
(28-31 March 2007, Sounio, Greece)
- *Spatial Information Management Toward Environmental Management of Mega Cities*
(18-21 February 2008, Valencia, Spain)
- *Spatial Information for Sustainable Management of Urban Areas*
(3-5 February 2009, Mainz, Germany)