



Bangalore - challenges and responses

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*Why should the international
community pay attention to
trends in Mega Cities?*

What is a mega city?

very large agglomerations of at least 8 million inhabitants; the UN lists 22 mega cities of the developing world circa 2000: Mexico City, Lima, Buenos Aires, Rio de Janeiro, São Paulo, Lagos, Cairo, Istanbul, Tehran, Karachi, Mumbai, Bangalore, Delhi, Calcutta, Bangkok, Dhaka, Shanghai, Tianjin, Beijing, Seoul, Metro Manilla, Jakarta

Why should we study Mega Cities?

- What happens in mega-cities affects the rest of the world;
- mega-cities are key instruments of both social and economic development; and
- mega-cities represent market opportunities for both developing and developed countries alike.



Syllabus Links

- (4G3) – **Global Change** – globalisation, global inequalities, changing global relationships.
- (4G4) **Global issues and the role of Citizenship** – urbanisation, access to fresh water, energy use, human rights.....
- (5G4) **Australia's regional and global context** – trade, outsourcing etc...
- Stage 6 – **Global Challenges, Urban Places**

Why Bangalore?

- It is a unique case study that other students will not have.
- The Australian government has been actively involved in aid projects in Bangalore through AusAID.
- Bangalore is one of the fastest growing cities in Asia. It is a mega-city in the making.
- It is an example of a city attempting to cope with a range of challenges resulting from its increased integration into the global economy.

More reasons for studying Bangalore.....

- The city is currently experiencing rapid change. You can witness this process directly and investigate its causes and impacts of population increase first hand.
- The city currently in the media because of the outsourcing of service jobs (particularly back office banking functions).

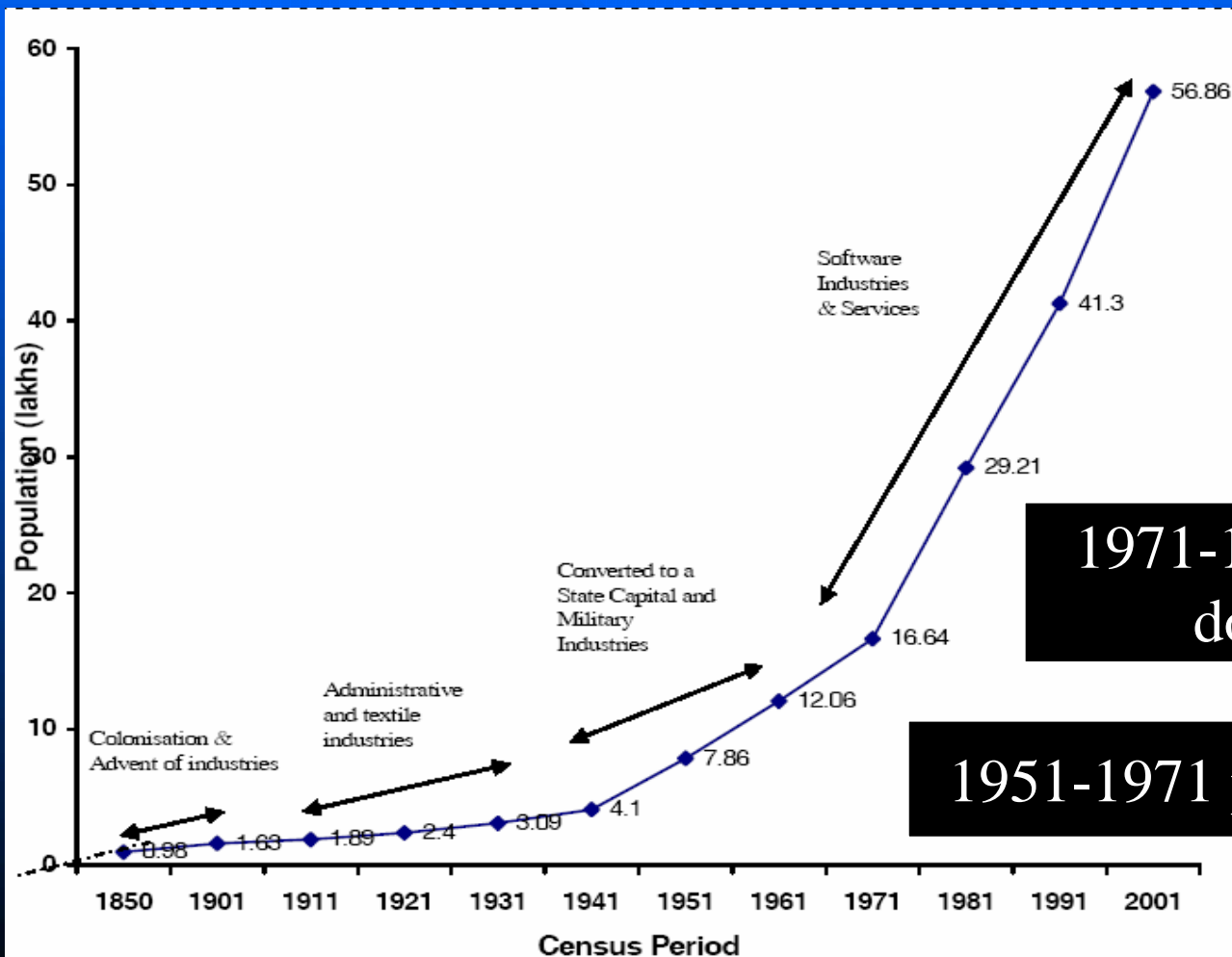
The nature and location of Bangalore

1. Most people know very little about this city – 4 corners, Today Tonight!
2. The city is located in Karnataka state southern India ($12^{\circ}8' \text{ N}$ and $77^{\circ} 37' \text{ E}$)



Rapid population growth

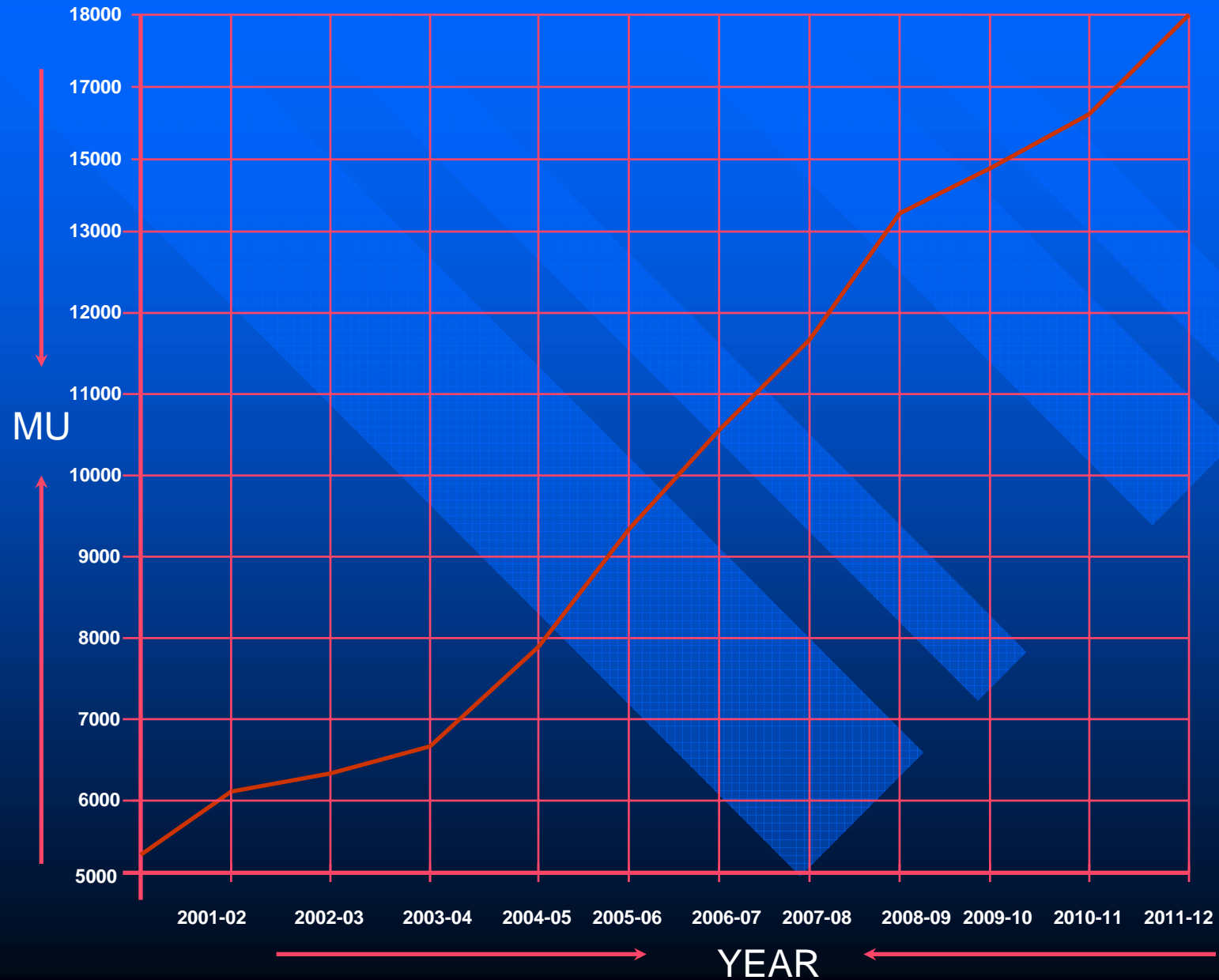
- Mid 1990's Bangalore's Growth = 4.9%
- Sydney's growth rate = 0.74%



1971-1981 pop. almost doubled again

1951-1971 pop. doubled

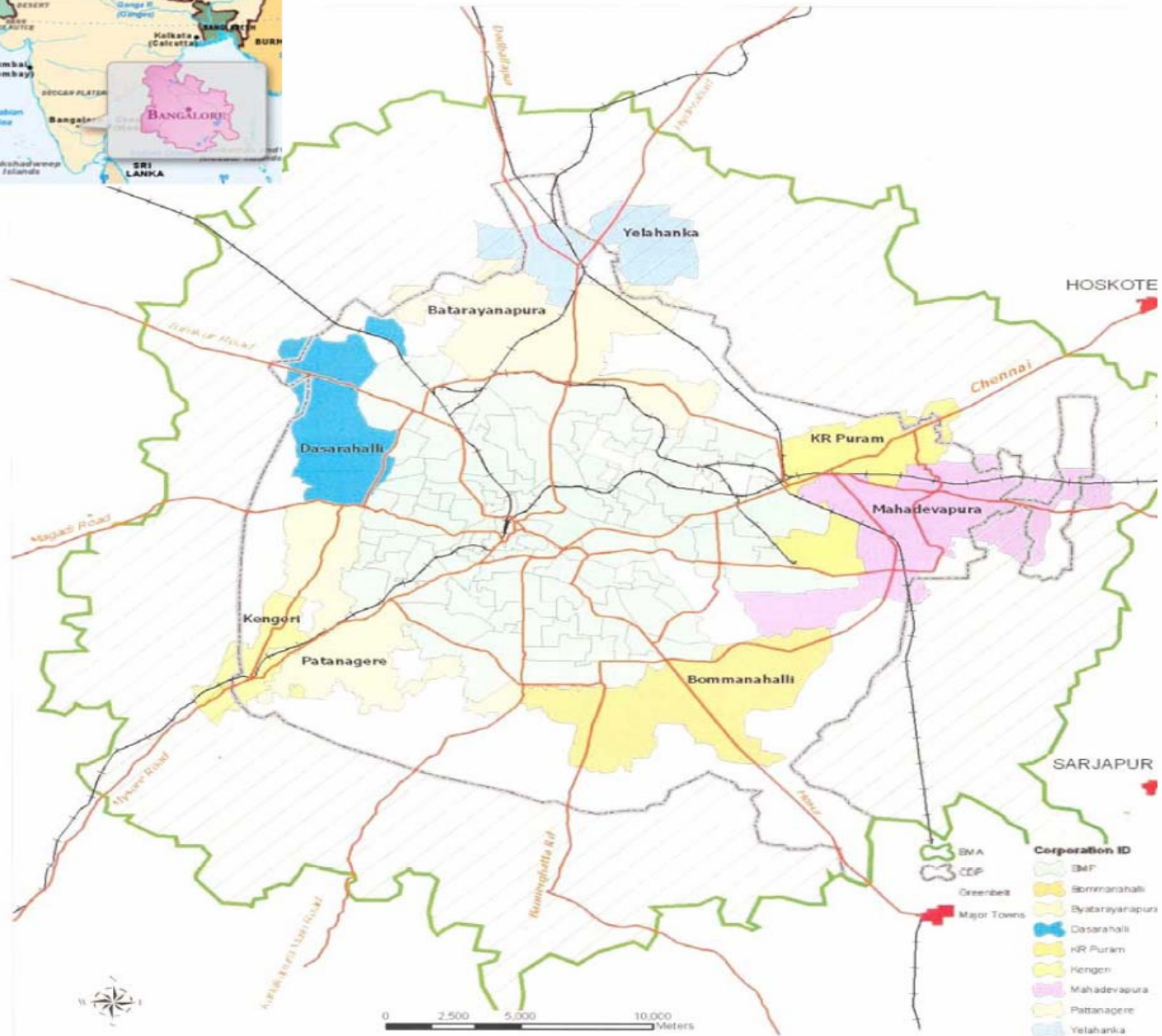
PROJECTED POWER REQUIREMENTS – 2012 BANGALORE



Population is difficult to estimate

- Pop. of metropolitan area was 5.7 million (2001)
- transient, or 'floating' population of approximately 1-2 million
- Slums account for 15-20% population (debate continues over this). Urban poor = 33% pop.
- Plans exist to create a 'Greater Bangalore' through the integration of the city with the eight surrounding municipal areas. Resulting in a pop. of 7-7.5 million people.





The city is being transformed by globalisation

Push Factors

Rural Poverty/
drought

Rapid Urbanisation

Migration = 60% growth

Pull Factors

Globalisation

Advantages

Econ growth
Job creation
Regional development
Increase in foreign
exchange

Disadvantages

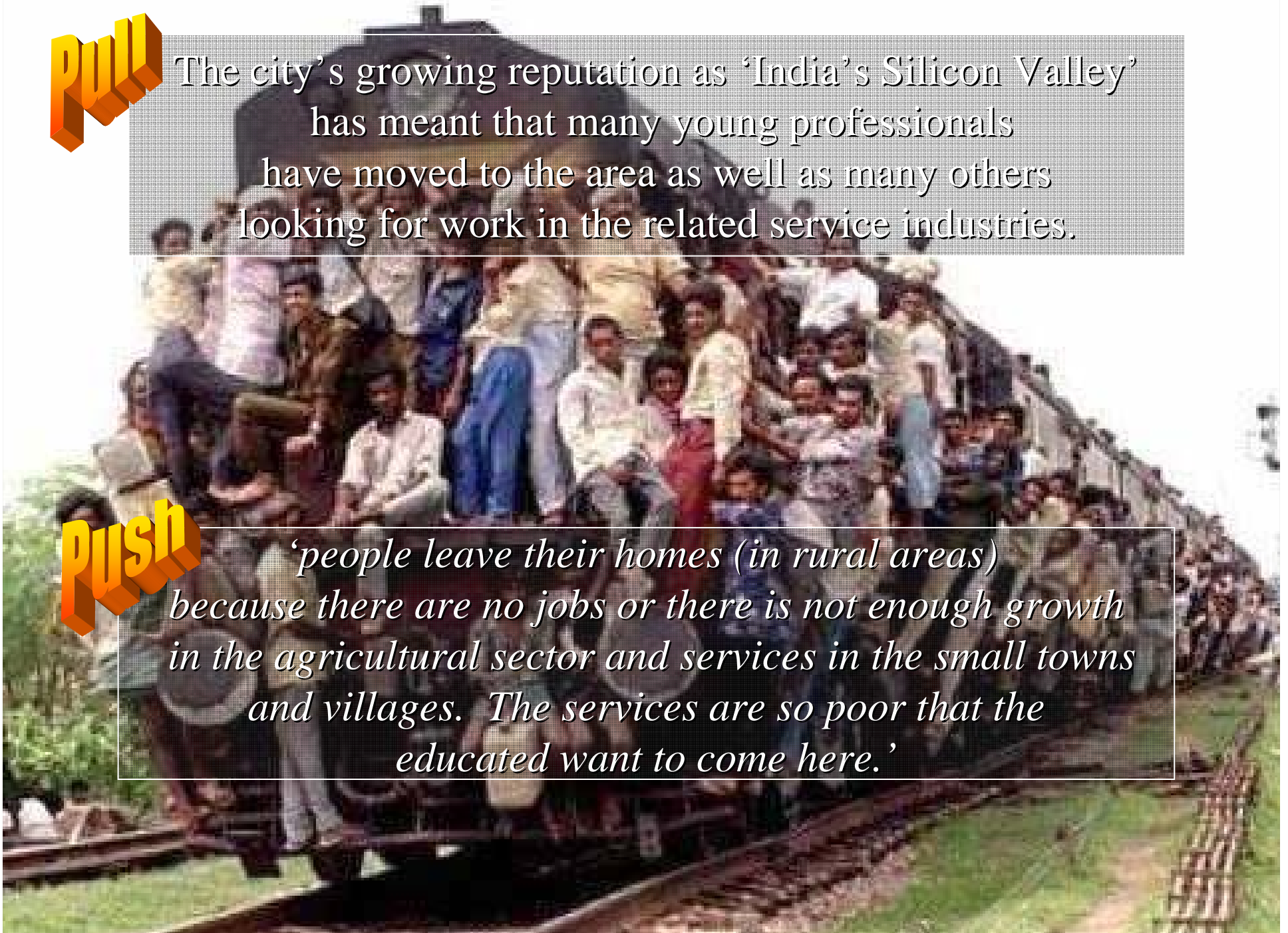
Inadeq. Infrastructure
Pollution
Traffic Congestion
Uneven Distrib. Wealth
Serious planning problems

Pull

The city's growing reputation as 'India's Silicon Valley' has meant that many young professionals have moved to the area as well as many others looking for work in the related service industries.

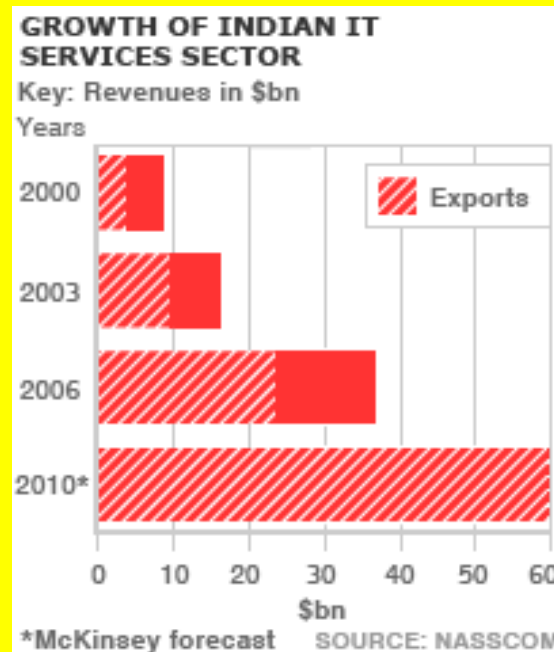
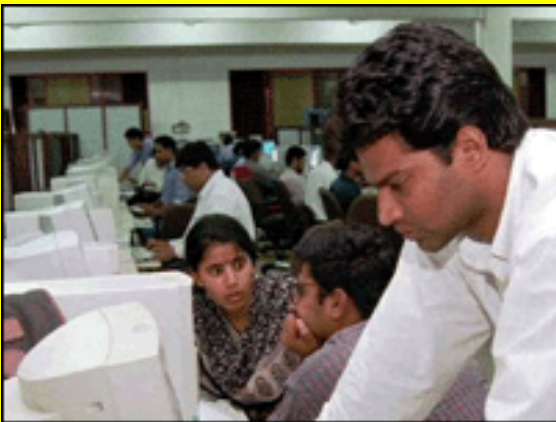
Push

'people leave their homes (in rural areas) because there are no jobs or there is not enough growth in the agricultural sector and services in the small towns and villages. The services are so poor that the educated want to come here.'



A key PULL factor: The Growth of India's 'silicon valley'

- Since the opening of the economy in the 1990's, Bangalore has become a major centre for IT related industries.
- Examples of these include back-office administration for the finance and banking sectors; software research, development and support services; and computer aided design services for the engineering sector.



Reasons for the growth of IT (and for migration to Bangalore)

- the favourable **CLIMATE** of the area ;
- the availability of a **HIGHLY TRAINED WORKFORCE** (many trained in public sector companies);
- **GOVERNMENT INITIATIVES** to promote research and development as well as foreign investment in the city;
- the relatively **LOW COST OF LABOUR**. Wages are one fifth of the salaries in developed countries;
- the **COSMOPOLITAIN CHARACTER** of the city (the result of rapid inward migration) and the high quality of life that can be enjoyed in the city;
- the presence of excellent **RESEARCH AND TRAINING FACILITIES**; and
- improvements in **SATILLITE COMMUNICATIONS** that have increased the amount of outsourcing taking place from the US.

Pull

Push



The challenges of water and sanitation

Water Supply and quality are both problems!

- Relatively long distance (98 km) to a perennial water source and the large elevation difference between the main water source (the Cauvery River) and the city (490 metres).
- Intermittent and uneven supply of water to the city (30-40% is unaccounted for!) Many of households receive water for only a few hours a day on alternate days.
- Current demand for water outstrips supply and this is going to get worse.
- Depletion and contamination of existing local groundwater sources.







Water Quality

- Faecal contamination - the sewer and water supply systems mix during periods of low pressure.
- Urbanisation of the Cauvery River catchment is likely to affect future water quality.
- Bangalore's rapid rate of population growth is likely to make these problems worse.



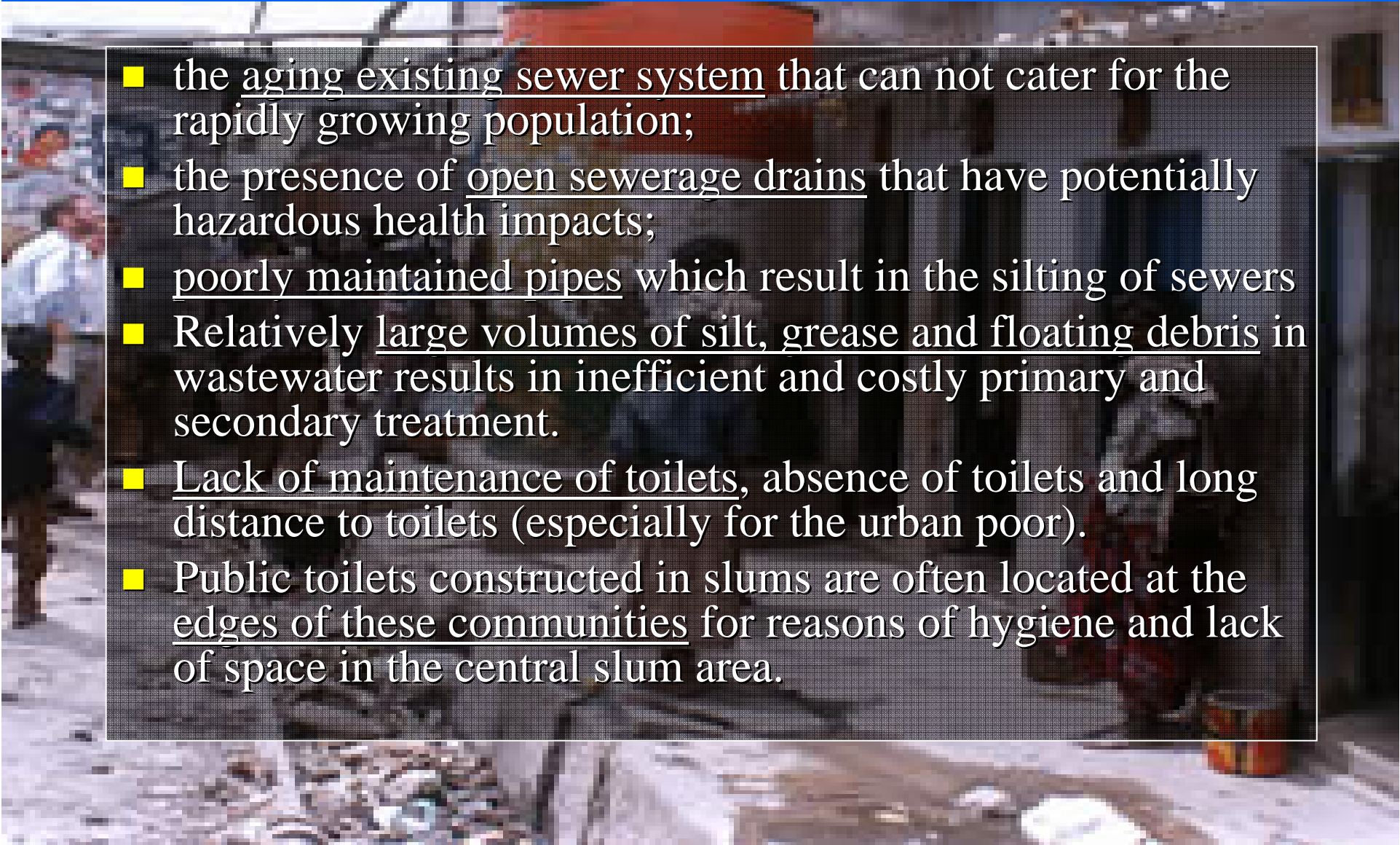
Sanitation issues

- 40% do not have access to sanitation
- 50% of sewerage that is generated is released untreated into environment. This causes flooding of low lying slum areas.
- Encroachment of residential areas on sewer lines and manholes causing blockages in the system.
- Increased demands result in overflow from manholes

Open storm
water
drains in
central
Bangalore are
used to dispose
of human waste
and rubbish.



Sewer system maintenance issues

- 
- the aging existing sewer system that can not cater for the rapidly growing population;
 - the presence of open sewerage drains that have potentially hazardous health impacts;
 - poorly maintained pipes which result in the silting of sewers
 - Relatively large volumes of silt, grease and floating debris in wastewater results in inefficient and costly primary and secondary treatment.
 - Lack of maintenance of toilets, absence of toilets and long distance to toilets (especially for the urban poor).
 - Public toilets constructed in slums are often located at the edges of these communities for reasons of hygiene and lack of space in the central slum area.



Toilet block
for 500 people
in the central
slum area

The responses to water and sanitation issues

Government

- Cauvery River Water Supply Augmentation Scheme (over 5 years). Plan to pump more water from the Cauvery River. Note: this will only provide short term relief from water shortages.
- Infrastructure upgrading to limit system insufficiencies and to arrest the loss of water .
- Rainwater Harvesting - Since 2004 rainwater-harvesting became mandatory in all new buildings within the city.
- Diverting urban runoff into lakes around the city where it can be used for both potable and non-potable purposes.

The responses to water and sanitation issues

NGO'S

- The Rainwater Club - group of architects and engineers. Seek to make politicians, and the general public, more aware of the benefits and applications of rainwater harvesting.
- As a result of this NGOs actions women of the Chamarajpet slum community in Bangalore have been able to connect more than 200 homes with rainwater storage devices (self help schemes).

Evaluation

- Some success has been made in this area but there is a lot more work yet to be done.
- Only 0.7% of households and 5% of schools use of rainwater harvesting measures.



Responses of international aid agencies and foreign banks

The Australian Aid Agency (AusAID)

- has been helping to improve water and sanitation services in slum areas through the: 'Bangalore Water Supply and Environmental Sanitation Masterplan Project'.
- Provision of practical, convenient and legal water supply and sanitation facilities within three diverse pilot slum communities.
- Phasing out of public taps and fountains and establishment of individual connections



Evaluation

- Aid was well targeted and there was a high degree of community involvement through local NGOs.
- More recently, BWSSB (water board) and Bangalore City Corporation have upscaled the project to extend water supply and underground sewerage services to all areas of the city. Finance provided by - Japan Bank of International Cooperation (JBIC)

What would your health be like if you lived next to this??



The challenges of health

- The key health challenges are related to a lack of health awareness and inadequate living conditions of the population.
- Diarrhoea, upper respiratory infections, common colds, fever, tuberculosis, and dengue fever are, for example are major problems
- These conditions are related to the general living conditions of the urban poor and their level of access to adequate water and sanitation services.
- NGOs say that many of these problems are not being adequately dealt with.

‘public health system has the ‘wrong’ focus. There is a preoccupation with treating disease and with the provision of family planning and welfare services at the expense of addressing the underlying health issues’.

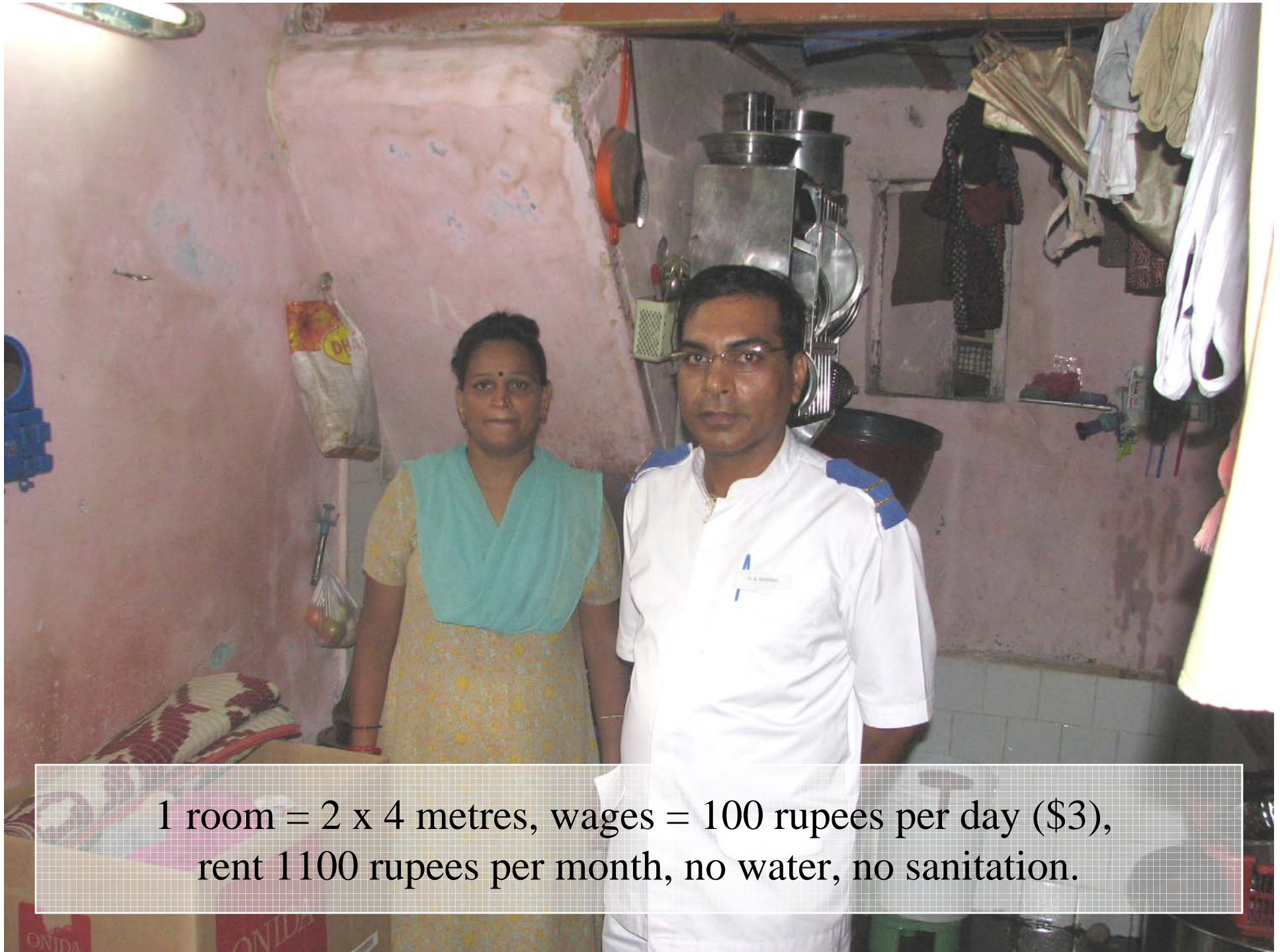
- Corporatisation of health care in India which has reinforced the focus on treating disease rather than addressing the underlying determinants of health.
- Patients are prescribed drugs that are not necessary and be referred for services including surgery that they do not need.
- You may be charged 5000-20,000 rupees for an unnecessary caesarean section.
- Quote from one NGO - 'Patients are being written irrational prescriptions, unethical drug trials are being undertaken and the health of the population is suffering'.

Resource shortages and bribery

- Shortages of resources mean that bribes often need to be paid for 'free' public services.
- A recent study of maternity homes found that on average,

'if you were to pay a bribe for everything that people are being asked to pay bribes for, you would end up paying about 1300 rupees for a stay in the hospital for the delivery of a child'

- The urban poor are starting to use the private hospital system to avoid the corruption.
- Many of the doctors in private hospitals are inadequately qualified and do not provide a level of care that patients are entitled to.



1 room = 2 x 4 metres, wages = 100 rupees per day (\$3),
rent 1100 rupees per month, no water, no sanitation.



Expatriates working
in the banking
and IT sectors
live here



The challenges of urban transport

Rising incomes

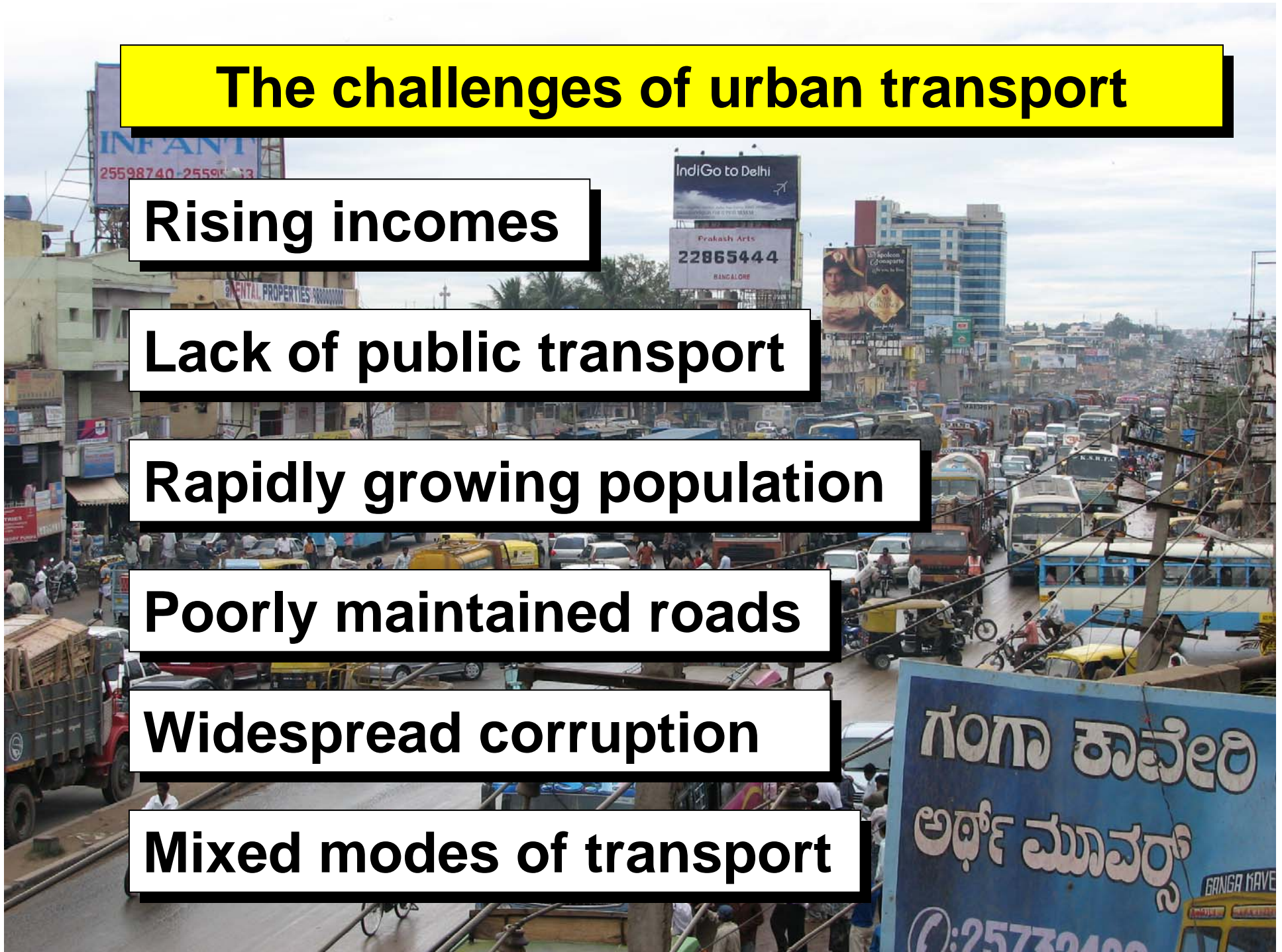
Lack of public transport

Rapidly growing population

Poorly maintained roads

Widespread corruption

Mixed modes of transport

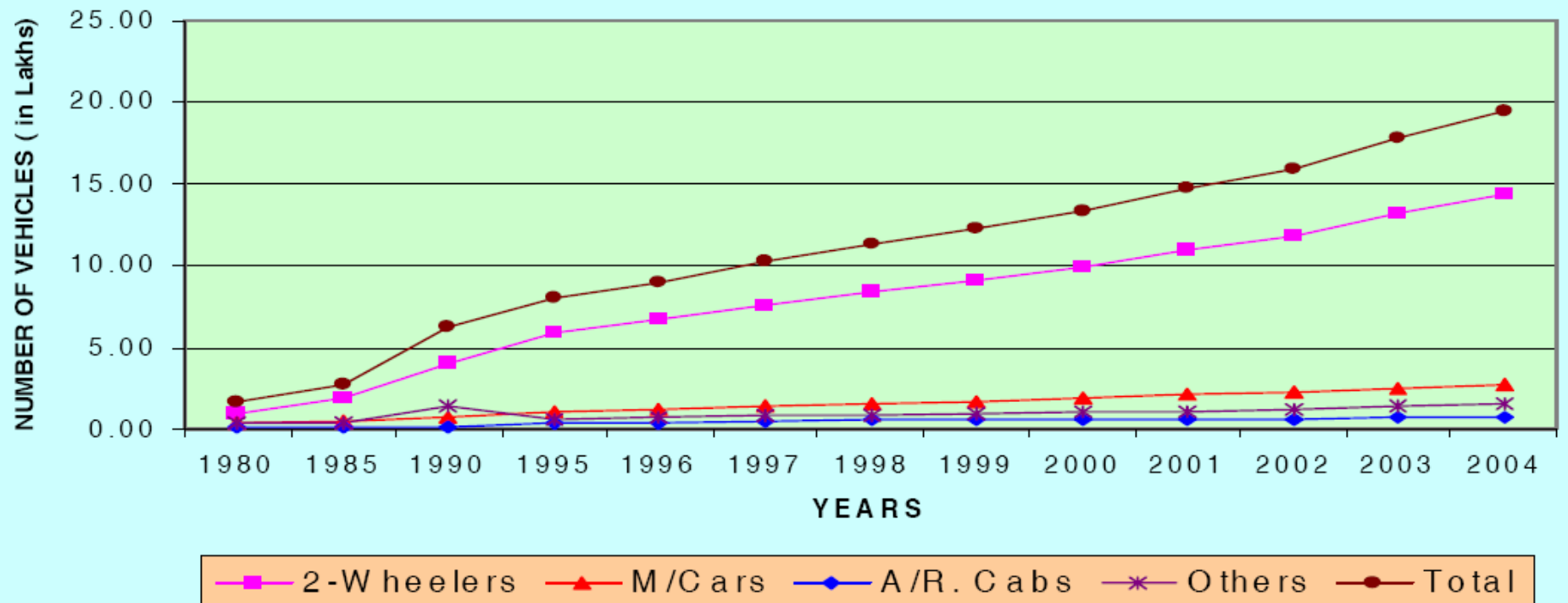


The result.....

- Heavy congestion
- Increased travel times
- Dangerous driving conditions
- Air and noise pollution
- Loss of economic productivity



GROWTH OF VEHICLES IN BANGALORE CITY



'the 2.5 million vehicles on the city's roads represent approximately four times the carrying capacity of the road network.'

- Average rate of increase in vehicles = 10%
- Rate of increase in population = 3-4%
- Morning peak hour = 3 hours
- A typical 15km commuter journey can take 90 minutes at this time of the day.
- Different modes of transport compete for space on the road network
- Public transport = buses only. They account for less than 1% of the traffic volumes but carry more than 40% of the traveling population.



World Bank (2005) suggests that the future trend is away from public transport towards increases in private transport use due to rising average incomes and the social stigma attached to bus travel.



Problems with road infrastructure

- Poor surfaces; lack of signalised intersections and inadequate corridor widths.
- Lack of transparency in government and in procurement systems for new roads and road improvement.
- Contractors have been slow to complete road upgrades in the city.
- The city also has a poor road network design including a radial road layout with limited links between the major corridors.
- Congestion has been made worse by the concentration of employment in the inner city.



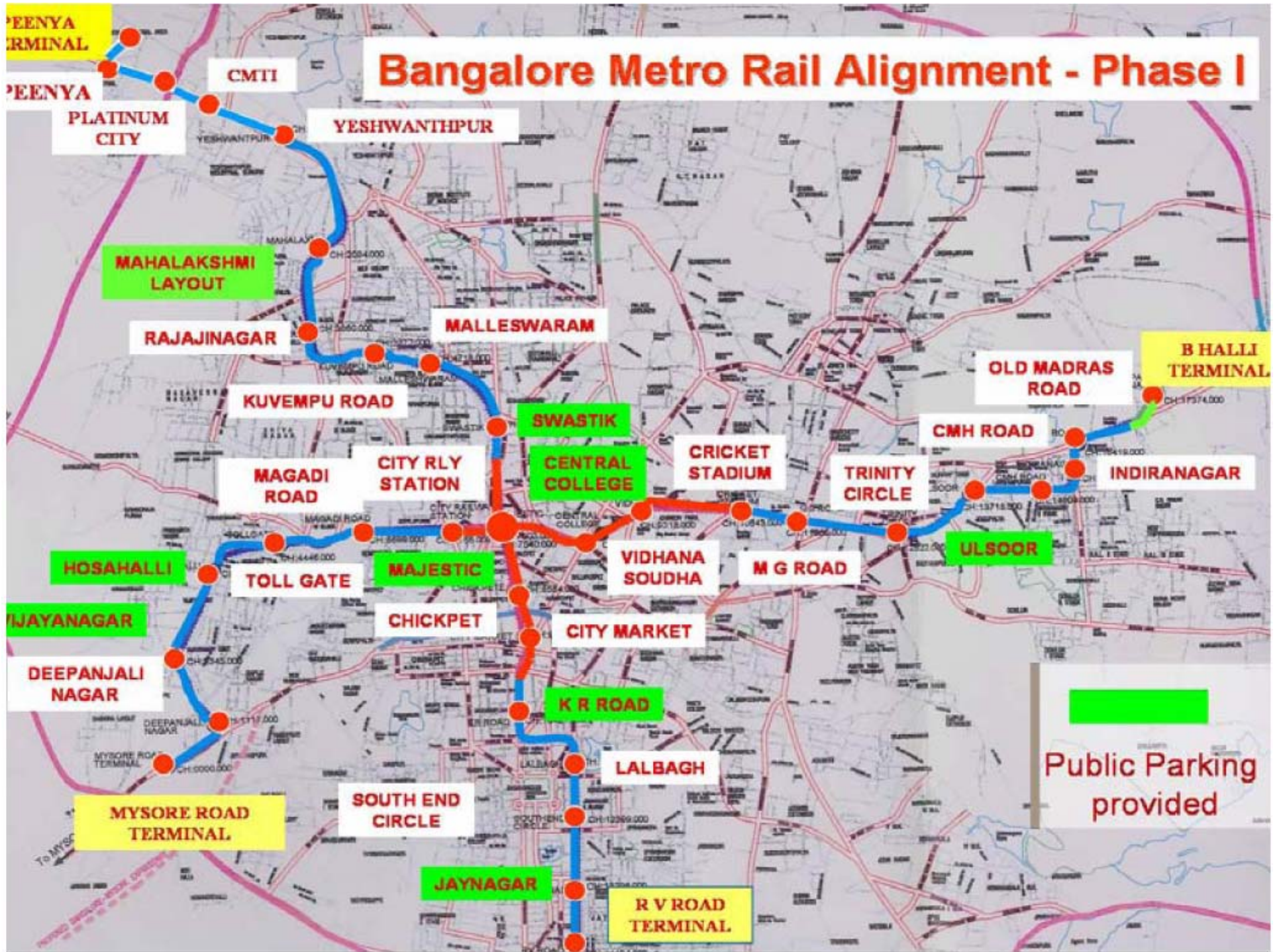
The responses to urban transport issues in Bangalore

Typical responses of government have been to initiate infrastructure programs including the construction of:

- A series of concentric ring roads for the city (core, inner, outer and peripheral).
- A Mass Rapid Transit System or 'metro' which aims to reduce traffic congestion, fuel consumption, strain on roads travel times and pollution;
- A 10 km elevated freeway along Hosur Road to Electronic City (one of the key centres of IT based services in Bangalore)



Bangalore Metro Rail Alignment - Phase I



- A bus rapid transit system & dedicated bus ways;
- 27 high density truck corridors to increase the traffic flow and decrease the conflicts between different modes of transport;
- Up to 22 flyovers/grade separators to reduce junction conflicts; and
- The Bangalore-Mysore Infrastructure Corridor to improve transport links between the two cities and facilitate the decentralisation of population from Bangalore.



Proposed regulatory changes and localised initiatives

- restrictions on trucks using ring roads during the morning peak periods (7am-11am);
- the establishment of a coordinated traffic management system;
- plans for dedicated busways;
- the strengthening of traffic police numbers and infrastructure;
- conversion of roads to one way traffic corridors;
- improvements in road signage;
- upgrading of intersection controls by introducing signalisation;
- and education campaigns



Evaluating the government's response

- Road upgrades favour cars. Would a circular railway network serviced by feeder buses be better?
- Corruption and excess land acquisitions have been a feature of some infrastructure projects.
- Govt has been biased towards upgrading the existing road network with capital intensive infrastructure projects (e.g. elevated freeways) rather than seeking to restrain the use of private motor vehicles (World Bank).
- the government's approach is anti-pedestrian and anti-cyclist.



A quote from the national paper..

'Roads continue to be in bad shape with contractors and government engineers doing a shoddy job and siphoning off tax payers' money A committee appointed by the high court has come down heavily on consultants, contractors, ward engineers and accountant staff for poor quality of road works. It says mismanagement of funds and administrative irregularities are the bane of Bangalore's roads' (Balram, 2006).

The response of NGO's – Civic Bangalore

CIVIC Bangalore (a community based NGO) - hold public hearings regarding the key transport issues.

- Aims to facilitate a dialogue and debate.
- Investigate all of the public transport options and evaluate their various merits.
- informing the public of the issues involved so they would be in a better position to engage themselves in the public debate.

'The aim was to improve the quality of service as well as the affordability (of public transport) and serve the needs of all of the customers, not just those wanting flyovers....'

Evaluating the response of NGO's

- Have they empowered and involved the local community?
- Were they able to expose the limitations of the government's arguments?
- Did they bring greater clarity to the decision making process?

Note however:

This response has been reasonably effective however it is important to ensure that public hearings result in tangible action to address the problems rather than simply generating a list of complaints.

Conclusions

- Rapid spatial, economic and demographic growth in the city has created a number of complex and simultaneous challenges that need to be managed.
- Strain on the ability of individual government departments to provide an immediate and effective response to these issues.
- Effectiveness of governmental responses have been limited by their focus on larger scale infrastructural changes.
- Many approaches target the symptoms rather than the underlying causes of the issues affecting the city.



Organisational and procedural concerns that need to be addressed:

1. issues regarding the adequacy of communication flows between government departments;
2. the need for increased inter-departmental coordination;
3. levels of transparency and accountability;
4. the dominance of the state government in local planning decisions;
5. distortions in resource allocation created by corruption and the
6. low levels of effective civic participation in decision-making processes within the city.

Features of effective responses by NGO's and IGO's

- detailed and ongoing consultation with individual communities including the identification of their individual needs and the careful tailoring of programs to address these needs.
- involvement of local NGOs who have an existing working relationship with, and knowledge of, individual communities.
- programs carefully targeted to address the key determinants of quality of life including access to housing, potable water, sanitation, employment, sustainable and nutritious food sources and health services.

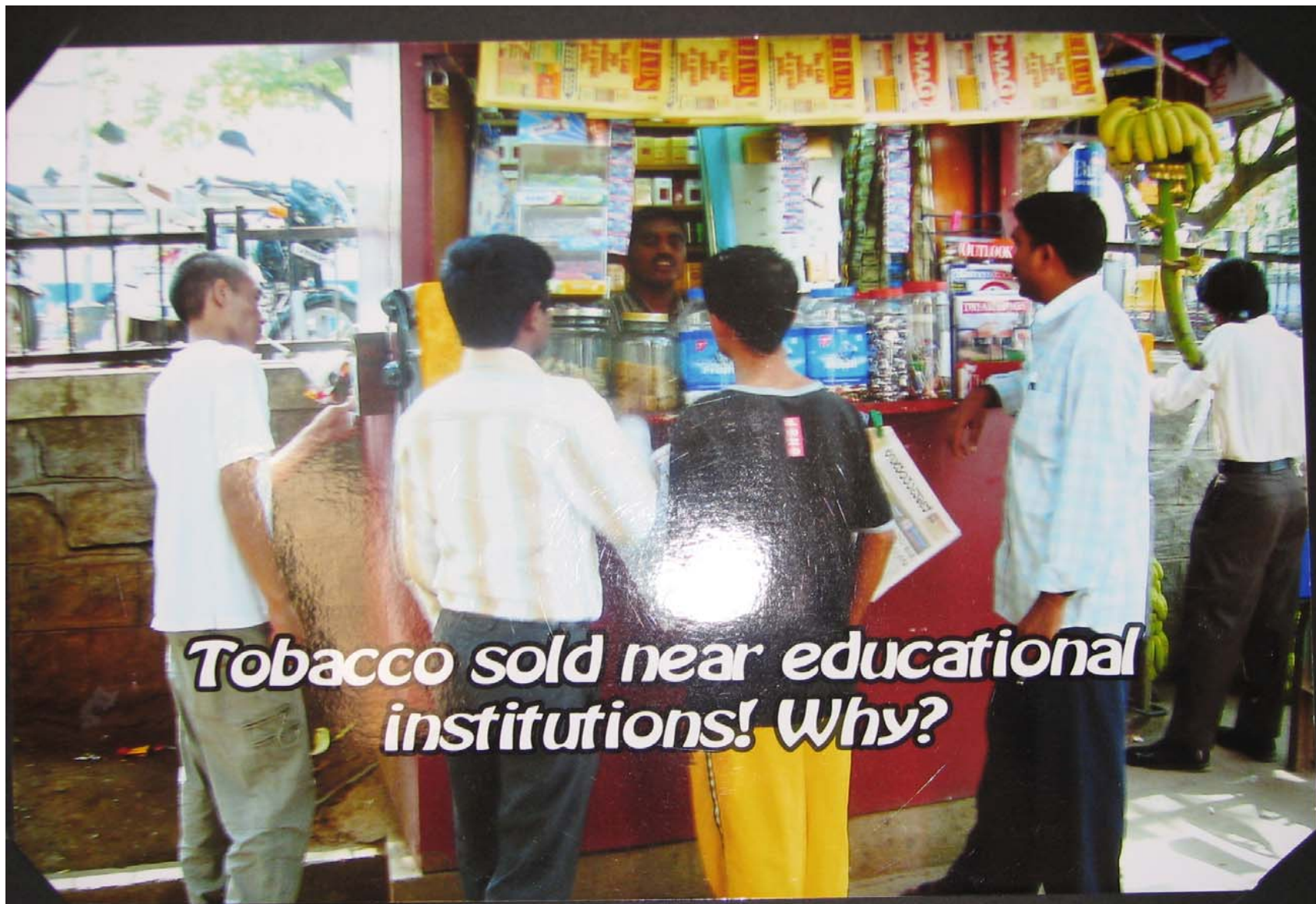
- involvement of communities in the planning and implementation of programs was central to the success of initiatives.
- empower local communities. The formation of 'self help' groups so that can assert their rights and effectively negotiate with relevant government departments to ensure that future development initiatives are in their best interests.





THANK-YOU FOR YOUR ATTENTION





Tobacco sold near educational institutions! Why?

Other government initiatives

- Government has put in place monitoring, maintenance and augmentation schemes for the existing sewerage system
- Large tertiary treatment plants have also been planned that will enable wastewater to be used for a range of non-potable applications around the city.

The Public Affairs Centre

- Citizen Report Cards on public services
- Overview of the performance of 14-15 public utilities as judged by residents.
- Aims to monitor and improve the quality of public service provision within the city.
- Provides feedback that can be used to improve services.

CURRENT CITIZEN CONCERNS

BMP	Insecticides not sprayed, No slum improvement	42%
BDA	Insufficient road width & inadequacy of civic amenities in new layouts	50%
BMTCL	Polluting buses, Irregular bus timings	33%
BWSSB	Irregular water supply, Water quality	47%
KPTCL	Irregular power supply, queues for bills	38%
Police	Increase in crime rate, poor traffic management	31%
Telephones	Delay in getting connections, lines not working	43%

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