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On the political economy of sustainable megacites
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Respected Chairperson, Ladies and Gentlemen.

I have been invited to talk at this Indo-German Winter School that is dedicated to the "Growth and sustainability in a highly dynamic city. Exploring the urban development in South Chennai." I feel very honoured, indeed, to address you at this prominent institute of higher learning and thank very much for the invitation. However, I have to ask myself: What qualifies me for this task and what could be my contribution? I am neither a city planner nor a specialist for Chennai. I am an economist, more specifically working on the economic, social and political development, in short: on the political economy of South Asia. I have been doing this at the South Asia Institute of Heidelberg University in the Department of International Economics. Thus, you will hear an economists's approach to the topic.

The task

I shall proceed as follows: After introducing myself, I shall discuss cities as long living institutions; some of them had an urban infrastructure superior to what we see today thousands of years ago. Then I shall look at terminology: growth, size, sustainability, megacity, global city. Cities provide what we call public goods and services. Because of rivalry, lack of excludability and external effects public goods, to some extent also common property and club goods, constitute natural monopolies and must not left to the forces of an unregulated market. That raises problems of organization, funding and pricing. The problem will be exemplified by the drinking water market. In order to escape the many inefficiencies of the soft state, water users install their own systems, but such strategy has its limits. This brings us to the question of who the state is in megacities. As I shall explain, there is no dychotomy between formal and informal sectors; both are interlinked in a symbiosis. In the end I shall come to the question whether megacities constitute an own class of problems. There will be no time to go much into detail. But you have a copy of my manuscript and there are plenty of references. If there are questions, there will be time for discussion after my presentation, while I am here in Chennai and later there always is e-mail and Skype.

Personal Background

Let me start with a few words of my own urban and megacity experience: I have always lived in cities. I was raised in the harbour town of Bremen in northern Germany, a city republic for more than a thousand years; for studies I moved to Heidelberg in southern Germany, once the capital of the Palatinate and the seat of Germany's oldest university. I live in Ladenburg, a small medieval town with half timber houses and cobble stone roads, in Roman times the capital of a province of the Empire. I could visit most of the prominent cities of South Asia. I lived and taught in Islamabad, the planned capital of Pakistan. I also lived in Delhi, a very old city,

selected by the colonial power as their capital before they left. And I lived and taught in Shimla, India's best known hill station. Over the last years I was concerned with megacity development, a major programme funded by the German Research Council (DFG). Our work focussed on Dhaka, the fastest growing megacity, and on the Pearl River Delta, the largest conurbation in the world. These cities are very different, indeed, as are all cities. They have a different history, they have very different functions and these functions have been changing over time. Some cities are several thousand years old, some old cities lost importance and are forgotten now, some new cities only have a short history. The question is: Why it is so? As an economist I can see that economics is a major factor, of course, besides all the others.

Cities: Long living institutions

Cities are usually long-living institutions and given current population dynamics, rural exodus and urbanization, they will continue to grow. But is this growth also sustainable, a question implied in the overriding theme of this Winter School? *The Economist* writes about Beijing: 'The capital is growing unsustainable' [The capital 2013]. How shall we define then 'sustainable cities'? And is 'sustainability' a recent concern? Both terms, 'growth' and 'sustainability' are central to planning and to development policy and I shall deal with them in a short while. Before that, let me first have a look at the opposite of growth and sustainability, i.e. at stagantion, recession and unsustainability. We do not have to look far to find a perfect example.

Moenjo Daro

Moenjo Daro was a centre of the Indus Civilization, situated on the right bank of the Indus river in Upper Sindh. With multi-storey brick buildings, a rectangular pattern of streets and brick lined water and sewage canals, it had an infrastructure not seen in most places in the region until recently. Moenjo Daro was excavated in the 1920s and since then we are puzzled how such a great civilization could come up in the fourth millennium before Christ, last for around 2000 years and decay and disappear almost suddenly. There are no records in writing, just plenty of seals. What we know about the city's history and its social organization is almost exclusively based on interpretation of archaeological findings [POSSEHL 1979].

There are three popular theories: The first is that the Indus Civilization was overrun and destroyed by an Arian invasion in the middle of the second millennium B.C. The second is that a reduction in the water flow of the Indus and/or a climate change ended this civilization. The third is that the city fell victim to an overuse of the natural resources that had sustained it.

The Aryan invasion theory suffers from the fact that there are no indications of war and destruction: There are no signs of large fires and hardly any bones scattered around. As latest findings have shown, the period of decay lasted for around a century and seems to have started before the Aryan invasion, if there was any such invasion at all [GIRI 2013].

The natural disaster theory is supported by the fact that there was a third major river between Indus and Ganges running from the Himalaya to the sea, parallel to the Indus. What made the Saraswati disappear is not known. May be it was a deformation of the topography, caused by a major earthquake. There could have been a whole series of disturbances that left no time for

adaptation. Anyway, the Saraswati is believed to have dried up much earlier. As for climate change: We know that the climate in the Gulf region and in Baluchistan once was less hostile. But it is not known whether the climate change was sudden or not.

The unsustainability theory is based on the assumption that the city's food and energy demand led to an overuse of the natural environment, the destruction of the forest cover, the degradation of soils and a change of the micro climate.

From the fact that there are no remains of any fortification it has been concluded that it was a peaceful civilization; the absence of any palace or castle has led to the theory that it must have been a very egalitarian society. But all this is not much more than speculation. What we can say for sure is that it was a well organized civilization and an early example for excellent town planning.

If it was possible to create and maintain such a well organized city in pre-historic times, we have to ask: Why that is so difficult today? I presume that the many shortcomings in most of present day cities and the high vulnerability of their inhabitants has to do with a lack of organization that is necessary to make cities liveable and lasting, and with a basic knowledge of economics.

Sustainability, resilience, adaptation and coping capacity

The survival of cities is proof of resilience, adaptation and coping capacity. South Asian cities have seen an unprecedented rise of population in recent decades. In the 19th century the greatest problem was the spread of communicable and water borne diseases. Thanks to public hygiene mortality has fallen with the effect of first a rapid population increase and now with falling fertility, especially in the cities. Today, the most urgent problems especially in the larger towns are traffic congestion and air pollution. A lack of housing, an unreliable supply of water and power and for the poor a lack of employment and income have to be added. The latter problems are not specific to urban areas; poverty usually is even more pronounced in rural areas.

The ever rising number of motor vehicles has been crippling traffic: There are 6.5 million motor vehicles on the road in Delhi alone. Traffic congestion in Dhaka is among the worst in the world; every day traffic comes to a standstill for several hours. Air pollution is so bad that we talk of the Dhaka Cough; Delhi's cloud of smog can be easily seen on satellite photos. But there are also quite simple and effective solutions in place: Heavy vehicles are allowed into the major cities only at night, when people have gone home and there is little traffic. As we found in our study of food systems in Dhaka, bringing goods into the city is less a problem then we had expected [ZINGEL et al. 2011, KECK et al. 2012].

Otherwise, reaction has been slow. Mumbai has its suburban train, Kolkata has its trams. First Kolkata, and then Delhi and other cities have started metro lines [Metro systems 2013]. Dhaka is hoping for one: Funding would be ready, but the Bangladesh government wants to change a route on the instigation of the Army. The donors are not ready to accept another cost increase. There might be a story behind the story: With so much corruption there might be vested interests behind such policies of obstruction. **Governance**, thus, is another aspect of sustainability. Before I come to that, I shall discuss first the two central terms of the Winter School's topic: Growth and Sustainability.

Growth

Growth of cities is usually understood as the swelling number of inhabitants, the extension of the built up area and the increase of urban production and incomes. But to define who qualifies as a citizen, where a city ends and what counts as the city's economy is difficult. We have also difficulties to define what a city is and who should be considered as an inhabitant. After Margaret Thatcher dissolved the Greater London Council in 1986, there was no 'London' as a political and administrative unity for 14 years, but there was a clear perception that the 32 boroughs plus the City constituted (Greater) London. In countries like India, Pakistan or Germany several major cities constitute sub-national units. Berlin is one of the 16 *Länder* (states) of Germany and identical with the City of Berlin. New Delhi, Chandigarh and Islamabad are National Territories, but comprise rural areas. Many cities have outgrown their borders: The National Capital Region of New Delhi extends deep into Harayana, Uttar Pradesh and Rajasthan; Islamabad borders its twin city Rawalpindi. It is different in Dhaka: Bangladesh is a unitary state. There is no political level below the Socialist Republic. Dhaka City Corporation serves only half of the population of the city's planning area.

As cities are expanding, inner city population has been shrinking, in parts of the world since the 19th century. Cities started to resemble a doughnut, i.e. a ring around a hollow centre; inner cities show signs of neglect and decay [CARTER and POLEVYCHOK 2003]. The trend back into the inner cities has started in European cities from the middle of last century; in South Asia it is just to begin. Delhi's Connaught Place, for decades the pride of the city, lost its shine in the 1980s and 1990s; the new metro is bringing back the old glory. Inner city renewal has brought affluence and gentrification, but not necessarily brought back population. One of the reasons of depopulation of inner cities is the trend towards smaller families and larger living quarters; in Germany we use now more than twice as many square metres per person than a generation ago. But also where inner cities look better now, they are deserted after office hours. In any case, urban renewal is not new at all, there have been attempts at it throughout history.

Growth is especially difficult to measure in the case of the urban economy. Although production and income of all countries taken together sum up to the same total, they are not the same locally: A migrant worker in Chennai contributes to the city's production, but not necessarily to Chennai's income, if part of the income is sent home to Andhra, where it will be counted as income: In this case Chennai's production is higher than its income.

That growth has been popular with planners and policy makers partly can be explained by the fact that growth allows distribution at nobody's expense (in absolute terms). Contrary to this, in a no-growth situation the additional production and incomes are nil: Distribution is only possible at the expense of someone else and becomes difficult, if not impossible. Without growth, distribution becomes a zero-sum game. In the former socialist countries they joked that the the only thing that could be distributed was scarcity.

Among the many abstractions used in basic economic theory the two most common ones are the abstraction from space and time. Regional economics is an attempt to include the spatial dimension; comparative static and dynamic models do the same with time. As development has many aspects, unidimensional measurements, like the production per head or the average

income during a given period of time, do not give us any clue of future implications of present doing. This has led to overlooking long term social and ecological effects. The present system of national accounts originates from the 1930s and 1940s and became international standard in the 1950s. Criticism started in the 1960s. Jay W. FORRESTER'S model of System's or World Dynamics [1971] became the major theoretical underpinning of discussing the long term impact on nature, our natural environment and ecology. Based on his work and on the initiative of the Club of Rome a group of scientists around Dennis MEADOWS [1972, 1974] and Donella H. MEADOWS [1972, 1974, 1992] studied the interdependencies between rapid industrialisation, population growth, world-wide under-nutrition, the exploitation of natural resources and the destruction of our environment. It came out as a book under the tile "**The Limits of Growth**" just before the OPEC raised the oil price. Energy out of a sudden became more costly and scarce. This so called Oil Shock of 1973 made it clear that resources are not unlimited. In 1979 the OPEC cartel raised prices a second time and the oil price peaked at an all time high (in real terms). The oil crisis had far reaching consequences for urban development as commuting became more expensive: It is in the 1970s that the movement back into inner cities gained momentum in the more affluent countries. With the first Gulf War between two major members of the OPEC, the oil cartel lost much of its powers and oil prices started to fall over the next two decades. They only started to rise again at the end of the century due to an increasing energy demand in the emerging economies, notably China. New findings have been made outside the Gulf areas and with new technologies oil sands and shale oil can be utilized. In the 1980s and 1990s lower energy prices brought back energy intensive consumption patterns (like the SUVs), the same seems to happen just now: Automobiles have become more fuel efficient, but more powerful motors again need more fuel. Air conditioning, once a privilege of the rich, has become popular even in poorer countries and it is expected that the world soon will use more energy for cooling than for heating.

Size and importance: Mega and global cities

Definitions of what a city is, differ from country to country and even within them. In German – as in several other languages – there is only one word for city and town: *Stadt*. Cities with more than one lakh inhabitants – are called *Großstädte*, i.e. big cities; those with more than ten lakh inhabitants are called *Millionenstädte*, i.e. million cities. Megalopolis or Megapolis would be the Greek equivalent: *Mega* (μεγας) means big, but also stands for a million in the metric system (like megabit or megawatt), *polis* (πολις) means city. As the number and size of million cities has been growing dramatically, standards for classifying cities as megacities were raise first to five million, later to eight million and now to ten million inhabitants [BRONGER and TRETTIN 2011].

But despite this simple yardstick, classifying cities by size can become confusingly difficult. Depending on how cities are defined, they can extend over several thousand square kilometres. Agglomerations with impressive population figures can show a surprisingly low population density. If we consider areas with a population density of 1.000 per square kilometres as 'urban', all Bangladesh, Kerala and West Bengal would qualify as cities. People sometimes commute for hours every day and what seems to be a perfect rural hinterland may turn out to be an extension of the city with factories of all sizes.

China has hundreds of millions of migrant workers only, because they do not possess a

residence permit of their place of work. Without the famous *hukou* they are denied most social benefits like housing, health care and education for their children. Size, therefore, measured by population number, depends also on whom we count.

But size not necessarily means importance: Some of the largest cities by number of population are hardly known abroad while comparatively small places like Washington, Frankfurt, Zurich or Geneva are obviously of global importance. There have been a number of attempts to rank cities by their global importance. Such 'global cities' are measured not by their number of inhabitants but by a compound index based on a number of indicators. In a recent book BRONGER and TRETTIN compared the various lists of 'global cities'. The striking absence of Asian, especially South Asian, cities reflects a western perception of 'global'. Geometrically, the globe's surface does not have a centre. 'Centre' has to be understood economically and politically. The present discourse of globality implicitly starts from Europe. For Europeans, the known world lay around the Mediterranean Sea. Lands beyond the known world were considered of a lesser size and importance. Finding the sea routes to America and Asia, the lands around the Oceans became accessible for European conquest. The European centres of global power were later joined by the USA and Japan. The 'triade' of industrialized countries became the 'global north'. The Asian perspective should be quite different: The Roman Empire was not the only one of vast proportions: We know of Chinese expeditions to southern Africa, the Mongolians ruled over the largest territory ever; China and India were by far the two most prominent economies of the world for most of the last two millennia [MADDISON 2006]. Certainly the centres of these empires, their trading posts and religious centres were global cities [ZINGEL 2012].

Sustainability: Sustainable growth or growing sustianability

Sustainability comes from the Latin word *sustinere* that means to hold up, to carry, to keep up. Sustainable simply means lasting. Sustainable growth means that today's growth must not be at the expense of tomorrow's growth. It is an old principle in traditional, rural societies. A growth-first policy and a fixation on the standard indicators of economic growth, i.e. the GDP and GNP, however, led to an overuse of our natural environment and to what these days is discussed as the 'environmental problem'.

'Environmental problem', however, is a misnomer, since it is not the environment that presents a problem, but our careless use of it. The word 'environment' comes from French *les environs*, the surrounding area like the German word *Umwelt*. As we damage the world around us, we leave it to the next generation in a worse condition than the one in what we inherited it and, thus, damage ourselves. Unfortunately, one cannot read this effect from the usual measures of economic accomplishments. Robert REPETTO et al. [1989] of the World Resources Institute have warned more than two decades ago that the chopping down of primary rain forest and the over-utilization of soils appear in the national accounts as value added and enhance the gross domestic product (GDP). In the short run, the loss of forests and of soil fertility is not reflected in the national accounts. Therefore, a country like Indonesia could show impressive rates of growth that would have been only half as high if they were measured by 'green', i.e. ecological standards of national accounts.

As agriculture is the oldest field of government activities, much of modern economics has been

discussed and applied first in the rural context. This also applies to natural resource management, environment and ecology. In Germany the Green Movement started with public protest against the plan to build a nuclear power plant in a wine growing area: It was not so much radiation that was feared, but the damaging effect of moisture emitted by the large cooling towers on the quality of the grapes and the income of the farmers [ZINGEL 2013].

The discussion of sustainability gained momentum in the 1980s and especially after the 1992 Rio 'Earth Summit'. The World Bank held the first annual international conference on environmentally sustainable development in 1993 [SERAGELDIN and STEER 1994]. Measuring sustainability became a major concern [MUNASINGHE andSHEARER 1995; Zingel 1999]. Now every aspect of development is being discussed with respect to sustainability.

Theories of location and space have explained the distribution of cites over the landscape, transportation costs has been seen as the major determining factor (THÜNEN, LAUNHARDT, CHISTIALLER, LÖSCH). Alfred WEBER brought out the importance of economies and diseconomies of agglomeration [ISARD 1972: 182-188]. What finds less mentioning is the long term character of investment in urban infrastructure and its lumpiness, if we only think of bridges, roads, harbours. We are still using bridges that have been built two thousand years ago. Thus, urban infrastructure made cities last. *The Economist* writes: 'If any country needs better infrastructure, it is fast urbanising India' [A bridge in Mumbai 2013:105]

In the urban context, space most probably is the most scarce good. This explains the endless fighting over property and the contest for public space. Water and power are also scarce everywhere. But why water and power supply are so unreliable in South Asian cities and so reliable in most of Europe needs explanation that I shall try to give in a few minutes.

In their call for the First International Conference on Urban Sustainability and Resilience in 2012, the Centre for Urban Sustainability and Resilience of the University College of London listed four central themes: (i) Facets of urban resilience; (ii) Integrating and engineering sustainable and resilient urban systems; (iii) feeding the city and (iv) A low carbon environment. Further topics were: eco cities; measuring resilience; transport; water; security; information and communication technology; retrofitting; adapting to climate change; managing ageing infrastructure; sustainable indicators; waste, energy; food, material; urban visions [USAR 2012].

GENG et al. [2010] in their attempt at measuring urban sustainability developed an Urban Sustainability Index. Before doing that, they collected indicators of urban sustainability and found the following five:

Categories	Definitions	Indicators	Description of the indicators
Basic needs	• Access to safe water, living conditions, education and health services	• Water supply • Housing • Health • Education	• Water access rate (%) • Living space (sq. m per capita) • Doctors per capita • Student teacher ratio (primary school)
Resource efficiency	• Efficient use of energy, power and water, waste recycling	• Power • Water demand • Waste recycling • % GDP for heavy industry	• Total electricity consumption (kwh per GDP) • Water consumption (Liters per capita) • Rate of industrial waste recycled and utilized (%) • Heavy industry GDP / Total GDP (bn RMB)

Environmental cleanliness	• Clean air and water • Waste management	• Air pollution • Industrial pollution • Waste water treatment • Waste management	• Concentration of SOx NOx PM10 (mg/cu m) • Industrial SO2 discharged per GDP (T/ RMB) • Wastewater treatment rate (%) • Domestic waste collected & transported (10,000 T per capita)
Built environment	• Dense, transit-oriented green efficient design	• Urban density • Mass transit usage • Public green space • Building efficiency	• Persons per square kilometer of urban area • Passengers using public transit (bus, trolley) •Public green space per capita (sq.m per capita) • Building heating efficiency
Commitment to future sustainability	• Investment in human and physical assets	• Green jobs • Investment in environmental protection	• # of environemtnal professionals per capita • Amount of environmental danction funds per GDP

Source; Deng et al. 2000, p. 10.

Their own index is based on five sets of indicators [p. 10]:
(i) "Basic Needs: Access to safe water, sufficient living space, and adequate healthcare and education are priority needs that help sustain an urban population.'
(ii) 'Resource Efficiency: Efficient use of water and energy and effective waste recycling contribute to functional resource management, providing benefits in both urban and rural areas.'
(iii) 'Environmental Health: Lessening exposure to harmful pollutants and heightening waste management efficiency helps induce cleaner urban environments.'
(iv) 'Built Environment: Increased livability and efficiency of communities comes with equitable access to green space and public transportation, as well as dense and efficient buildings.'
(v) 'Commitment to Sustainability: More staff and financial resources brought against sustainability challenges suggests how vigorously city governments are meeting their commitments to implement national and local policies and standards.'

That their study of 112 Chinese yielded 'no deterministic relationship between economic growth and performance on our Index' [p. 37] is an indication that relationships are ver complex, indeed.

In India, there is a project of the Institute for Financial Management & Research (IFMR), Chennai, on "USI: Urban Sustainable Index" with the objective 'to measure and assess the performance of Indian cities' on the basis of 'an equally weighted average of six categories – Air Quality, Build Environment Sewage & Sanitation, Solid Waste, Roads and Water Quality & Supply' measured by 'normative benchmarks'. In a first pilot phase four cities have been looked at, i.e. Mysore, Bengaluru, Kovai (Coimbatore) and Chennai, perfoming in this order: 'Tier I cities, perform well in certain categories such as 'Roads' and 'Sewage', while they lag behind in the provision of water services and in curbing pollution of fine particles (SPM and RSPM). One area of concern across the board is with regards to solid waste management (waste generation, primary waste collection & transport to transfer station, segregation and disposal in landfills)' [SIVAPRADHA et al. 2013] .

Public goods and services

Standard economic theory deals with scarce private goods. They are rival, excludable and free of external effects. What does this mean:

Economics is about scarcity: There are only few free goods like sunlight and air to breathe; access to them is open to everyone, at least in principle. Goods that are not freely available are called **private** goods. They can be exchanged for other private goods for a price. The plans of the individuals are coordinated by the market that is ruled by competition. Competition guarantees that no one enjoys any market power, no one can 'play' the market.

Rivalry: Most goods and services can be consumed or processed only once. To give just two examples: A and B are rivals with respect to food or a haircut: What A has eaten, cannot be eaten by B, and during the time A's hair is cut, B's cannot be cut. But there are also non-rival goods like a public park or public transport: A can enjoy the park as well as B and A can take the bus at the same time as B.

Exclusion: Raising a price requires that those who are not ready to pay, can be excluded. Shops ask for money, we don't get anything without paying. There are, however, instances where this principle does not work. Public hygiene, beauty or safety and security benefit everyone, whether he/she pays or not. We cannot be excluded from enjoying the beauty of the park next door, but we can be excluded from taking a bus.

Externalities: There are often costs and benefits for third parties that neither pay for them nor are they compensated for suffering from them. We call such costs and benefits external effects. A nearby public park lifts up the value of his property, although the owner of the property is not paying for it; this is an external benefit. A sewage treatment plant or a land fill has the opposite effect. The unpleasant sight and the stink means external costs for nearby residents.

A well known example would be the mad race for ground water: As more and more water is pumped up, water tables start falling and water becomes more expensive. This would be a lesser problem, because the process is reversible. It is, however, dangerous if toxic substances are released into the ground: Renewal can be very expensive, maybe even impossible.

This means, that **sustainability has a time dimension**: Natural resources are usually are distinguished as renewable and non-renewable; they also can be used as sinks for all kinds of emission into the soil, water and air. So called non-renewable resources are renewable, indeed, it is only that they take millions of years. In other cases, renewal may not come automatically and is costly: Land fills can be dug out and cleared from toxic substances.

The world bank provides us with a useful chart, where rivalry, excludability and external effects are set into relation. As we can see, there are four different kinds of goods: (i) private goods; (ii) common property; (iii) club goods; (iv) public goods.

Private goods are rival and excludable, associated in most cases with (usually) low externality. Private goods can be left to the market, although there are many instances where typical private goods are produced or distributed by the state. This can be done directly, indirectly, by regulating markets, by raising taxes or paying subsidies. Food would be a good example in India [Kabra 1990], housing in Europe.

Common property is rival and non-excludable and associated with high externality. Common property is best known in agriculture, where the rights to use grazing land are often enjoyed by

a particular group of people, a tribe or residents of certain locality. Such common property in English is often simply called 'commons'; in German it is the *Allmende*. Common property must not be confused with **open access**. The decisive difference is that in the case of common property the rights are restricted to a certain body of people who in principle should be able to regulate access. The classic example is that of overstocking and over-use of the common grazing lands (*shamlat* in northern India). If the number of animals grazing is increased beyond the carrying capacity of the grazing ground, there is no time for the grass to recover and animals get ever less feed. But the farmers will continue to stock up their herds. Their individual decision is rational, although collectively it is not. The 'tragedy of the commons' [HARDIN 1968] is one of the most quoted articles (792.000 hits on Google on 10 Feb 2013) in connection with sustainability. It is also used in order to prove that common property does not work. But the example only shows what happens, if access is not regulated.

The discussion of the merits and demerits of common property is almost ideological, where the proponents of private property use the example to support their demand for a division of common property. We find proponents of private property more in the Anglo-Saxon world, and of common property more on the European continent. In England the argument of effective utilization was used to justify 'enclosure', i.e. dividing up the commons and 'enclosing' the newly won individual plots, so that the land may be best used by individual owners. But as I said, it is nor the only solution possible. Another would be regulation, and there are many traditional systems known of a sustainable common use. Market places and piazzas are a good example of such regulation: Although in principle open to all citizens, there are rules and regulations to avoid overuse and conflict.

In the last phase of the 'battle of the systems', i.e. capitalism versus socialism, the importance of **property rights** has been emphasized by more business friendly governments in the United Kingdom, the USA and – to some extent – in Germany. Many of the former developing countries followed: in India economic liberalization started cautiously in the late 1970s and more so since 1991. But the gist of the property rights theory is not that property rights would be best used by the private sector, but that it is important that property rights are clearly defined. A good example would be immovable property: The sorry state of run down living quarters and makeshift housing is often the outcome of unclear **land rights**. As long as people have to fear that their houses are repossessed or broken down or that owners cannot get rid of squatters, there will be less investment in new houses and little renovation.

Club goods are non-rival, but excludable at low externalities. The fact that sport clubs maintain facilities that are open to all their members, but not to others, is why we speak of club goods. Where public services cannot be guaranteed, more and more neighbourhoods organize themselves and run their own services, restricted, however, to their members. Some cities have become assemblies of such 'gated communities'.

Public goods are non-rival, non-excludable at high externalities. Public goods and services can be enjoyed jointly without loss for anyone, they are impossible or at least difficult to be charged and are characterized by high external effects. The World Bank gives rural roads as an example.

Funding public goods and services

When we talk of public services, we usually mean services that are provided by the state or any semi-public agency, even when they are not public goods in a technical sense. Housing comes to my mind: At a first look housing is rival and excludable, there are no immediate external effect. At a second thought, however, we could consider social unrest as potential external costs and altruism as external benefit. Whether governments should be involved in providing housing or not, or only for members of the public service, is seen very differently from country to country.

Public services can be funded either by the exchequer through taxes or debt or by user fees. The latter is possible not in all cases, but in many cases. That the government provides services themselves is a matter of debate. The question raised usually is, whether the public or the private sector would be more efficient and cost-effective.

Natural monopoly, rent seeking, agency and corruption

Public goods and services often can be made available by one supplier at lower costs as compared to two or more. This is due to high fixed costs and decreasing average costs. To give an example: It makes little sense to have two metro lines running from A to B only to establish some competition. The investment costs are very high as compared to the variable costs: None of the two companies could offer such a low fare, as if there were only one. Only one supplier, however, means a monopoly, and since this monopoly would be given by the very (technical) nature of the enterprise, we call it a **natural monopoly**. Natural monopolies are determined by technology only. To give an example: Telephone became a classical natural monopoly because it required that participants were wired to the telephone grid. After switchboards became automated and self-dialling the norm, most of the cost was capital cost; it would not have made sense to have any parallel nets just for the purpose of creating competition. That all changed with the arrival of mobile telephones. Still, one network would be more cost effective, but monopolies have a tendency to be inefficient, and that is independent of public or private ownership.

In the case of public ownership there is the danger of **state failure**, in the case of private ownership of **market failure**. State failure or 'bureaucratic failure' [LAL 2000, p. xii] describes the loss of efficiency due to corruption and overstaffing and is a typical **agency** problem: In any organization we have principals (owners, superiors) and agents (managers, public servants) who act for the principal. If they follow their own agenda, they might act against not so much in the principal's, but in their own interest [SMITH 1998]. In the government context, public servants may not choose the most efficient contractor, but the one that pays the highest bribes. Anne O. KRUEGER [1974] calls this '**rent seeking**'. The damage is twofold: First the costs are higher than necessary and second the quality (and safety) may be compromised. Overstaffing has the same effect: More people are employed than necessary and may be also less qualified ones, not necessarily for personal gains, but also for political reasons. Like in **corruption** the costs of production are higher than necessary. One of the main argument against government service.

In the case of private ownership the contractor tries to maximise his monopolist's profit, which is possible by reducing his supply to the point, where the marginal return (given by consumers propensity to pay) is not less than the marginal costs. The difference between the monopolist's price and his average cost is his profit. The consumer pays more and gets less quantity as

compared to a profit-less situation. We call this situation a market failure, although the market is not really failing. We might rather argue that in a monopoly there is no competition and, thus, no market.

The real problem, as said before, is that in a monopoly there is no competition; it is not a systematic shortcoming of the private or public sector. There are examples of fairly efficient state monopolies and of fairly inefficient private monopolies. Often monopolies that once were well rectified live on, although there no longer is any justification. Banning competition in the mobile phones sector or banning Voice over Internet (VoiP) are good examples.

Pricing public goods and regulating markets of public goods: The case of drinking water

Mismanagement of markets for public goods and inefficient pricing are reasons for market failure. A good example is the market for **drinking water**. Drinking water usually is provided by public utilities, although there is the example of France, where drinking water since long has been provided (mostly) by private companies. Most of the cost of drinking water is fixed costs: Dams, wells and reservoirs, transport through canals and pipelines to the city, local distribution. If water companies are run on a no-profit base, the price must cover the depreciation of investment, the costs of operation and maintenance plus the variable costs. If the government tries to be kind to their people and lower the price below that level, not enough money is available first for extension, then for modernisation, for operation and maintenance and finally for covering the running expenses. The effects of such mismanagement show only over time: Technical system losses in form of crumbling pipes and water seeping into the ground reduce availability at the end of the pipe, in short, there is not water enough. In order to keep up the pressure in the system's pipes, operators turn to load shedding: Supply to whole quarters are shut, water supply becomes irregular or restricted to only a few hours, sometimes even only a few minutes per day, if at all. Consumers react with creating their own supplementary infrastructure, usually by building ground and roof tanks and installing an electric pump: Water from the local water supply fills the ground tank, whenever it comes. A safety valve closes the line, when full. With the help of an electric pump, water is lifted to the roof tank. From there it flows by gravity to wherever and whenever it is needed in the house. House owners often have their own wells as another backup. In many cities there is – literally – a mad rush to bottom: as more and more water is pumped up, the water table goes down. It affects the local ecology and sometimes even the stability of buildings.

Usually the more affluent neighbourhoods are better supplied with water from the local public utility than the poorer ones. In the poorer neighbourhoods people rarely have an own water tap and cannot afford to have ground and top tanks and electric pumps. Water is fetched from a nearby stand pipe or hydrant that gets water maybe once a day, not necessarily always at the same time. Mostly women have to line up with their buckets to fetch water. Not all are in a position to do so: they are served by private water seller, who queue up for them and deliver the water to their homes. In Dhaka's biggest *bustee* the colleagues found a hundred water sellers! Private water traders also make home deliveries in the better neighbourhood, and there not by the bucket, but by the tanker. The problem is that these water traders rarely have their own legal sources. They tap the public sources, and sometimes even the big pipelines, usually without payment. By and by low price public water is crowded out by expensive private water. As a result, the poorest people in the world pay the highest price for water!

Water more than often is not metered. And if it is metered, it is not always billed, and if it is billed, bills are often not paid – with no consequence. Water is charged often independent of consumption at a 'flat' rate. As we tend to use a commodity as long as its marginal utility is higher than its marginal costs, people have no restrictions to use water as much as is technical possible, because at a flat rate the marginal costs, that is the costs of any additional quantity, are zero.

In Germany we face now a different problem: In order to save water and money, people have installed so many water saving devices that now there is too little water to flush the sewage systems. Drinking water has to be pumped directly into the sewage system with the effect that the water rate has to be raised: A dead race.

To sum up this case study of drinking water supply: It is not so much the restricted availability of water that creates the water shortages in South Asia's cities, but the poor organization of its distribution. Water consumption in Delhi is around 240 litres per head and year, that is much more than in Germany, and still there is not water enough in Delhi. The inadequate water supply is one of the reasons of the unhygienic situation in all South Asian megacities.

There are similar problems with electricity. Again a typical natural monopoly, characterized by high fixed costs and an inefficient distribution system. Peak demand is much higher than available capacities because of a 'benevolent' government guarantees unsustainable (low) prices. Systems' breakdowns can only be avoided by 'load shedding'. System losses are seen as the main reason of system defaults. In the process of transmitting and distributing electric power from the power plant to the consumer, part of the electricity is lost, indeed, in the process. Such 'technical systems losses' have to be distinguished them from 'organizational systems losses' that are simply electric power not paid for, often in collusion with the staff of the electricity companies. Corruption, however, not only needs one, who takes a bribe, but also one who pays a bribe, and a situation that allows corruption in the first place. A *contrario*: If there would be electricity enough, no one would be willing to pay an extra amount of money to get it.

Energy demand is doubling more or less every decade in emerging economies like India. Modern buildings with concrete walls and ceilings heat up in the hot season, air conditioning is spreading fast and becomes quickly a major consumer of electricity. In some places we can observe 'heat alleys', heating up the environment and making it even more difficult and costly to cool down places. The problem of power cuts in principle could be solved by raising the electricity price, which would lead to a more careful use of electricity and speed up the application of energy saving technology. But any attempts at rising electricity prices will meet large scale resistance, especially from the middle class that becomes the largest consumer of electricity. It would also help, if buildings would have better insulation. In Germany we have the opposite problem: Keeping buildings warm in winter. Stricter building codes and strict control of heating systems have been helpful that energy consumption has been going down in Germany even in times of economic growth. It also helped reduce urban pollution in winter. The most famous example is that of the London fog of 1952, believed to have killed thousands of Londoners prematurely. A combination of cold, chimney smoke and exhaust form the buses that had replaced electric tramways and no wind let to the worst fog in English history. That has changed, winter nights have become less foggy and hazy.

The soft state, exit, loyalty and voice

There certainly is no lack of legal provisions in South Asia; the deficiencies are all in implementation. Gunnar MYRDAL [1970 : 208-252] in this context talked of a **soft state**, i.e. a state that is trying to do too many things, but actually is too weak to get them done. In India food has been declared a basic human right, there are provisions of schooling, health care; child labour and bonded labour are banned, as is any form of discrimination. India has a system of reservation for disadvantaged groups and an employment guarantee for rural worker. There are also building codes and zoning laws. But often the law is not put into practice, or the government retracts from their position, as has been the case several times when the government tried to raise fuel prices.

Albert O. HIRSCHMAN [1978] has explained how important it is that the elite, i.e. the decision makers, cannot distance themselves from the public: He gives the example of public transport: Once the elites have the option to use air-planes and motor cars, they are no longer interested in their railway system; services suffer with the effect, that more and more people travel by air and road. He calls this 'exit' But if people raise their voice and remain loyal they can be successful: As the service is improved, more people return to the railways. We can see this world over also in the urban context: Kolkota retained the tram after public protest. The new metros in India are used by all types of people. In Europe, local transport – not to speak of high-speed railways – have become so popular, because they so much faster, not simply less costly than motor cars. In HIRSCHMAN's terms, private motor vehicles no longer provide an 'exit' option: It might be an alternative for overcrowded public transport, but it no longer allows to escape traffic congestion. Metros and dedicated bus lanes make public transport faster than private vehicles and save us from looking for a parking place. That public transport is also more eco-friendly is a welcome side effect, but not the reason, why people return.

Governance: Who is the state in megacities?

Federal states like India and Germany have a confusing mix of public and private institutions that make out our cities. Public services are provided by the different tiers of government and administration. There is a vast spectrum of semi-public institutions that are difficult to label. The state in both countries comes in different *avataras*: Cities are the lowest rung of a three-tier system. They have directly elected bodies, but depend on public grants and subsidies, mostly from the second tier, i.e. the states of the Union in India and the *Länder* in Germany. Fiscally, and thus economically, the cities are better equipped and more independent in Germany. Whereas in India urban local bodies can spend around 5 per cent of all public money, it is about 25 per cent in Germany; own funds are also relatively more than in India. With the 74th amendment to the Constitution of India (1993), local bodies finances have finally entered the Constitution.

Public services are provided by an array of public, semi-public and private institutions, serving different and overlapping territories. Public transport companies, for example, often serve areas outside of the major city; the same holds true for water and power.

To say whether a public utility belongs to the public or the private sector can be very difficult, if the provider is organized as private company, but owned by the state. On the other hand,

private institutions may fulfill typical government functions. In Germany, for example, road worthiness of vehicles is certified by private institutions; their checks are compulsory and their judgement is binding. In the social sector, many services are provided by charitable trusts, non-profit organizations, cooperative societies, mutual institutions etc. Law and order, a typical government function, gets privatized where private security agencies are employed.

Who does what is difficult to establish anyhow. Road construction and maintenance, for example is the responsibility of all three tiers, depending on the national, state or local importance (and classification) of roads. Similarly, hospitals, that can be run by any of the three tiers or by charitable organizations or even by for profit private enterprises. RAHMAN [2013: 32-34] presents a list of 28 functions that fall into the responsibility of Dhaka City Corporation (DCC), mostly in the are of public health, water and drainage, transport and public safety. There are 51 (national) government agencies active in the management of the city [ibid, pp. 56-59]. SIDDIQUI et al. [2004] in a comparison of megacity governance of Kolkata, Mumbai, Delhi, Karachi and Dhaka states: 'In all five megacities, environmental degradation is severe. This means unsatisfactory solid waste disposal and high air, water and noise pollution.' [Siddiqui 2004: 436]. 'There are considerable differences in the legal framework or municipal governance in these five cities.' [p. 437] 'In all the five city governments, assessment and collection of taxes were found to be unsatisfactory owing to corruption, pressure by powerful individuals, the attitude of not paying taxes, non-transparency, faults in tax policy, lack of knowledge of taxation rules/procedures by both officials and taxpayers, scope for applying discretion, inefficiency and the need to maintain popularity. Other problems were absence of innovative measures in assessment and collection and the inability of the tax net to include all those who should be included.' [p. 452]

Formal and informal economy

Since the 1970s we discuss the importance of the informal sector or economy. The term became popular after an ILO study on Nairobi's labour market. They describe the informal sector as follows: 'We should [...] emphasise that informal activities are not confined to employment on the periphery of the main towns, to particular occupations or even to economic activities. Rather, informal activities are the way of doing things, characterised by – (a) ease of entry; (b) reliance on indigenous resources; (c) family ownership of enterprises; (d) small scale of operation; (e) labour-intensive and adapted technology; (f) skills acquired outside the formal school system; and (g) unregulated and competitive markets. Informal-sector activities are largely ignored, rarely supported, often regulated and sometimes actively discouraged by the Government.' [ILO 1972: 6]. As they write 'The popular view of informal-sector activities is that they are primarily those of petty traders, street hawkers, shoeshine boys and other groups "underemployed" on the streets of the big towns. The evidence presented [...] suggests that the bulk of employment in the informal sector, far from being only marginally productive, is economically efficient and profit-making, though small in scale and limited by simple technologies, little capital and lack of links with the other ("formal") sector.' [ILO 1972: 5] However, it is rather not the sector, that is informal, but the labour relations [Etzold et al. 2009]. Neither sectors nor people can be 'informal'. In South Asia 'informal' labour relations dominate the greater part of the economy not only in the cities. The same person that, say, as a civil servant is very much part of the formal sector, may employ a maid in a very informal way. And the same big industrial enterprise that would be counted as part of the formal economy may use

the services of contractors and manpower agents that do not adhere to any labour rules. On top of if, the informal sector can be very formal, as we observe with the rule of slum-lords and their *mastaans* and the formal sector can be quite informal when it comes to corruption and tax evasion. For all these reasons, in our six years work in the megacity programme the distinction of formal and informal sectors in the urban context came out as not be very yielding. What was interesting, however, was the symbiosis between both sectors as can be seen in every major town in South Asia: Those who use the services of poorly paid helpers themselves have an interest that they live not too far away, so they are cheap and round the clock available. Where employment of such informal labourers is no longer allowed has been mainly for security reasons.

The informal sector has become a byword for low wages, miserable living conditions and vulnerability. As such living quarters are especially the least safe quarters and suffer from the vagaries of weather and other natural calamities. The floods in Manila 2009, in Bangkok 2011 and Jakarta 2012 have shown how exposed the large cities on the shores of the oceans are: 'Megacities face the challenge of having to tackle urban climate risks more generally and the vulnerabilities faced by the informal sector and the urban poor specifically.' [JAMIL and ALI 2013]

Professor Geetam TIWARI of the IIT Delhi writes about informal housing: 'Nearly 1 billion people who live in squatter settlements are those who came to the city in search of jobs, needed a place to live and, not being able to afford anything on the private market, built on land that was not their own. These informal settlements create a huge hidden economy [...] The builders of informal housing are the largest builders of housing in the world – and they are creating the cities of tomorrow.' [Tiwari 2007: 348] She concludes: 'Undoubtedly, the growth of future cities depends upon how well we are able to plan for the 'unplanned'. [..] It is better to plan for what is inevitable than to turn a blind eye to the future.' [TIWARI 207: 351]

Conclusion

I think, Professor Tiwari's advice is a perfect conclusion. It obviously is not so much the questions, whether cities – any cities, not just megacities – can be sustainable [Power 2007: 370-371], which they obviously can be over long periods of history, as the initial example of Moenjo Daro showed, but what it needs to make them liveable and lasting, which is the topic of this Winter School.

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