BANGOCO – A BANGALOREAN COMMUNITY

Finding a solution for the small scale slum

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Introduction

The great level of wealth in which the middle class of the western world lives at this moment is exceptional in world history. This level of wealth exists relatively short. In the 19th century a big change occurred at an industrial level. People in Europe went to the cities and worked in factories. Families lived on very small surfaces and the working conditions were very bad. Around 1820 was the first time the word slum was used. It defined a deteriorated area in the London Cant.1

Slums still exist but are not unambiguously defined anymore. A whole set of different criteria and meanings are used to define what it is. Generally it is accepted that slums are areas that have inadequate access to water, sanitation and other infrastructure. That the housing in slums is of a poor structural quality. That there is overcrowding and that there is an insecure residential status.2

Globally some of the different trends that can be seen concerning slums are:

1. The world population is growing very fast and this is especially happening in developing countries.3
2. There is a very big growth and urbanisation of cities. Especially in developing countries and mainly the poor cause this growth.4
3. The population growth and urbanisation is biggest in Asia.5
4. The biggest cities of the world are, and will be, the ones in the developing world. At this moment six of the ten biggest cities are in developing countries. This will only become more.
5. In 2001, 924 million people, or 31.6% of the world’s urban population, lived in slums and it is projected that in the next 30 years, the global number of slum dwellers will increase to about 2 billion.6
6. Sustainability is very important in relation to the development and the survival of the slums in the developing world. The climate change, the worse economy, the possibility of local production, the economic aspect of re-use, etc. all have a bigger impact on slums than they have on other parts of the city.7
7. Globally the distinction between the educated and non-educated people gets harsher. The non educated people get increasingly less access to jobs in the formal work market and they start to work in the informal market. A very clear example can be found in “the silicon valley” of Asia, Bangalore, India, where the economy growth very fast, but where the jobs related to them (except for the construction jobs) are not accessible to most people. The city attracts people, who can’t work in the ICT companies. They generally go and live in the slums.

1 (Programme 2003) P9
2 (Programme 2003) P12
3 (dwellers 2005) P9
4 (dwellers 2005) P1
5 (dwellers 2005) P12
6 (dwellers 2005) P12
7 (dwellers 2005) P124
8 (Programme 2003) P40
The problem with slums is that they are only rising and nothing seems to stop the growth of them. A question then arises why the growth is not declining and what a good approach to slums can be. The goal of the project is thus: **Understanding how an Architect can help to achieve the best quality of life for all the slum dwellers in one slum within reasonable possibilities and achieving this on the same site.**

This document exists of two parts. The first part treats the more general aspects regarding slums and the task of architects. It discusses slums in general and its focus points will be given. The real approach, which will be explained in part two, uses a location in Bangalore, in the South of India, as a reference. That is why the problems with modern Indian architecture will be pointed out, after which a direction for the Indian architecture will be suggested. Then the task of the architect is explained regarding slum improvement and sustainability.

The second part explains a possible solution regarding slums. It starts with a focus on the city of Bangalore, where a reference project will be placed and it will be explained why this city has been chosen as a location for a project. The project is called BANGOCO. Then specific information will be given concerning slums in Bangalore. After that the opportunities of the location of the chosen slum will be explained and the characteristics of the neighbourhood will be analyzed. After this the five step plan will be used to make a programme of possibilities for that specific location. And finally the steps to improve the quality of life within the slum will be explained.

In the end a cd-rom is provided with additional information. These are for instance a worked out possible solution, analytical maps of India and Bangalore and a document concerning Indian Hindu Temple Architecture.
Part 1

Defining slums

The history of the definition slum can be traced back to the 19th century. The UN-HABITAT report “The challenge of slums – global report on human settlements 2003” gives a clear explanation of the definition. Their explanation will be used.

The original meaning of the term slum includes housing areas that were once respectable or even desirable, but which have deteriorated because the original dwellers have moved to new and better areas of the cities. The condition of the old housed has then declined and the units have been progressively subdivided and rented out to lower-income groups. One of the first examples where this happened can be found in a part of the London cant during the 1820s.

Since the 1820s the term ‘slum’ was used to identify the poorest quality housing and the most unsanitary conditions. It was a refuge for marginal activities including crime, ‘vice’ and drug abuse; and a likely source for many epidemics that ravaged urban areas – a place apart from all that was decent and wholesome.

During the major part of the 19th century the word appeared in the written language in quotation marks mostly as ‘back-slum(s)’. At the end of the 19th century, slum meant ‘a street, alley, court, situated in a crowded district of a town or city and inhabited by people of a low class or by the very poor; a number of these streets or courts forming a thickly populated neighbourhood or district where the houses and the conditions of life are a squalid and wretched character. ‘. a foul back street of a city, especially one filled with a poor, dirty, degraded and often vicious population; any low neighbourhood or dark retreat – usually in the plural, as Westminster slums are haunts for thieves.’

The Housing Reform Movement in England during the 1880s changed a popular word that once described an awkward phenomenon to a general operation concept as ‘a house materially unfit for human habitation’, and made possible the delimitation of ‘slum areas’ on city maps for planning purposes. It became a common word in the Anglophone world, used, for example, in India in order to designate without the distinction the bustees, chawls or cheris of Mumbai, Delhi or Chennai.

The 20th century made the word obsolete in context requiring more precise and rigorous terms, such as ‘tenement house’, ‘tenement district’ and ‘deteriorated neighbourhood’, because of legislation from the 1890s and 1930s authorizing the eradication of the so-called slums, and imposing technical and legal definitions.

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9 (Programme 2003)P9
10 Also see the chapter remarks at the end of this essay
and standards for such actions. At the same time, the social movement generated new words, such as ‘neighbourhoods’ or ‘communities’, to qualify the designated slums in order to ‘rename’ the socially stigmatized slum areas. As with most euphemisms, alternative terms were eventually subsumed into the argot and served to maintain rather than counteract the negative prejudices against slum dwellers. The polite ‘neighbourhood’ has become shortened to ‘hood’, a badge of youthful ‘attitude’ in Los Angeles.

Today, the catch-all term ‘slum’ is loose and deprecatory. It has many connotations and meanings and is banned from many of the more sensitive, politically correct and academically rigorous lexicons. It can also vary considerably in what it describes in different parts of the world, or even in different parts of the same city.

In developing countries, the term ‘slum’, if it is used, mostly lacks the pejorative and divisive original connotation, and simply refers to lower-quality or informal housing. Large, visible tracts of squatter or informal housing have become intimately connected with perceptions of poverty, lack of access to basic services and insecurity. Terms such as slums, shanty, squatter settlement, informal housing and low-income community are used somewhat interchangeably by agencies and authorities.

The problem with measuring slums starts with the lack of an agreed definition. As a result enumeration of slums has not yet been incorporated within mainstream monitoring instruments, such as national population censuses, demographic and health surveys, and global surveys. Some surveys provide proxies or related variables, such as ‘proportion of unauthorized housing’ or ‘proportion of squatters’. Participatory poverty assessments in many least developed countries generally provide only qualitative information of urban poverty. The generic definition suggests that a slum is:

“...a contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services”.

A slum is often not recognized and addressed by the public authorities as an integral or equal part of the city. Other similar definitions are provided in many policy documents; for example the Cities Alliance Action Plan describes slums as follows.

“Slums are neglected parts of cities where housing and living conditions are appallingly poor”.

And also the encyclopaedia Britannica calls a slum “a densely populated usually urban area marked by crowding, dirty run-down housing, poverty, and social disorganisation”\(^\text{11}\).

Slums range from high-density, squalid central city tenements to spontaneous squatter settlements without legal recognition or rights, sprawling at the edge of

\(^{11}\) (Britannica 2007)
cities. Slums have various names, favelas, kampungs, bidonvilles, tugurios, yet share the same miserable living conditions.

These general definitions meet the common perception of what a slum is; yet, as it stands, they are not associated with operational definitions that would enable one to ascertain whether or not a particular area is a slum.

In practice, what has happened when it has been necessary to operationalize the concept is that areas have been designated specifically as slums, usually by planners making impromptu surveys or following popular usage. This was the case during the Housing Reform in the UK, and subsequently in many other countries. More recently definitions developed in 1993 in India use housing conditions and availability of facilities as the main basis for defining areas as slums. They call it “a compact area of at least 300 populations or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitation and drinking water facilities” 12.

Clearly, it would be better for a number of purposes to have a more universal and objective definition – particularly when global measurement and MDG targets are involved. Yet, the most important indicators associated with UN-Habitat work – slums, insecure tenure and poverty – are terms that do not have clear or universally agreed definitions.

Efforts to propose a more ‘quantitative’ definition of slums have only recently been started, not only because of divergent opinions as to what constitutes the key determinants of slums, but because of several features of the concept:

- Slums are too complex to define according to one single parameter.
- Slums are a relative concept and what is considered as a slum in one city will be regarded as adequate in another city – even in the same country.
- Local variations among slums are too wide to define universally applicable criteria.
- Slums change too fast to render any criterion valid for a reasonably long period of time.
- The spatial nature of slums means that the size of particular slum areas is vulnerable to change in jurisdiction or spatial aggregation.

What is agreed is that slums, like poverty and secure tenure, are multidimensional in nature. Some of the characteristics of slums, such as access to physical services or destiny, can be clearly defined, and others, such as social capital, cannot. Even with well-defined indicators, measurement can be very problematic, and acceptable benchmarks are not easy to establish.

In 2002 the United Nations tried to make an operational definition of a slum 13. A slum is defined “as an area that combines, to various extents, the following

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12 (India 2001)
13 (Programme 2003) P12
characteristics (restricted to the physical and legal characteristics of the settlement, and excluding the more difficult social dimensions):

- Inadequate access to safe water
- Inadequate access to sanitation and other infrastructure
- Poor structural quality of housing
- Overcrowding
- Insecure residential status

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<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Indicator</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Access to water | Inadequate drinking water supply (UN-Habitat 13) | A settlement has an inadequate drinking water supply if less than 50% of households have an improved water supply:  
  - household connections;  
  - access to public standpipes;  
  - rainwater collection, with at least 20 litres' capacity available within an acceptable collection distance. |
| Access to sanitation | Inadequate sanitation (UN-Habitat 13) | A settlement has inadequate sanitation if less than 50% of households have improved sanitation:  
  - public sewer;  
  - septic tank;  
  - pour-flush toilet;  
  - sanitation improved on term.  |
| Structural quality of housing | Location | Proportion of households residing on or near a hazardous site. This following locations should be considered:  
  - areas prone to frequent and severe floods;  
  - areas prone to land slipping, landslides and/or erosion;  
  - areas prone to fire or chemical accidents;  
  - areas adjacent to airports, military bases, or other high risk areas (e.g. mining areas, nuclear sites, military bases). |
| Structural quality of housing | Permanency of structure | Proportion of households living in temporary and/or dismantled structures. This following factors should be considered when placing a household in these categories:  
  - quality of construction (e.g. materials used for walls, doors and roofs);  
  - compliance with local building codes, standards and laws. |
| Overcrowding | Overcrowding | Proportion of households with more than two persons per room. The alternative is to set a minimum standard for floor area per person (e.g. 5 square metres). |
| Security of tenure | Security of tenure (UN-Habitat 13) |  
  - Proportion of households with formal title deeds to their land and houses.  
  - Proportion of households with formal title deeds to other one of land or houses.  
  - Proportion of households with enforceable agreements or oral document as a proof of a tenure arrangement. |

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Figure 1 - Indicators and thresholds for defining slums

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14 (Programme 2003) P12
The amount of slum dwellers in the world

Slums are a global phenomenon. To define how big the global slum population is, a Secure Tenure Index was developed in 2002. This index focused on the physical representation of secure tenure. It showed that in 2001 around 31.6% or 924 million people live in urban slums around the world and that the region with the largest slum population is in South-central Asia (TABLE...).

<table>
<thead>
<tr>
<th>Major area, region</th>
<th>Total population (milions)</th>
<th>Urban population (milions)</th>
<th>Percentage of total population</th>
<th>Estimate of slum population (thousands)</th>
<th>Percentage of urban population</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>61.34</td>
<td>29.23</td>
<td>47.7</td>
<td>503,966</td>
<td>21.6</td>
</tr>
<tr>
<td>Developed regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>11.94</td>
<td>9.22</td>
<td>77.5</td>
<td>54,850</td>
<td>6.9</td>
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<tr>
<td>OECD</td>
<td>16.77</td>
<td>15.47</td>
<td>79.9</td>
<td>40,096</td>
<td>2.7</td>
</tr>
<tr>
<td>Developing regions</td>
<td>32.83</td>
<td>24.49</td>
<td>49.3</td>
<td>663,198</td>
<td>40.9</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>1.68</td>
<td>1.60</td>
<td>98.8</td>
<td>21,550</td>
<td>13.2</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>1.67</td>
<td>1.21</td>
<td>74.6</td>
<td>166,209</td>
<td>7.9</td>
</tr>
<tr>
<td>Latin American and Caribbean (LAC)</td>
<td>3.52</td>
<td>3.36</td>
<td>77.6</td>
<td>127,067</td>
<td>38.2</td>
</tr>
<tr>
<td>Eastern Asia</td>
<td>3.36</td>
<td>3.13</td>
<td>93.1</td>
<td>151,204</td>
<td>36.4</td>
</tr>
<tr>
<td>South-central Asia</td>
<td>3.20</td>
<td>1.52</td>
<td>48.0</td>
<td>262,954</td>
<td>50.8</td>
</tr>
<tr>
<td>South-eastern Asia</td>
<td>1.90</td>
<td>1.25</td>
<td>66.7</td>
<td>16,030</td>
<td>26.0</td>
</tr>
<tr>
<td>Western Asia</td>
<td>1.50</td>
<td>1.35</td>
<td>89.3</td>
<td>40,796</td>
<td>26.4</td>
</tr>
<tr>
<td>Oceania</td>
<td>0.00</td>
<td>0.00</td>
<td>0.0</td>
<td>750</td>
<td>0.0</td>
</tr>
<tr>
<td>Least developed countries (LDCs)</td>
<td>6.62</td>
<td>5.79</td>
<td>87.7</td>
<td>130,114</td>
<td>20.1</td>
</tr>
<tr>
<td>Lower-middle developing countries (LMDCs)</td>
<td>2.75</td>
<td>2.38</td>
<td>85.8</td>
<td>83,108</td>
<td>31.2</td>
</tr>
</tbody>
</table>

Figure 2 - Total, urban and estimated slum population by major region

Figure 3 - Slum population by region, 2001

15 (Programme 2003) P14
16 (Programme 2003) P14
Before the Secure Tenure Index was developed there were no good estimators. For that reason it is not really known what has happened during the 1990s. Service delivery, especially water, improved very much during the decade, which would reduce the incidence of slums under the present definition. However, new immigrants tend disproportionately to be poor and urgently need new housing, which would increase the slum incidence.

The lack of accurate data is also a major problem. As long as cities have no idea of how many dwellings are within their urban areas, and choose to exclude slum dwellings from statistics, particularly those in peri-urban areas, it will be difficult to estimate baseline numbers definitively. As cities change their boundaries, the numbers will increase (and, probably, the incidence as well, given that housing in peri-urban areas tends to be informal).

Whatever the definition, it seems almost certain that the amount of slum dwellers increased substantially during the 1990s. Urban populations in less developed regions increased by 36% during the decade. Unless overcrowding increased in existing settlements, it can be assumed that the number of urban households increased by a similar ratio. It seems very unlikely that slum improvement or formal construction kept pace to any degree with this increase, as very few developing countries had formal residential building programmes of any size. Therefore, it is likely that the number of slum households increased more than 36%. However, it is clear that these changes were very different in different parts of the world.

How slums happen

Slums do not occur in a vacuum. They reflect local cultures and conditions, accidents of history or politics, and topography or the built environment. Some are working communities in their own right, with their own economy and social structure, whereas others are 'black holes of misery and despair'.

As can be seen in the figure slum formation is caused by a combination of poverty and a lack of affordable housing. Poverty is caused by a combination of income inequality, a lack of economic growth and immigration.
Spatial organization and residential differentiation

An essential part of city life is constant change: building and rebuilding, the succession of industry and commerce, and processes of marginalization and impoverishment. In the capitalist city, this is largely driven by the search for higher returns and optimal land use, and this has led to the physical expression of inequality in built form, of which slums lie at the lowest socio-economic level. In developing cities, where land use is still partially dictated by traditional uses or controlled by governments, slums have tended to sit outside of the formal market system, to some extent, acting as a residual for older market systems of exchange and income generation rather than the specialized shops of formal urban distribution systems.

One of the approaches of cities that existed from the 1920s and 1930s till the 1980s is the ‘Chicago School’. In this system the inner city had been vacated by families who had moved outward to the suburbs in rings and wedges from the downtown centre, leaving the decaying inner city to the most disadvantaged groups. But from the 1960s on a new group of people, like yuppies and childless couples, were moving back to the city centres. They would then share the neighbourhood with poor people and would at the same time remodel the buildings. The economic Alonso-Muth-Mills model demonstrated how the ‘rent gradient’ of declining land prices and rents away from the centre could be calculated from first economic principles, and the location of various groups could be predicted.

In the model, residents are considered to have a trade-off between transport costs or time and living space. Each group has a ‘bid rent curve’ for the amount that they are prepared to pay per square metre for particular locations, and the group with the steepest curve will win. Poorer people, for example, could beat the rich
by taking much smaller plots of land at a higher price, accepting higher crowding as the price for location. The poor are where they are because, even with their low incomes, they are outbid by the rich for the areas in which they live, and they pay more than the rich would be prepared to pay to live there.

As far as it goes, the model is reasonably accurate in determining social change in a centralized city with a reasonable level of residential mobility. Gentrification can be predicted using the model because of the steepening of the rent gradient, a phenomenon that has been steadily observed in most western cities.

The centralizing tendency of all of these factors can be deduced from the model and, more significantly, have all been observed empirically. The net result is that the poor are outbid in the central area by the new affluent bidders, and either will share the space or move outwards to more affordable areas.

During the 1970s, a new quantitative paradigm came to dominate urban science. This included a new technique that was called factual ecology and what was based on a multivariate analysis of the various socio-economic indicators distinguishing small areas in the city, calculating indexes that would distinguish these areas from each other. Recently this technique has been revised and the new approach showed that in every city that was studied in widely different parts of the developed world, the spatial separation was due, in large part, to three factors:

- **Accessibility / space.** This distinguishes between households who want accessibility and households who want space. Accessibility can be afforded either through high incomes small family size or crowding. The factor is identical with the trade-off that is the starting point of neo-classical urban economics.

- **Socio-economic disadvantage.** This is the flip side of advantage, and shows how households who suffer from unemployment are single parents, have little education, receive welfare or belong to marginalized ethnic groups and are separated from the rest.

- **Ethnicity.** This usually measured the proportion of those born outside of the country, but could also represent the separation of particular ethnic or religious groups.

These three factors were of different strength in different cities and cultures, and had different weightings on variables; but they were, invariably, the three major factors determining social structure. From these factors can be concluded that in line with the thesis of globalization, people working in producer-service industries and university graduates are stronger determinants of socio-economic advantage. The social divide is no longer between ‘white collar’ and ‘blue collar’ occupations, but between professionals and the rest.
The social aspect

Measuring spatial inequality and separation

A number of measures are in common use for distinguishing the level of inequality or unevenness of distribution of sub-populations across space. The best known and simplest of these is the index of segregation or dissimilarity. It measures the proportion of the sub-population that would need to move in order for it to be equally represented in all areas. It is used most often for racial groups, but also for low-income earners.

The question of whether or not the poor and rich have moved further apart, and therefore whether they are more or less segregated over time, is not clear. The very deliberate suburbanization separating middle class from the poor and defining the traditional slums during the 1880s to 1950s may have marked a period of greatest residential differentiation of income groups in a number of developed countries. Greater mobility and social acceptance of different groups also act to reduce spatial separation. With gentrification and with a retreat from rigid planning guidelines that separated dwelling types and sizes and other urban activities until quite recently – and a move away since the 1970s from the policy of construction of large peripheral public housing estates – rich and poor have moved closer together in space in many places. However, the growth of large areas of disadvantage towards the edge of some cities, while the wealthy have continued to occupy areas of prime accessibility or amenity, would militate against a general assumption of reduced spatial separation.

The very obvious increase in gated communities might be an indication that the rich and poor have been moving closer together in space. If violent crime has not increased, then the closing off of high-income precincts or buildings would be a sign that the rich have no longer been able to separate themselves spatially from the poor, or have lost control of the streets, retreating into small areas where their particular needs are catered for. To some extend, it is the perception that crime has increased, due to a constant media barrage, rather than any actual crime increase, that has prompted the elderly and affluent to withdraw in this manner.

Spatial concentration of poverty

It has been clearly demonstrated by factorial ecology that social advantage and social disadvantage are the major agglutinative forces in cities – possibly the major forces in western cities, at least. The question is why. It is not immediately obvious in these days of cheap telephones and cheap transport why people of a similar economic or social status choose to live together. In many cities in the developing world, the separation in space so obvious in Western cities is not obvious at all; in others, it is very visible. It is fairly clear why particular ethnic groups choose to cluster together for access to social networks, speciality shops and facilities; but why do social classes congregate in particular areas?
The conventional neo-classical explanation for residential differentiation is based largely on housing and land costs, as expressed in the Alonso-Muth-Mills model. Lower-income people live in particular areas because they can outbid the rich for the kind of housing that is there – it would be too expensive or undesirable for the rich to convert it to other uses. This argument is reasonable but not really satisfactory. Why are the rich not interested in this valuable inner-city land and converting it to profitable uses, such as the development of condominiums?

A related argument suggests that employment opportunities for the rich and poor are not consanguineous, so that the rich tend to locate near, for example, office areas while the poor locate near, for example, factories or markets. This argument once had considerable merit; but in an era of cheap transport, it is no longer applicable. In fact, it has been argued in the US that the move of industry to outer areas has disadvantaged the inner-city poor and worsened slum areas, since now there are no jobs in their vicinity, and this is contributing to unemployment. The loss of jobs and businesses may start early in the decline cycle of an inner-city slum and is an ongoing contributor to its deterioration.

The second argument refers to amenity. Slums, it is believed, begin on fragile or poor-quality land subject to flooding, landslip and other disadvantages, while the rich locate in areas of high amenity – ocean views, pleasant, slightly hilly areas of good soil and aspect. This amenity is self-reinforcing in that both public and private investment suited to each class tends to locate accordingly and attracts more people of a similar socio-economic profile – particularly at the upper-class end. Private schools, elite shopping centres, and social business services tend to follow their clientele. Services for the poor also tend to cluster – for example, welfare agencies, food distribution and public medical facilities. A need to be near these kinds of services attracts the homeless, in particular.

In places where taxation is collected locally, in particular, spending on local public goods will be much higher because of the much better revenues, further accentuating inequality. Local governments in slum areas have almost no revenue base and cannot find money to either construct or maintain infrastructure and other services, and the whole system goes downhill, causing the more affluent residents and formal businesses to move out thus further lowering revenue potential. The push for decentralization and own-source revenue generation in many developing countries could increase spatial inequality accordingly.

The third argument relates to exclusionary zoning, which is seen as the main factor distinguishing different cities, and is probably responsible for most of the more visible tract-wide spatial separation of the classes. The ‘wrong side of the tracts’ is actually enshrined in local laws and regulations that prevent poor people from building the kinds of houses that they can afford in rich areas, or conducting the kinds of informal income – generating activities that are necessary for their livelihood. Home-based enterprises, street markets or the raising of chickens, for example, are expressly forbidden in most of the affluent suburban areas of the
world. Local democracy exacerbates the situation, as the middle class will always vote to exclude activities that they do not conduct themselves.

In the meantime, exclusionary zoning affects amenity by pushing various negative externalities into low-income areas where the poor are not organized to resist. Factories and noxious or polluting industry, and possibly waste disposal facilities, are located within these areas, further pushing down land prices. Illegal activities are also pushed into these areas, through police ‘turning a blind eye’ and lack of organized local opposition to their presence. The partly extra-legal nature of income opportunities for the poor also discourages the kind of strict scrutiny and enforcement that occurs in middle-class areas.

The final argument is the post-modern one of cultural landscapes, in which spatial distinctions are embedded in social constructs of what is real. Poverty and slums are, essentially, comparative notions that assign particular groups and particular places to the good, the rich and the successful, and the bad, the poor and the unsuccessful, and the paths of people’s lives tend to follow these assigned constructs unless they can redefine their own self-worth. The reality of exclusion actually stems from an allocation of status to individuals at an early age. While initial endowments of wealth will also play a large role, many of the personal choices and most of the social chances and opportunities will result from the part of the cultural landscape to which individuals are ‘assigned’, the ‘signs’ being accent, dress, self-confidence and reputation. It is in this way that social classes are reproduced, and why slums and poverty show such a high level of resilience and continuity through generations.

The city aspect

Contemporary urbanization

Contemporary urbanization is mainly determined by two factors:

- **Political factors**: instability, civil war and repression
- **Economic, environmental and social factors**:
  - **Pushing**: environmental degradation and declining productivity of cropland; low rural incomes from agriculture; lack of new lands for farming; move to export rather than subsistence farming; enclosure and consolidation of farm holdings; limited off-farm employment;
  - **Pulling**: higher incomes in urban areas; greater employment opportunities; economic safety nets; availability of social services, education and health care; improved water supply and other environmental services and infrastructure. The question is why poor rural populations continually move to the city, even when there are apparently no jobs for them and they have to live in slums with what might appear to be a lower quality of life, in a vulnerable situation and separated from everything they know. The ‘bright lights’ syndrome is the usual answer – there just seems to be a lot more going on in the city. Rural life is dull and backbreaking; there are few opportunities and little new arable land that can be
developed, especially for women, who are often excluded from land occupancy upon death of, or divorce from, husband. The cities are uniquely able to create jobs, and if the formal sector does not have them, the informal sector can produce them. Life in the city is also not as risky as is often thought. Sanitation is generally better now; medical and social services are more readily available than in rural areas; life expectancies are higher; there is less risk of attack by brigands; and food availability is less dependent on the good health of working animals and the condition of crops, and less subject to the vagaries of the weather. Famines are largely a rural phenomenon since it is fairly easy for aid agencies to ship supplies into cities, where it is in the interests of elites to ensure that they are distributed, and where levels of monitoring from well-informed and local action groups and the support agencies themselves are much higher. In rural areas of smaller urban areas, however, distribution channels are poor and there are many intervening opportunities for humanitarian aid to go astray. Cities are, in the end, a more controlled environment and life is less risky.

The separation between rural and urban life is also not as absolute as is often thought. For generations, informal settlements carry much of the atmosphere of the rural communities from which they have stemmed. It is this rural imprint that gives them their unique, lively character, without the separations between home, workplace and recreation that the hallmark of the ‘modern’ and middle-class society.

The image of vast, spreading estates of makeshift housing self-built by recent arrivals is one of the most enduring in development; however, this is not the only way, or even the most common way, in which rural to urban migration takes place. Transportation is no longer expensive; most immigrants have contacts or relatives in the city; they move backwards and forwards to live with friends until they are ready to make a permanent move; then they make a choice as to where and how they will live based on what they have learned. If there is affordable rental housing, they will pay for it until they can manage no longer. If there are new intrusions on unoccupied land, they will join in and build whatever they can afford. They will move in and out of backyard shacks or other informal accommodation until they have been there longer than anyone else and they become ‘the resident’.

Another commonly held theory is the ‘city as parasite’ – that urban–rural migration is a result of differential taxation with an ‘urban bias’. The urban elite (particularly under colonialism) tax rural produce to pay for services in the city, which attracts people to the city. This allegedly causes a misappropriation of resources in favour of urban areas.

This theory is very difficult to substantiate. Very little tax is actually paid in rural areas, which is why rural local governments have such trouble in providing services that have to be largely paid for by central government transfers. Most
business and other taxes are paid in cities, and in many countries, rural areas receive high levels of subsidy.

Cities are so much more successful in promoting new forms of income generation, and it is so much cheaper to provide services in urban areas, that some experts have actually suggested that the only realistic poverty reduction strategy is to get as many people as possible to move to the city. The fact is that higher incomes and more urbanization go hand in hand. As indicated earlier, improvements in rural productivity mean that less labour is required in rural areas. Increasingly, however, population growth in cities comes from within, and the larger urban spaces are no longer mandated by experience of the rural or the small town. As rural–urban migration slows and becomes less important, cities take on a truly urban character – the faceting and dividing of space between the social classes into a mosaic landscape of differences.

Poverty and slums

Slums and poverty are closely related and mutually reinforcing, but the relationship is not always direct or simple. On the one hand, slum dwellers are not a homogeneous population, and some people of reasonable incomes choose to live within, or on, the edges of slum communities. Even though most slum dwellers work in the informal economy, it is not unusual for them to have incomes that exceed the earnings of formal-sector employees. On the other hand, in many cities, there are more poor outside slum areas than within them. Slums are designated areas where it is easiest to see poor people in the highest concentrations and the worst conditions; but even the most exclusive and expensive areas will have some low-income people.

Slum conditions are caused by poverty and inadequate housing responses, which are mutually reinforcing, to some extent. It is not surprising that the characteristics of the settlement or housing are often confused by act or by implication with the characteristics of the people living in them. The issues of living conditions, poverty and poor people’s management of their own situation are amalgamated, and cause-and-effect relationships are confused. This presents a policy and delivery problem for programmes aimed at addressing slum conditions as part of an overall poverty reduction agenda.

The converse is the case for non-housing poverty reduction programmes, which sometimes presume that their activities will result in improvements in housing, infrastructure and service delivery in slum areas – but ‘trickle through’ to housing may be extremely slow or non-existent unless the income improvements are substantial and sustained.

Although poverty in urban areas has been increasing for some decades and there are now higher numbers of the ‘poorest of the poor’ in urban centres throughout the world than at any previous time, the urban poor are usually able to help themselves more than their rural counterparts. Indeed, the immigrant urban poor
have largely moved voluntarily in order to exploit actual or perceived economic opportunities. Opportunities manifest, in part, due to the growing urban informal sector, which is most spectacularly visible in the many growing and large-scale informal and squatter settlements in urban centres. In many cities, the informal sector accounts for as much as 60 per cent of employment of the urban population and may well serve the needs of an equally high proportion of citizens through the provision of goods and services.

Yet, it cannot be assumed that those living in slums that appear physically uniform all have the same needs and demands. The necessity to distinguish between different levels of poverty has been recognized with a view to targeting and tailoring resources at those most in need. Women – widows in particular – children, unemployed youths and disabled people have all been identified as the most vulnerable amongst the poor, as have female-headed households and certain ethnic and religious groups. Where housing conditions are poor, such as in slums and informal urban settlements, it is the vulnerable who suffer most from environmental degradation and inadequate service provision.

**Defining poverty**

The different dimensions of urban poverty have been described in four different ways:

- **Low income**: consisting of those who are unable to participate in labour markets and lack other means of support, and those whose wage income is so low that they are below a nominal poverty line;
- **Low human capital**: low education and poor health are the components of ‘capability poverty’ used in the UNDP Human Development Index. Health shocks, in particular, can lead to chronic poverty;
- **Low social capital**: this involves a shortage of networks to protect households from shock; weak patronage on the labour market; labelling and exclusion. This particularly applies to minority groups;
- **Low financial capital**: lack of productive assets that might be used to generate income or avoid paying major costs (for example, a house, a farm or a business).

**Types to measure poverty**

There are three ways in which you can measure poverty:

- **Absolute poverty**: This comprises people who cannot afford to buy a ‘minimum basket’ of goods – which sometimes is just food and water for minimum nutrition, but should include other necessities, such as clothing, shelter and transport to employment, education or the means to obtain the basic necessities.
- **Relative poverty**: This is the proportion of people below some threshold, which is often a percentage of local median income.
- **Extreme poverty**: A measure of one or two US dollars a day.
Approaches to poverty

It is important to consider all of the inter-related aspects of poverty; merely addressing monetary resources or livelihoods may only be a temporary stop gap and may not deal with the many other aspects of poverty that may ensure a sustainable transition from poverty.

Other conceptual approaches to poverty are as follows:

- **Capability poverty**: is the lack of life chances and opportunities, defined particularly through ill health and lack of education. Once this is changed, capability is somewhat more subtle and encompasses empowerment, work contacts and the ability to transcend social class.

- **Social capital**: is related to capability, but refers to the individual’s ability to command or work within ‘institutions, relationships and norms that shape the quality and quantity of a society’s social interactions’

- **Chronic poverty**: In the US, only about 50% of those in poverty remain in this situation for more than two years. A similar 50% figure seems to apply in most countries. Approximately half of those in poverty are long term poor, while the other half are moving in and out of poverty. In Australia, mobility is higher: about 80% of those in the lowest quintile of household income move upwards within two years, and 15% of these move into the highest quintile (students, unemployed professionals, etc).

This mobility has implications for pro-poor policies. Two kinds of programmes are necessary: safety nets for the transitory poor, and empowerment and capability raising programmes for the chronically poor.

Inequality and its role to slums

How inequality happens

Capitalism has long been recognized to be cyclical in nature, with periodic booms and busts, or periods of prosperity and recession, in several time scales. The longer cycles have a strong correlation with urban in-migration, stops and starts in house building, and with the development of slum areas. The overall picture for a very long economic cycle (Kondratiev wave of 50 to 60 years) is shown in the figure. The upwave is a time of slow inflation, growth and relative economic stability; the downwave is an unstable disinflationary period of booms and busts.
Entrepôt free-trade ports have been particularly prone to cyclical growth patterns, such as those responsible for areas or rings of slums in internationally exposed cities such as Sydney and Liverpool during the recessions of the 1850s and 1890s. In booms, large numbers of poorer quality formal-sector houses are built as entrepreneurs seek to recycle their capital quickly. During recessions, maintenance expenditure on dwellings and infrastructure fall, lowering stock quality. Lower-income people tend to congregate in the lowest cost dwellings and housing, as their circumstances drive them into poverty. Large areas of poor quality housing with low-income occupants result – and the traditional, formal-sector slums of the Western world have often appeared in this way.

What generally happens under the irregular boom/bust cycles of unregulated capitalism is shown in the figure. In booms, shown in the left half of the figure, the ratchet handle moves upwards. The richest few per cent gain most of the income and wealth because they hold most of the assets. Most booms happen in a situation of mild disinflation, which inflates asset prices well above the underlying productivity trend. Real estate and stock prices rise enormously. There is usually a drop in unemployment and in poverty – but the trickle-down effect is fairly minimal.

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In **busts**, shown in the right side of the figure, the ratchet handle moves downwards from its post-boom position. The poor suffer disproportionately, as do women, losing both income-earning opportunities and government support, as revenues drop. The higher-income groups are generally able to protect their wealth, and may even use the situation to buy cheap assets for the next cycle.

When translating the changes after the bust back to the initial position, there has been a marked increase in inequality: the rich have gained and the poor have lost. This will be repeated in subsequent cycles.

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The only time when inequality appears to decrease is during long, steady *growth periods*, such as 1945 to 1967, when slowly increasing excess demand for labour allows wages to rise and keeps unemployment low.

With more cities opening to cyclical forces of international trade, it is likely that booms and busts will become more marked, and that slums associated with these economic cycles will continue to form in the rapidly developing areas of the world.

Per capita GDP by region, 1820 to 1998\(^22\)

\(^{21}\) (Programme 2003) P36
\(^{22}\) (Programme 2003) P37
Globalization and its effects on inequality and slums

From the mid 1940s, there has been considerable concern that globalization was exacerbating inequality worldwide – both at the global and the local level. Almost 60 years on, there now seems to be little doubt about the matter. Increases in inequality can be traced almost directly to liberalization, which is also a proximate cause of globalization.

Despite a large number of studies, a consensus has not been reached as to how the interaction between growth or other macro-economic changes and inequality works, and many contradictory results have been obtained. It is generally agreed that trade shocks and deterioration in the terms of trade are particularly bad for low income households. It is also agreed that the more inequality, the harder it will be to stimulate growth and the less likely it is that poverty will be reduced when growth occurs.

What happens within countries has been more an exercise in differential power than the operation of the invisible, equilibrating hand of the economy. Increasing incomes are not enjoyed equally within a country since; firstly, higher income people are in a better bargaining position and can appropriate some of the productivity gains of lower income people while keeping their own. Secondly, the higher earning producer service and information/knowledge industries, which are the ones that have been increasingly generating wealth, have strong barriers to entry in terms of education, social class and contacts. Economic returns to individuals from education have been increasing, and a good proportion of the population has been excluded from these high-leverage areas – instead, suffering a downgrade in their incomes, working conditions and job security.

Figure 8 - Gini coefficient, world (unweighted), 1950 to 1998 (measures the inequality in the world)\(^{23}\)

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Throughout the developing world, the contrasts between the elite who benefit or participate in globalization, and the rest of the population, are considerably starker.\footnote{Programme 2003} P39

A 1995 study, for example, found that 23 per cent of the increase in relative wages for skilled workers in developing countries during the period of 1986 to 1990 could be attributed to the reduction in tariffs and the elimination of import licence requirements. Another study concluded that the increase in wage inequality can be attributed to the rapid increase in wages for more educated and experienced workers, while the wage increase was minimal among less skilled workers. The authors concluded that this trend is caused by a shift in demand, skewed in favour of higher skills.

It is generally agreed that there is an across-the-board shift to higher returns to skills and education. Increased trade contributes only a very small part of labour force change, and the result is almost entirely due to increased mechanization of routine jobs in the manufacturing sector, and changes in consumer preferences as global incomes have increased in favour of products with more service and skilled inputs. In addition, increased professionalization of the work force tends to be internally generated, rather than being specifically connected with international trade.

There is very little for unskilled workers in Lower Developing Countries (LDCs) to do in a globalized economy – so they join the informal sector and live in the slums. The LDCs are caught in a vicious cycle: the lack of skilled workers causes them to concentrate in sectors where limited skills are needed. This concentration, in turn, reduces the demand for more advanced skills – a process further intensified with trade liberalization. Generating a demand for skill acquisition is perhaps the key area for governmental intervention – and, in some situations, is probably more important than macro-economic management and free trade.

It is generally accepted that the main single cause of increases in poverty and inequality during the 1980s and 1990s was caused by the retreat of the state. For cities and housing, the major policy changes emerging from neo-liberal policy and the retreat of the state were\footnote{Programme 2003} P43:

- The reduction of most forms of public ‘welfare’ expenditure.
- The privatization of many forms of government enterprise. The new rule was that the government should not be involved in anything that the private sector could do. The new role of government was to ‘enable’ the private sector, primarily by withdrawing from many spheres of life, but also by improving its institutions and its planning and supportive capabilities, rather than engaging directly in productive activity. The enterprises most affected were utility companies and
public housing; however, there were also effects on employment through the retrenchment of large numbers of public-sector employees.

- **The reform of regulation.** In line with the primary neo-liberal goal of small government, large numbers of regulations and restrictions have been removed in many countries. The most important of these have been the
  - deregulation of the work force, which has led to widespread labour casualization;
  - reduction of trade barriers, which has led to increased trade and economic restructuring;
  - deregulation of financial systems, which has allowed for considerably improved flows of capital at the cost of greater instability and less local control;
  - decentralization of government, which can create its own problems by moving responsibility down the chain without adequate resources to fulfil them;
  - removal of planning restrictions, which has generally allowed for more mixed-use areas and development at higher densities, but possibly involving the loss of affordable housing to the redevelopers.

One topic on which virtually all commentators on globalization agree is that the power of nation states has been substantially weakened. In most developing countries, this power has only been established relatively recently, in the post-colonial period from about 1965, and these countries have not had a great deal of time to build up a unified national pride and character, democratic institutions or a balanced national economy.

The weakening of nation states has occurred through several major mechanisms:

- The development of multinational corporations that now control most of the world’s economic activity – these corporations exist beyond national boundaries and the control of governments, and can move their operations to anywhere that offers the most favourable input costs or subsidies and the least restriction to their activities.

- The widespread availability of contact and information beyond national boundaries – this is achieved through the internet and rapidly cheapening telephone costs, so that entrepreneurs or small businesses can easily create international operations without the formal structures and state intermediation that larger businesses are subject to, and with little reference to the usual gatekeepers at national borders.

- The move of responsibility to lower levels of government, known as subsidiarity – in theory, this should strengthen national governments by enabling them to focus on their principal roles of centralized financial support, rather than the minutiae of local management or service delivery. In many more developed countries, this has, in fact, happened. However, this is not the case in a number of developing countries, where the central government is left in something of a vacuum, unable to articulate what its real role should be. This has been partly due to the reluctance to dismantle large bureaucracies, formerly responsible for service delivery, and to transfer the funds to local government. But it is also due to a sense of

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bewilderment in the face of rapid change, as long-standing channels of authority and support are dismantled.

Contributing to this loss of central autonomy are the activities of international aid agencies, which now also prefer to deliver their activities to the local level, generally through non-governmental organizations (NGOs) or city governments. This is partly because it is felt that many national governments have had their chance and have misdirected aid money to their own elites or according to different objectives than those of the agencies; partly because it is easier to monitor local projects and ensure they are being targeted, through local organizations that have a vested interest in meeting international objectives of transparency and accountability; and partly due to the prescriptions of neo-liberal theory. Another very palpable advantage is that it permits widely different strategies to be tried in different places, allowing a whole range of possible strategies to determine good practice in activities where really nobody knows the answer.

These are considerable benefits. However, on the negative side, the whole, apparently decentralized, structure is foreign to the notion of national representative government that has served the developed world well, while it is very amenable to the operations of global hegemony. The dominant international perspective becomes the de facto paradigm for development, so the whole world rapidly becomes unified in the broad direction of what is supported by donors and international organizations. National governments lose control over the direction of economic planning or policy, and the means to create a unified nation representing the will of the majority and the cultural, language and religious differences that are embedded in different societies. Activities may also become piecemeal and disconnected, so that many different agencies are trying to achieve the same ends. The typical bureaucratic failures of duplication and overlap, which so often occurs when different government agencies get involved in the same activities, are writ miniscule throughout the development administration as hundreds of different agencies take control – unless significant efforts are spent on coordination. The situation is not analogous to private service competitive delivery, where the ‘discipline of the market’ prevails to restore order. In this case, the paying clients for the executing bodies, such as local governments and NGOs, are not the public, who have no money to pay for such services, but the funding agencies, and successful delivery means meeting the norms of these agencies, which are established at the international level.

The danger, also, is that the successful local governments are no longer the ones who can follow national government policy and meet their requirements for good practice, but the ones who can put on a smooth front for donors and meet their norms, and have the capacity to put together first-rate proposals. The poorly governed have little chance in this system – and rarely do they have the chance to find out what they are missing out on and act upon it.
The current trend is towards creating local economies of agglomeration – that is, basically taking what exists and finding new ways of organizing, linking and affecting it. Part of the strategy involves creating ‘clusters’ or areas that are amply provided with infrastructure, and where related firms can benefit from the presence of vertically or horizontally linked firms. Another component is to foster greater links between education, training, and job creation, which hopefully will result in a human capital base more closely aligned to the requirements of the labour market.

**Territoriality and Spatial Forms**

Many slum dwellers are attached to their slums in a way that formal-sector house buyers may not be. If one has constructed a dwelling on empty land and seen a neighbourhood develop and improve, there is bound to be a strong tie to that dwelling. In central city areas, many dwellings are steeped in family history and are precious, although they are of little value. In addition, some households are so poor that even a ramshackle shack is more than they can bear to lose.

Many of the slums are very tiny, perched on a traffic island, on a small piece of back land in the business district, next to the railway goods depot. The issues they face may have less to do with servicing, as they can often free-ride on other people’s water supply and sanitation. Instead, they have greater issues of security and recognition, and concerns about who will defend them against threats of eviction. At the same time, they may be holding up important development, or creating dangers for themselves and others. The task of solving the dilemma they present for city authorities is, therefore, beset with problems.

Despite a great range of varieties mentioned above, slums fall into two broad categories: declining areas and progressing settlements – each of which can, for the purposes of expanded analysis, be broken into:

- **Declining areas:**
  - ‘old’ city centre slums; and
  - ‘new’ slum estates.
- **Progressing settlements:**
  - squatter settlements; and
  - semi-legal subdivisions.

Furthermore there are five categories of slum spatial analysis. In the next chapters these will be explained.

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Figure 9 - Major categories of slum spatial analysis

**Origins and age**

Origins and age indicate the legacy of a slum, such as its physical assets of building heritage, the root and speed of its formation, and the establishment of community. There are clearly geographical and historical regional patterns to the world’s cities. Nevertheless, many cities have some combination of old established slums, which may, indeed, be the original city itself. At the other extreme, there are the slums and areas of poverty that are currently forming; and between these are the remaining settlements of various vintage and degree of integration within the city.

**Historic city-centre slums**

Most cities in Asia and Africa that have a pre-colonial existence, also have some or all of that original settlement largely intact. The equivalents in Latin America are the colonial pre-independence cities, laid out according to the code of *La Ley de Indias*. In many instances, the original city is separated from the more modern city by its old defensive wall (for example, in Lahore, Pakistan) or a moat, or it is on a hill (such as Salvador, Bahia, Brazil), and often has a distinct name, such as the Kasbah (for example, in Marrakesh, Morocco) or the old city (as in Old Delhi, India). It is a distinct neighbourhood or even a sub-city within the city. Many such neighbourhoods are a mixture of grand buildings and public spaces, many in semi-ruins, others taken over for private use. Those of the original inhabitants who could afford it have moved out to the new city, leaving the odd retainer, or even some members of the older generation, too set in their ways to move. Many of the buildings and places have been subdivided and let to poor households.

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perhaps employed in the old businesses and manufacturing units that remain, still producing the goods for which the city was once famous.

Many established historical city cores are classified as slums because they have high residential and commercial densities and overcrowding, as well as levels of services and infrastructure only suited to much smaller populations. This is especially evident in streets that are too narrow and irregular to accommodate cars, lorries and refuse-collection vehicles. In addition, the drains and water supply pipes often leak, and electricity and telephone cables, many of them unofficial, festoon the streets. In many, the once fashionable balconies now hang perilously, propped up by decaying posts, their facades blocked to provide additional rooms.

These are the classic inner-city slums; yet, each building often also represents a fortune, if not for what it manufactures, stores and sells, then for the rents it brings in from the many households that now share its once noble rooms. However, this economic return is often negated by rent control, which, in turn, encourages owners to withdraw maintenance and further accelerates decline. They are also often the subject of ownership disputes, feuds, claims and counterclaims. The many claimants and litigants make it difficult for these properties to be redeveloped; in the mean time, they go neglected and unmaintained. Slums of this kind are found in Karachi, Cairo and other established cities in the developing world.

Nevertheless, these buildings, individually, and more so collectively, represent a part of the cultural heritage and generate claims for conservation, competing with those for demolition and modernization. Their strength also lies in their location within the city and in relation to the centres of commerce and production. The easy access to employment, real and potential, combined with cheap if rundown housing, are natural magnets for the poor.

The continued presence of the older generation, with ties and traditions that go back many years, is often an effective counterbalance to any socially disruptive tendencies. The continued presence of communities and community leaders, as well as the traditions and relationships between them, help to bind the newcomers, as well. Run-down and inadequate infrastructure can be upgraded, and there are many technological advances that make this possible without endangering the structures. The inaccessibility of motorized transport may be a blessing, and the dilapidated structures can be refurbished. Very often, it is not the know-how or even the resources that prevent improvement of these areas, but the complexity of ownership and the economic risk of investing in a single building on the chances that the whole neighbourhood will be upgraded and allow the investment to be recovered. Where this does happen, of course, the poor are often denied access to affordable, centrally located housing and business premises.
**Slum estates**

From the time that the old city lost its place as the centre of attraction for the rich and the affluent, and was replaced by the new city, parallel developments for the less well off have emerged. Some of these have been in the form of formal public housing estates constructed relatively recently (at least three decades old in developing countries). The vast majority of others have been older illegal and informal settlements laying claim to land deemed unfit or unsafe for planned residential development. As mentioned earlier, some slum estates have developed where relatively new estates, usually built for renting, have deteriorated quite quickly into areas where few would choose to live, but in which many low-income households are trapped through having no affordable alternative. Examples include government-built mass public housing estates, and housing built by industry or to house industrial workers, such as the hostels and estates of small dwellings for mine workers in Southern Africa, and ‘chawls’ in India. Other examples include the ‘new towns’ of Cairo (Helwan, Moktam and Shubra), Ciudad Kenedy in Bogotá and the large State Housing Board developments that were constructed in virtually all of the major Indian cities during the 1970s and early 1980s. Both have experienced social problems arising from overcrowded and pressured conditions, making residents particularly vulnerable to organized crime and political exploitation.

Another common reason for the deterioration of relatively new public housing estates has been their location on the edges of cities where land was available, but access to work, markets, kin and social amenities was not. The relative isolation of such estates means that the cost of transport is often unaffordable to the low-income inhabitants. They are, therefore, abandoned by all but the most destitute and desperate. In general, a lack of public resources is the most cited reason for the deterioration of physical conditions, as well as the conviction that, somehow, it is the culture of poverty of its residents that is the root cause.

Slum estates also include large amounts of housing built by employers as tied housing for workers. These vary from the tiny bungalows on featureless ‘locations’ in Southern Africa to the slab blocks in the former Communist bloc. They tend to be even more poorly maintained than publicly owned housing and may even be hated by their occupants. As many dwellings are transferred to occupier ownership, and many occupiers then lose their jobs in the decline of formal industries, conditions and the quality of life of the occupants decline in parallel.

**Consolidating informal settlements**

Much of the urban development in rapidly developing cities of the South has been through informal settlements in which land has been informally subdivided and sold or leased to households who have built their own dwellings. Some of the land used in this way is deemed unsafe or unfit for planned residential development, such as the land occupied by the extensive informal settlements built on stilts over
the tidal swamps of Guayaquil (Ecuador) and Cartagena (Colombia), and the
Tondo Foreshore of Manila (Philippines). In some instances, it is land reserved
for future development (by the sides of roads, railway tracks and canals, or even
around airports and other facilities) that has been pressed into serving the needs
of the otherwise unhoused.

Over time, some of the first of these settlements have been grudgingly
recognized, tolerated and even accepted. There may have been attempts to
dislodge these settlements; but there have also been interventions to improve
them. Whether legal or not, their continued presence gives them a de facto right to
exist and to develop.

In many countries, traditional authority structures have powers over land in
tandem with the state and its agencies. Many areas are allocated by chiefs and
traditional councils with or without the agreement of state institutions.
Subsequent development may conform to some regulations but many do not fulfil
all of the official requirements for housing neighbourhoods. These may be
indistinguishable from, and treated in a similar way to, other informal
subdivisions.

Although often not as substantial as in the more established slums, the majority of
housing in informal consolidated areas is built of durable materials, though the
piecemeal construction and improvement of such areas have given them a more
chaotic (or organic) overall appearance than in formally developed areas. There
are fewer public facilities, such as schools and playgrounds, and few formal
commercial outlets than in the established slums. There are manufacturing and
marketing activities; but these tend to be small-scale, family-operated enterprises.
Similarly, though generally fairly accessible by road and public transport to the
periphery, the internal streets of these settlements tend to be less adequate.

The general level of earnings and incomes is not the lowest, with more owner
occupiers and self-employed residents than in newer, poorer settlements. The
potential for improving such settlements is generally high as a result of the greater
perceived and, to some extent, real benefits from upgrading for the residents. The
most frequent constraint is the planning and zoning legislation that the settlement
contravenes, even though, in practice, the city government has learned to
accommodate and adjust to the presence of these consolidating slum settlements.
This occurs as it becomes apparent that political opposition militates against the
demolition of such slums, and it is, therefore, in the interest of the city that they
should be absorbed within the formal housing stock and improved in order to
maintain the land values of the areas that surround them.

**Recent slums**

Recently developed slum neighbourhoods are often similar to the consolidated
informal settlements, but are newer and unconsolidated. Their newness is
expressed in poorer, less permanent materials, especially in settlements where
residents are unsure of whether and for how long they will be allowed to stay before being evicted. In cities where evictions are common, or on sites where they are unlikely to be left alone, shacks are likely to be very rudimentarily built of recycled or very impermanent materials (such as straightened oil drums, used corrugated metal sheets, plastic and canvas sheets, cardboard cartons and discarded timber). Where authorities are more tolerant, or where such settlements are the norm for establishing new neighbourhoods, or if there are about to be elections, then the settlers are likely to build with more confidence, using more permanent materials and standards of construction. In either case, infrastructure is likely to be absent or only available through clandestine connections.

New or recently established slums tend to have lower densities as there are fewer constraints and less competition for the land; yet the individual plots and parcels occupied by each dwelling are unlikely to be any larger than in the more consolidated slums. This is because households tend to occupy only enough land for their individual needs, rather than explicitly seeking to profit from land holding and development.

Recently developed slums are generally found on the periphery of the built-up area of the city, or in pockets of even more marginal land than the more established slums. Increasingly, occupants of the newer slums often use the grid-iron layout, even without the assistance of external organization and support. There are several advantages in adopting grid layouts:

- It is easy to lay out.
- There is a stronger likelihood of obtaining urban services and recognition if the settlement is orderly.
- There are likely to be fewer disruptions and demolitions when services are installed.

**Location**

To some extent, as has been indicated above, there is a correlation between age and location, with older slums in the city centre and the newest on the periphery. Although this follows from the realities of a growing city, it is not always the case. For example, with a relatively young, but fast-growing, city, the oldest slum areas may well be outside of the centre. Regardless of age, the location of the slum endows it with certain attributes.

**Central**

As mentioned in the section on ‘Inner-city slums,’ central city slums tend to have been formed by the classic process where central, prosperous residential areas of cities undergo deterioration as their original owners move out to newer, more salubrious and more fashionable residential areas. Initially, the housing vacated by the better-off, which generally has reasonable infrastructure and services, is ideal for those willing to trade off less space and shared amenities in exchange for access to employment opportunities.
Centrality of location does not necessarily imply the old city, or the central business or commercial centres of cities. As used here, it also embraces formal industrial areas, ports, wholesale markets and other areas of employment that are some distance from the central business district.

Residents of slums that are located close to such zones are able to benefit from the high concentrations of employment opportunities, especially those related to unskilled and casual jobs. They are also likely to be better off in terms of transportation because of the tendency for cities to grow outwards radially and, therefore, to have roads and transport converging on centres of formal employment. This makes centrally located slums much more suitable for unskilled workers. If the neighbourhood originated in the old city centre, then it may also have the benefit of substantial buildings and a reasonable level of infrastructure and services, though it may have fallen into disrepair and infrastructure may be severely overloaded.

The historic cores of many ancient cities (for example, Delhi, Dhaka, Cairo and Istanbul) are now in much reduced circumstances and would fit the description of city-centre slums; but these are dealt with separately as historic city slums.

As mentioned in ‘Inner-city slums’, much of this housing is controlled by rent control legislation, which fixes rents at levels that are affordable by some measure, but which are usually unrelated to the value or replacement cost of the accommodation or to the economic cost of adequately maintaining the building and its services.

Introduced in many countries during World War II, or in the economic upheaval caused by it, rent control is now widely recognized as contributing to the deterioration of the housing to which it applies as owners remove value from it by withdrawing maintenance or by converting it from residential to other uses (for example, cheap boarding houses).

Centrally located slums are most prone to being controlled by organized racketeers through their control over jobs, as well as property. The majority of slum central-area dwellers tend to be wage earners, and are either on piece rates or are casually hired. The majority of them are tenants, renting or subletting from slum landlords, rather than owner occupiers living in dwellings that they have built themselves. In more socially and economically mobile cities, many central-area slum dwellers, over time, move out to new and more peripheral locations, seeking less precarious and more permanent housing. They are the most likely candidates for official slum relocation programmes as they succumb to pressure and enticements from better-off households who want to move into the central locations once they have been improved or, in the more developed cities of the North, as part of the process of ‘gentrification’.
Scattered slum islands

Scattered throughout cities are ‘islands of slums’, surrounded by formal housing and other officially sanctioned land uses. These islands may have been intended as open or green spaces, as the land was thought to be unsuitable for future housing, or locations that are physically or environmentally unsafe. Slum islands are typically small, as few as eight to ten dwellings. They often get their water from fire hydrants or neighbours in formal areas and dispose of their waste, both human and refuse, in the city’s gutters and open spaces. They cannot support their own social infrastructure (school, clinic, etc); but use the facilities of the neighbourhoods in which they are located – unless they are denied access through social discrimination, which is quite common.

Slum islands that are closer to the centre share many of the advantages and attributes of the central slums described above. However, they are often physically isolated from the surrounding areas by barriers such as canals, storm drains, railway tracks or motorways, and, though close to urban facilities and opportunities, may not actually be able to benefit from them. Some islands may have started as rural communities that became engulfed by urban expansion; but this is rare, except towards the periphery.

Peripheral

Slums on the city fringes are, as described above, either squatter settlements in which households have invaded (usually public) land, or they occupy land that has been subdivided and for which they have paid or entered a rent purchase arrangement with the developer or landowner. The urban periphery has distinct advantages over more central and urbanized areas as there is less competition for the use or control of land, especially if it is located outside of the municipal boundaries. Peripheral slums can be quite large settlements since they are rarely constrained by competing development.

In many cases, the quality of housing is relatively good – significantly better than is to be found in the adjoining rural areas – but the level of services is generally low. While this is not a great hazard to health and amenity when the overall density is low – as it can be during the early period of development – it can become a serious problem as the slum grows larger and denser. While dwellings are often owner-occupied, in many cities the provision of housing in peripheral settlements is controlled by a ‘developer’: a well-connected businessmen or politician who has the necessary power and resources to lay out and allocate land.

An overriding problem facing peripheral slum dwellers is the low level of access and high cost of transport to jobs, markets, schools and the centres of administration of public services. Thus, households living in peri-urban areas can spend up to 30 per cent of their incomes on transport, or as much as three to four hours a day walking to and from work and school. Increasingly, middlemen are beginning to realize the potential offered by the women in these settlements by
offering them piecework, bringing in the raw materials and collecting the finished products.

One of the main problems of home-based pieceworking (home-working, as it is called in the literature) is that the ‘invisible’ workers can easily be exploited since control by labour authorities is very difficult. When workers are scattered around new, unmapped areas, control is even more difficult, so exploitation is easier. In addition, the further that potential workers are from their jobs, the easier it is for exploiting employers to flourish.

A very significant feature of informal settlements on the urban periphery is their potential for efficient and effective upgrading through the provision of infrastructure and public services, especially if it is done before dwellings consume all of the available land. Increasingly, NGOs recognize this and are developing strategies to help new land invaders and informal developers to impose some discipline in the subdivision and layout of land in order to prepare for the installation of public infrastructure.

**Size and scale**

The size of a settlement or slum area has obvious implications for what is, or is not, possible in terms of social organization, community cohesion and future intervention.

**Large slum settlements**

There are many slums around the world that are equivalent to cities in size. Dharavi in Mumbai, India, or Orangi in Karachi, Pakistan, house hundreds of thousands of households; Kibera in Nairobi, Kenya, has a population of 400,000 people. To a large extent, this is a function of the size of the city of which they are part. However, it is possible for a slum or informal settlement to be larger than the city upon which it depends. For example, Ashaiman (in Ghana), referred to earlier, has a larger population (150,000) than Tema (140,000), the municipality of which it is formally part.

With such large slums, the need for local management and social organization becomes clear. Many different social groups may live and work within the slum’s geographic boundary. While some large slums, such as Antop Hill in Mumbai, India, are organized spatially on ethnic lines, it is important for groups to cooperate with each other, whether or not it is traditional for their people to do so. Large slum settlements cannot rely on the services of the settlements around them and need their own, even to the extent of internal public transport systems. With large numbers of slum dwellers, even though they are poor, there are substantial economies of scale and viable internal markets. It is possible for as many as 40 per cent of the population to find employment servicing and serving the needs of their own neighbours. The markets that spring up in large slums often attract custom from the surrounding formal settlements, as the produce
tends to be cheaper than in formal-sector markets. The impacts and implications of such trends were discussed in Chapter 4.

Medium-sized slum estates

This is the most common situation, with neighbourhood sized settlements developing in and around the city. The process of deteriorating conditions that led to falls in land and property values is self-perpetuating and, in many cities, relatively rapid. Of course, given the higher density of most areas that house the poor, a relatively small piece of land is required to house a community. Most often, the origins of such settlements is land that has been undeveloped or abandoned, since it was felt by the urban planners and developers to be difficult, if not impossible, to develop.

These areas include swamps, marshes and steep slopes. Medium or neighbourhood-sized slums are quite effective in resisting attempts to demolish or relocate them. In part, this is because they tend to form a cohesive community who support an active internal leadership, and because there are sufficient households to ensure that they have enough political and voting power to generate external political support.

Small slums

Scattered throughout cities are small, or even very small, slums that are surrounded by formal housing and other officially sanctioned land uses, sometimes on land designated for public or communal use, but most often on land left as reserves for future development or to serve or service roads and highways, waterways or railroads. The sites may have been intended as open or green spaces, or land thought to be unsuitable for future housing, or classified as locations that are physically or environmentally unsafe. These very small pocket-sized slums, characterized earlier as ‘scattered slum islands’, often contain as few as eight to ten dwellings. In many cases, occupants of neighbouring upper-income housing areas tolerate, or even protect, such slums as the residents often work as their domestic staff and other employees. Because of their small size, they cannot support their own social infrastructure (school, clinic, etc); but residents have easy access to public services from the neighbourhoods in which they are located.

Sometimes, however, this is denied because of social discrimination. Where such settlements are not protected by their neighbours, they are vulnerable to exploitation and are ineffective at resisting eviction or relocation. These very small pocket-sized slums are often attractive to their residents because of their closeness to the centre. In the major cities of South Asia, very small pocket-sized slums occur through the occupation of pedestrian walkways. In Mumbai, India, it is estimated that there are more than 20,000 pavement dwellers that live in dwellings built on the pavements of the city centre, with residents using part of the carriageway as living space during the day. Many of these dwellers have been there for 20 years or more.
Because of their small size, these slums have easy access to public services from the surrounding areas. On the other hand, where they are not protected, their small size makes them vulnerable to exploitation and less effective at resisting eviction or relocation. This precariousness is often responsible for the lack of substantial investment in housing, most of which is usually made from second-hand or recycled materials and components.

**Legality, vulnerability and spatial forms**

As has been pointed out above, not all slums are squatter or illegal settlements, and not all illegal or squatter settlements are slums. Therefore, legality and resident perception of its relative vulnerability are important considerations, both to the process and nature of viable development interventions. Indeed, it is commonly held that legality, or security of tenure to land and property, is the single most important criterion in any slum upgrading or regularization process.

**Illegal**

There are settlements that are illegal, either because they are squatter settlements, without the right to be on or use the land, or the land on which they are settled has not been designated for housing and related activity in the statutory land uses of the city. Few cities in developing countries actually have up-to-date statutory land-use or zoning plans. In theory, residents of illegally occupied land are very vulnerable to being evicted as they have no right to occupy the land. However, what usually matters more, in practice, is the extent to which legality is enforced – and this may be not at all.

The literature on slums has made much of legality and the threat of eviction as the key to determining the level and extent of investment and other decisions. In practice, while the threat of eviction makes an enormous impact on the perceptions and, therefore, the behaviour and priorities of the slum dwellers, not all of their actions are governed exclusively by it. The threat of eviction is probably the most potent force in galvanizing communities – it can help to transform a heterogeneous group of households, settled in a particular locality, into a community. However, while the actual threat is there, it is likely to divert attention away from more long-term or development-oriented activities. If the threat is withdrawn, however, the community may be sufficiently enabled by the experience to undertake more development activities that require a collective effort, investment or the pooling of resources.

Many slums are built on land that is designated for housing, and the occupiers have a legal right to be there. However, the layout or type of housing may not have been given formal consent; often it may not have been sought! Essentially, dwellings in this type of settlement do not comply with municipal regulations. Consequently, these settlements may be denied access or connections to the urban infrastructure, or they may not have their land title registered or recognized. This will make it difficult or impossible for residents to obtain any form of certificate of title, access to housing finance and other such facilities. Thus, many
settlements are unable to develop beyond basic structures and householders cannot use the value of their property as collateral for credit to invest in enterprises or development.

Informal
In many countries, the process of registering title to urban land and obtaining permission to develop it is a relatively recent introduction. Therefore, as has always happened in many rural areas, households settle and construct their dwellings without any thought to their formal recognition. For this reason, many well-established settlements are considered informal – this is a common occurrence in the peri-urban areas of many African cities. Thus, strictly speaking, these are illegal settlements; but, in practice, it is unlikely that urban authorities would test this in court and they prefer to adopt a more tolerant, *laissez faire* approach.

However, the informality that makes it easy to access land in these settlements and to build dwellings may make it more difficult to obtain credit or to transfer or sell these rights to others. While generally constraining, this has advantages in that it makes it equally difficult for settlers to give up their land at a lower-than-market price to cash buyers who are more aware of the potential of the particular location.

Slums and tenure insecurity
Excessively complex, restrictive or inefficient systems of housing and land provision have a deleterious effect on both housing supply and housing prices and rents that, while appearing to improve conditions for existing occupants, actually reduce housing security for prospective and existing occupants. Security of tenure and security of supply are, therefore, not necessarily complementary, since:

- There appears to be an upper limit beyond which increasing security of tenure may be counterproductive. In countries with formal supply systems, the poor have relatively few resources to invest in housing, and only the middle classes tend to supply housing capital. Many developed countries have, therefore, chosen to limit security of tenure in order to maximize housing supply, thereby encouraging the middle class to invest in housing for private tenants.
- As a particular example, the experience with draconian forms of rent control has been poor in all countries, resulting in poor supply, little or no housing maintenance or investment and overcrowding.
- The practical experience with formal titling in irregular settlements has not been encouraging. Some writers suggest that formal titling is of doubtful benefit to the poor, slowing and formalizing supply, and in some cases dramatically reducing affordability. Better targeted partial changes to tenure rights can often avoid the undesirable effects of full-scale titling.
- There is no doubt that formal titling increases the value of properties; but there are cases where formal markets do not appear following regularization, and it is difficult for owners to realize the improved value. There are too many areas where
housing is not routinely marketable, especially in sub-Saharan Africa, for markets to be an assumed norm. Even where there are markets, regularization may simply raise the price of housing and reduce affordability across the board.

What is generally agreed is that secure tenure represents a bundle of different rights and is related to a number of other important issues. The specific legal rights to which tenure refers include:

- the right to occupy/use/enjoy;
- to restrict who develops or uses the property;
- to dispose/buy/inherit;
- to cultivate/produce/sublet/sublet with fixed rent;
- to benefit from change in value; to access services;
- and to access formal credit.

The tenure types that carry with them combinations of some or, ultimately, all of these are pavement dweller, squatter tenant, squatter ‘owner’, tenant in unauthorized subdivision, owner in an unauthorized subdivision, legal owner of an unauthorized building, tenant with a contract, leaseholder, and freeholder. These have progressively more rights29.

<table>
<thead>
<tr>
<th>Squatters, no rent</th>
<th>Renters</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Africa</td>
<td>8</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Rest of Africa</td>
<td>13</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>China</td>
<td>5</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>East Asia and Pacific, excluding Australasia</td>
<td>7</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>South and Southeastern Asia</td>
<td>14</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>Middle East</td>
<td>8</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td>Western Europe</td>
<td>2</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Northern America and Australia</td>
<td>1</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>11</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>World</td>
<td>7</td>
<td>17</td>
<td>4</td>
</tr>
</tbody>
</table>


Figure 10 - Insecure tenure by region (percentages)30

In the light of the figures presented in the figure, it may seem strange that so much attention has been lavished, over the past decade, on self-help for non-rent paying squatters. As there are so many more renters than squatters, it is strange that there are so few programmes that assist tenants with their rights and/or assist informal landlords to mobilize capital and participate in housing supply or estate improvement in various ways. It has been pointed out that helping someone to build their own dwelling is rather inefficient as it only results in one dwelling. Contrarily, if a successful self-builder decides to build dwellings for a business, the
same agencies cannot help, and many official obstacles are put in the way of such small businesses. There is a great need to assist small-scale enterprises in the construction sector – which probably provides the majority of all new dwellings – so that their methods of supply are as efficient as possible. At the same time, consumers need advice and knowledge on what represents good workmanship and value for money. The single householder–house interface represented by assisting self-help builders should be replaced by the twin interfaces of contractor–house and householder–contractor.

**Protection from eviction**

Whatever the type of irregular settlement (for example, unauthorized land development on customary or private land, or squatter settlements on public or private land), four main factors contribute to protect households from eviction:

1. Length of occupation (older settlements enjoy a much better level of legitimacy and, thus, of protection than new settlements).
2. Size of the settlement (small settlements are more vulnerable than those with a large population).
3. Level and cohesion of community organization.
4. Support, which concerned communities may get from third-sector organizations, such as NGOs

Recent shifts have focused on the following practices:

- Setting up a simplified registration system where tenure can be incrementally upgraded to real rights in accordance with the needs and resources of individual households and the processing capacity of administrations in charge (for example, in Namibia). A system such as this must be compatible with formal registration procedures.
- Devising and adopting innovative tenure formulae that emphasize collective trust or cooperative ownership. In the context of most cities, this is an appropriate, though temporary, solution that has difficulty in resisting market pressures.
- Emphasizing partnerships between formal and informal actors.
- Emphasizing protection against evictions, whenever possible, through long-term lease and other measures that, firstly, give priority to the consolidation of occupancy rights rather than to the provision of property freehold titles, and, secondly, give priority to collective rather than individual interests. In different cities, these basic responses can be combined in different ways.

Accompanying measures are usually adopted in order to facilitate the implementation of these responses. Here, again, recent shifts indicate a new approach to tenure issues, with emphasis mainly on the following:

31 (Programme 2003) P169
32 (Programme 2003) P171
- Decentralization of land management responsibilities to local/municipal levels, with municipalities receiving sufficient resources (both human and financial) to carry out land registration and land allocation and use.
- Attempts at integrating legal pluralism approaches within tenure policies.
- Reliance on community-based and grassroots organizations at settlement and city levels.
- Provision of basic services as a form of settlement recognition and as a tool for alleviating poverty.
- Improved access to credit for the urban poor through conventional and micro-finance systems.

Development Dynamics

There are several ways to approach slums. These include:

- Negligence
- Eviction
- Self-help and in situ upgrading
- Provision of basic urban services
- Provision of secure tenure for slum dwellers and the implementation of innovative practices regarding access to land
- Innovative access to credit, adapted to the economic profile, needs and requirements of slum dwellers and communities
- Enabling policies
- Resettlement
- Participatory slum improvement

Even within similar common geographical regions or contexts, settlements that share common characteristics in terms of age, origin, location and legality may still vary considerably. Different drivers and dynamics of development, both from internal (community) and external (NGO or other agency interventions) will render living conditions vastly different.

The next chapters will point out different forms of slum development.

Ongoing individual and community-led development

Individual or household-led development is manifest in very many slum areas. Without perceived security of tenure, access to some means of generating livelihoods, and the necessary capacity to manage threats such as environmental hazards, the majority of slum dwellers are unlikely to make incremental improvements to their own housing and living conditions. The extent to which there is community cohesion and organization to undertake broader development initiatives that serve the wider neighbourhood depends, partly, on the social structures of the neighbourhood and, partly, on either a supportive or a benign attitude by the authorities – which gives residents confidence that there will be no eviction.
Where other settlements have experienced upgrading and improvements, there may be spin-offs as other neighbourhoods emulate the improvements. However, where settlements have been regularly subjected to evictions and demolitions, there may be a reluctance to take any action that would bring the neighbourhood to the notice of the authorities.

**Intervention-led improved slums**

These are settlements where some intervention has been made to improve one or more aspects of the settlement, housing or social and economic facilities and opportunities; however, they have not had a complete upgrading project. The actual impact of such interventions is liable to vary, depending, in part, on what has been improved or introduced. More importantly, perhaps, is the way in which the improvements were performed. Often, they are part of a local politician’s efforts to improve his/her standing and to win votes. This may have been done in a way that residents feel was only necessary; rather than being grateful, residents may see it for what it is: a bribe. Many settlements are very well aware of their voting power in countries where elections are regular occurrences (such as in India). Ironically, where these improvements have been the result of a struggle that has taken time and effort, it probably also helps to create a greater sense of community. The resulting improvements, therefore, are more likely to have an enabling effect, empowering the residents to increase their efforts to further improve the settlements.

**Upgraded slums**

These are slums that have been the subject of a fairly comprehensive upgrading and improvement programme, whether gradually over time or as a one-off intervention. Nevertheless, the intervention may not have reversed the basic conditions, or – if it did – there is no guarantee that improvements will last long. Furthermore, improved conditions can serve to attract more households to the settlement, increasing pressure on the housing and services to create, once again, slum-like conditions.

It is also often the case that, while a settlement may have had a project or a programme of upgrading, in practice, the application of the funds and efforts were superficial, and much of the funding might never have reached the settlement. In some cases, where such insensitive upgrading occurred, the neighbourhood condition has been worsened by it. Most city authorities now recognize the need to address the problems of slums and squatter settlements in their cities and to do so in partnership with residents. There is another possibility where, although a slum has been upgraded, the residents refuse to acknowledge the upgrading – not because the improvements have not happened, but because there are often positive-discrimination measures that benefit the slum dwellers that would lose those benefits if their settlement were no longer a slum. On the other hand, the fact that the settlement was once a slum may carry a stigma that
residents may not be able to shake off, even after the settlement has been upgraded.

Upgraded settlements are likely to have much better facilities and urban services than other slums. They may also have had the benefit of cash handouts or access to loans and other forms of financial assistance that would have enabled the residents to improve their housing and, indeed, their means of earning a livelihood. They may, even, have been ‘promoted’ out of slum status.

<table>
<thead>
<tr>
<th>Do</th>
<th>Don’t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote good urban governance systems.</td>
<td>Assumes that slums will disappear automatically with economic growth.</td>
</tr>
<tr>
<td>Establish enabling institutional frameworks involving all partners.</td>
<td>Underestimates the role of local authorities, landowners, community leaders and residents.</td>
</tr>
<tr>
<td>Implement and monitor pro-poor city development strategies.</td>
<td>Separate upgrading from investment planning and urban management.</td>
</tr>
<tr>
<td>Encourage initiatives of slum dwellers and recognize the role of women.</td>
<td>Ignores the specific needs and contributions of women and vulnerable groups.</td>
</tr>
<tr>
<td>Ensure secure tenure, consolidate occupancy rights and regulate informal settlements.</td>
<td>Carry out unlawful forced evictions.</td>
</tr>
<tr>
<td>Provide benefits and owners in funding solutions that prioritize collective interests.</td>
<td>Discrimination against rental housing or promote a single tenure option.</td>
</tr>
<tr>
<td>Adopt an incremental approach to upgrading.</td>
<td>Impose unrealistic standards and regulations.</td>
</tr>
<tr>
<td>Associate municipal finance, owner subsidies and beneficiary contributions to ensure financial viability.</td>
<td>Rely on governmental subsidies or on full-cost recovery from slum dwellers.</td>
</tr>
<tr>
<td>Design and negotiate rehabilitation plans only when absolutely necessary.</td>
<td>Insert public housing in intimate social housing schemes.</td>
</tr>
<tr>
<td>Combine slum upgrading with employment generation and local economic development.</td>
<td>Consider slum upgrading solely as a social issue.</td>
</tr>
<tr>
<td>Develop new urban areas by using land and tenure infrastructure available.</td>
<td>Provide unaffordable infrastructure and services.</td>
</tr>
</tbody>
</table>

Figure 11 - The dos and don’ts of slum upgrading

**Lacking community incentives for improvement**

There are instances when residents expect slums to provide only the bare minimum in terms of shelter, and the individual residents and owners have no incentive to undertake improvements. Where residents are temporary, pay little rent, do not feel part of a community network, and where the building itself is owned by an (absentee) landlord, there is little reason for individuals and households to invest in order to improve those living environments. The owners also often have little incentive, owing to rent control legislation, or where the asset no longer has economic potential in terms of location near industry. In the case of industry-provided housing – for example, chawls in India, hostels in Southern Africa – the building fabric does not easily lend itself to affordable conversion and upgrading.

**Incipient slum creation**

Where poverty is growing, there is a high probability of slum appearance. Many established historic city slums and others in the centre of cities fit this description. Where there is multiple ownership through inheritance (for example, family houses and old tenements), occupants are likely to be too poor to carry out major renovations and owners are unlikely to agree to pay, especially where rent control is in force. It is estimated that 5 per cent of Moscow’s housing stock of ‘first-generation’ prefabricated apartment blocks built at the end of the 1950s falls into

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33 (Programme 2003) P142
the category of housing that is in urgent need of replacement or upgrading. More than 318,000 households live in such housing.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Opportunities for upgrading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communities served legally on public land—mainly owner-occupiers</td>
<td>Situated in older and more central parts of the city. Standard of provision of infrastructure is mediocre, though much of it may be run down and is in a poor state of repair. Overcrowded.</td>
</tr>
<tr>
<td>Communities served legally on public land—mainly tenants</td>
<td>Occupied by low and middle-income households in need of repairs. Maintenance and services are the responsibility of local government, but are likely to be inadequate due to low-rental income.</td>
</tr>
<tr>
<td>Communities served illegally on public land—mainly occupants of own structures/houses only</td>
<td>Few rents at this type. Frequently, there is a mix of people who see themselves as temporary to the city— for example, seasonal workers.</td>
</tr>
<tr>
<td>Communities served illegally on public land—mainly occupants of shacks/houses</td>
<td>Consists of middle-income households living in houses.</td>
</tr>
<tr>
<td>Communities served illegally on private land—mainly owner-occupiers</td>
<td>Convenient; located in the city centre; good transport connections.</td>
</tr>
<tr>
<td>Communities served illegally on private land—mainly tenants</td>
<td>High demand for security of tenure and willing to invest their time, money and energy into upgrading in return for a guaranteed period of tenure.</td>
</tr>
<tr>
<td>Communities served illegally on private land—mainly occupants of unlawful structures/houses</td>
<td>Such reforms are sometimes low but may result in some.</td>
</tr>
<tr>
<td>Communities served illegally on private land—mainly tenants</td>
<td>Less likely to be interested in security of tenure without corresponding economic gains.</td>
</tr>
</tbody>
</table>

Figure 12 - Summary of opportunities linked to tenure

1. Harmonizing and mobilizing cooperative, responsible and active communities of men and women for the purpose of mutual aid, self-help, problem solving, social integration and social action.
2. Forming the basis of participatory democracy at all levels of society to ensure equity, frustrated and measured, which arise from feelings of powerlessness and oppression in the face of oppressive power structures.
3. Relaying upon the capacity and initiative of relevant groups and local communities to identify needs, define problems and plan and oversee appropriate courses of action, increasing leadership capacity and media, dependence on state and professional interventions.
4. Promoting and exploiting resources from within the community and outside through partnerships with government, NGOs, etc., in such a way as to ensure balanced, sustainable forms of development.
5. Promoting community integration among transformation social relations among diverse groups whose differing characteristics may cause conflict and structural relations among those institutions (government, private, NGO and CBTD) that address social challenges in the community aimed at avoiding competition and duplication.
6. Organizing activities such as circles of solidarity that empower marginal or excluded population groups by linking them with the progressive forces in different social sectors and classes.
7. Giving the marginalized, excluded or oppressed the essential tools to enable them to critically analyse and become conscious of their situation in structural terms, so that they can advance possibilities for change.

Figure 13 - Seven values and principles underpinning community development

54 (Programme 2003) P94
55 (Programme 2003) P155
Important final remarks

There are some important final remarks to be made in relationship to slum development:

- Intra-household differences and inequalities (especially relating to the role of women) must be taken into account in defining strategies or interventions. Reciprocal relations between households that create support structures are vital parts of the operation of successful low-income communities. This explains why different ethnic groups cluster together. Keeping these relations intact must be addressed in all types of intervention.

- In a few places, the primary response to slums and areas of poor housing is now a combination of public or social housing, targeted housing allowances, and rebuilding through gentrification. Housing finance for low-middle income earners is supported by the secondary mortgage market or other government guaranteed funds. There have been considerable advances in public housing asset management and innovative housing and finance schemes for lower income earners. Much public housing has been moved to housing associations (with NGO management). In many places, social housing is now quite diversified in order to meet the needs of a changing clientele, and is under tenant management or participation.

- There are at least 50,000 NGOs working with poor communities in developing countries. They have been instrumental in obtaining and distributing resources, and in providing advocacy and diversity of response, and they have become the preferred channel for relief agencies to implement anti-poverty and self-help programmes. In many cases, non-profit organizations are preferred over the private sector in contracting out government services. They are seen to encourage democracy and accountability in countries where there has been increasing disillusionment with government. However, as they have gained in importance, they have also become less and less autonomous. The line between governments and NGOs has often become quite blurred. The understanding of what participation and partnership mean in practical terms remains open to wide interpretation. Participation and partnerships are often regarded as a cure-all for development problems, without careful thought being given to how best the complexity of, and barriers to, these goals should be addressed.

- Large-scale regularization of housing on public land has often failed to provide sufficient coverage and has failed to reach the poor. Regularization is often a difficult, costly, complex process, beset by corruption, which leads to situations in which the poorest residents may be squeezed out through market pressures after housing areas have been ‘formalized’. Instead of heavy reliance on regularization programmes, therefore, it should be advocated to move to more locally tailored, flexible and incremental systems to upgrade tenure through, for example, temporary measures using cooperative ownership, or emphasizing occupancy rights rather than freehold titles through administrative or legal measures against forced evictions.
- Infrastructure development is a major cause of relocation of low-income households, often to remote locations without access to services or income opportunities. The equity implications of new transport initiatives must be part of project and programme plans – especially with regard to low income transport and to relocated households.

- Upgrading and other infrastructure projects should use labour-intensive solutions involving small-scale enterprises rather than heavy equipment, where this is economically justified. Government incentives or subsidies to large contractors should be removed and legislation and training should support small enterprises. Building regulations should allow for more affordable technologies. Unpaid volunteer labour should only be used on the most local activities.

- Typical annual expenditures by local governments in Northern Europe are well above US$1,000 per person, while in the least developed cities the expenditure may be less than US$1. As a result, services are grossly inadequate. The lack of revenue is largely due to the poverty of the citizens, but is also compounded by poor governance and inefficient tax collection mechanisms.

- Micro-finance approaches used in informal enterprise lending have also been used for housing, but they are not ideal as terms are too short. A number of good practices in lending for cheaper or even informal housing exist; but they tend not to extend to the lowest-income households, including slum dwellers. The private financial system is unlikely to lend to the poorest groups. However, they can be encouraged to lend to middle-income households using various forms of guarantee or support, or through untapped sources of funds, such as credit societies or secondary mortgage markets, which takes off some of the pressure on housing markets. Interest rate subsidies or fixing are not recommended as they limit the supply and effective functioning of the housing finance system.

- The advantages of partnerships are in obtaining synergy, public efficiency and community participation. But partnerships must be inclusive and firmly within the domain of elected government. Partnerships may be developed for infrastructure or service provision, for planning, advocacy and the carrying forward of projects.

- Effective inter-sectoral cooperation requires the building up not just of mechanisms and committees, but of trust and a good knowledge of specific responsibilities and how they may be brought together. Obtaining a confluence of top-down and bottom-up approaches, effective coordination of decision-making and policies, as well as the building of a consensus and shared city vision, are prerequisites to the success of participatory governance.

- The main difference between earlier unsustainable approaches and the approaches of the present is that today's best practices are strategic, inclusive and holistic. Under the new paradigm, projects are now undertaken not because they deliver numbers of houses, kilometres of road or good benefit-to-cost ratios, but because they:
  - benefit urban citizens, especially low-income people and vulnerable groups, and deliver worthwhile social outcomes that improve equity and participation;
  - form part of larger strategies aimed at improving the overall well-being and operation of cities, not just today but for future generations; and
- Involve all stakeholders, particularly marginalized groups, in conception and design, and often in construction and operation.

- The biggest stumbling block to achieving cities without slums is, in fact, housing, because formal-sector housing is well beyond the reach of most slum dwellers and without formal housing, areas are usually automatically considered to be slums.

- The most difficult area of all, and the one upon which eradicating slums ultimately depends, is providing income earning opportunities. In the end, families can only afford non-slum housing if they have good incomes. In a global environment where formal-sector urban jobs have been lost almost everywhere and where there are no proposals to improve the situation, the prospects are not promising. Since the major agencies adopted poverty reduction as their primary goal, anti-poverty programmes are under way all over the developing world, and these can help to strengthen the income-earning capacities and opportunities for poor people. Such programmes tend to target the poorest households, as they should, and are usually not sufficient to deliver the kinds of incomes necessary to pay for formal housing.

- It has to be remembered that slums have always been a part of market societies. In the long run, the goal of cities without slums is only going to be achieved in a predominantly market economy once a good majority of the urban work force has middle-class incomes. Until this is achieved, the principal goal cannot be the outright elimination of slums, but improving the lives of slum dwellers in the many ways that this chapter has suggested.
To conclude

In conclusion, the world faces a very great challenge in improving the lives of the approximately 924 million existing slum dwellers and in providing jobs, housing and services for 2 billion future urban residents. Many existing slum dwellers live in degraded and marginalized conditions that are unacceptable. The numbers of new urban residents who will be arriving in the cities of the developing world are unprecedented and will put great pressure on city administrations that are already struggling with inadequate infrastructure and widespread poverty. A concerted international response is required to deal with the situation, and this demands a change in the processes and global organization of aid and the economy in order to deal with this huge challenge in a balanced, sustainable and inclusive way.

\(^{56}\) (Programme 2003) P175
Indian architecture

In general the Indian architecture can be divided into three categories. The first are the Indian monuments. The second are the western architecture styles and the third is defined by the village architecture.

Of course these three different categories are very wide and do not contain a clear boundary. Regarding the Indian monuments it possible to distinguish different styles, but to find information regarding their designs is difficult since the historic texts about architecture on the Indian peninsula do mostly not match reality. The reason for this is that the historic texts were never meant to be copied and distributed to others. Originally the texts were kept secret and they were for personal use only. In the real world of architectural construction it meant mostly that temples were built by imitation. One generation would copy the predecessor. In one region great similarity was made to each other, but yet they do not match texts. Most modern books that talk about Indian architecture talk mostly about temple architecture of a specific period. In the case of South India the most important one is the Dravida style. This style was mostly build in Tamil Nadu from the 7th to the 13th century. In a connecting essay this subject has been worked out much more. A study about this style can give some insight in South Indian architecture and in the ways South Indian architects would design their buildings.

The village architecture is much more about the vernacular then about a certain style. The next quote from Takeo Kamiya, writer of the book Indian Architecture can be good in this respect: ‘What strikes one when travelling in a taxi, is that the driver does not use a road map. Asking for the way in towns and villages, with people offering directions and advice, is how the trip continues. Instead of starting on a trip equipped with a detailed map, accumulating the whole in parts, is the Indian way. This is perhaps the basis for the construction method of vernacular architecture in the villages and even in the cities of India. While it would be wrong to say that Indian architecture is “lacking in totality”, it would be more accurate to point out that Indian architecture is “rich in detail”.

Modern architecture in India got a boost right after independence. Le Corbusier built the city Chandigarh in the north of the country. In this way the ideas of the modernists penetrated and influenced the Indian architects very much. Most modern architecture in India has the modernistic approach as reference. For instance the Bangalorise architect Edgar Demello told in an interview that there is no such thing as modern Indian architecture.

37 (Pramar 2005) 1 Introduction
38 (Online 2007)
39 (Oijevaar 2007)
40 (Kamiya s.f.)
The Indian society has widely plural characteristics. As well temporally, culturally and economically. The complexity of the Indian society is thus not simply understood by focusing on one possibility, but can only be understood if the complexity of the society as a whole is accepted. During the last 60 years mostly this complexity has not been recognized by the Indian architects and urban planners and this meant that no modern Indian architecture has been developed. There are seven main causes for this (Menon s.f.):

1. The colonial origins of the professions, architects and urban planners in India accepted the ‘universality’ of the British experience and adopted their methods, devices and legal instruments to create the built environment. These instruments have moreover not changed significantly.
2. Professionals in India have shown a marked proclivity in their work to adopt patterns and images rather than policies and programmes associated with the so called universal experience.
3. Urban planners have a preponderant bias towards achieving beauty and order rather than dealing with the complexities of the Indian urbanism. Consequently they ignore the compelling logic of vernacular urbanism. This bias creates an intellectual void in the discipline of urban planning. A similar void is at work in the delineation of ‘modern’ architecture in India, where every international ‘ism’ is mirrored in local architectural production as a ‘style’ ignoring the potential of vernacular architectural practices.
4. Urban architects and architects easily absorb bold proposals made by foreign experts. The influence of Le Corbusier and Louis Kahn who built in India and the current international stars of the architectural media overwhelm the local architectural imagination.
5. More complex ideas appear to be beyond the grasp of urban planners and architects. Architects for instance have failed to grapple with the complexities of advanced building technologies and the challenge of housing the economically weaker sections of the Indian society.
6. Architects and urban designers have not considered their practice in a self reflexive manner and thus have continued to pay obeisance to foreign knowledge and expertise.
7. Architects as well as urban designers have remained low level functionaries in the decision-making hierarchy in the bureaucracy and society and so they do not feel ‘responsible’ for failures of their plans or designs. When Delhi went through the trauma of sealings and demolition because of ‘illegal’ construction, architects and planners merely pointed fingers at politicians, bureaucrats and society-at-large.

The lack of recognising the complexity of the Indian society and also the lack of trying to find solutions within the local context have resulted in solutions that do not integrate well within the Indian society. Mainly the solutions benefit only those who can conform to its imperative and in India the majority cannot.

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41 (Menon s.f.)P4
The question now arises what architects can do to design an architecture that recognises the complexity of the Indian society and that can integrate well within the Indian society.

In regard of the previous several questions arise. If there is not a modern Indian architecture, what approach can the architect take? And which elements are important when designing a building in India?

Figure 15 – A stone window

In the old Indian monuments the detail is a very important element. But as has been shown in the essay by the author of this document about Indian architecture actually the element is the basis within the Indian architecture and the detail is the connecting part between two or more of these elements. Normally a building would be started with one element. This one element is placed in the centre of the location where a temple has to be built. This is done because in the centre the main Hindu God, Brahma, lives. Then this element is used to define (through a process involving for instance splitting and mirroring) the whole building.

This knowledge can also be used in our current time. But of course this asks for a different approach. In the old temple architecture the Gods are the central figures, this contrast with the project in this document, where the slum dwellers are the central figures. Also is the task of this project to find connection to slum dwellers and not to build a monument for all times. In the Hindu temple architecture

42 (Oijevaar 2007)
Brahma is the most important figure, so he is placed in the centre of the location and out of this place the whole temple is defined. In the housing for slum dwellers this is different, because all the slum dwellers have to be treated equally. For that reason the different rooms within the slum are the centres from where the building has to be defined.

In the current situation the slum dwellers live with their family in one house. This house exists of one room. For an architecture in this situation a room has to be seen as an element. The different elements together form the building. And each time an element is needed, it can be added. The new “building” that results when an element is added has to be seen as a whole. That is why an architecture is needed to make sure that the different elements as a whole still form a coherent picture that fits in the context.

In short this means that a system of rules is needed to make sure that an element has certain qualities. These qualities are defined by for instance aesthetic, constructive, building physical and urban rules. For every project these qualities have to be “re-invented”. To “re-invent” the rules a prediction tool, which is called the “five step plan”, is given.

This approach makes, as has been explained, a reference to the design method in which the old Hindu temples of South India were built. The approach also makes, because gradually the building will grow, a reference to the vernacular building method used in villages. This way the architecture will be made more understandable and accessible for the slum dwellers.
Helping the slum – a five step plan

As a tool for prediction the five step plan has been developed. First it has to be said that the slum dwellers will keep their house. Only through investments will the little houses grow. There are several reasons for this choice. As has been shown in many slum housing improvement projects in India the new buildings doesn’t solve most of the problems that existed previously. A lot of examples are known in which the slum dwellers moved from their “designed” house to another slum. Also does new housing in most cases destroy the social coherence and investments that have been done by slum dwellers previously. Furthermore is there a consensus that a participatory approach is needed when providing new shelter. This means for instance that shelter cannot be provided without influence and investments of the slum dwellers. Lastly the amount of slums around the world is growing much faster than governments are able to cope with. This means that in most cases there is almost no money available for helping slums.

The small houses in the slum will for that reason in the first stage be kept in the way they are. Through gradual investment and expansion of the small houses a whole building will appear. This process is already the case in most slums at this moment. There are several examples in which architects try to provide expansion possibilities for the slum dwellers, but mostly these projects exist of new and expensive structures that the slum dwellers themselves cannot afford. Also do all of these architecture schemes only provide the shelter. Other important factors, like money generation solutions and social cohesion, are not taken into account.

The approach for the project that is described in this essay is a different one. Here the architect will try to help the slum dwellers to steer the growth of the slum in a way that their life standard improves. The architect is able to help the slum dwellers because he can predict how the slum as a whole will grow and from that prediction he can make conclusions that will help him to decide what are important qualities for the slum and for the future developments on the location. But this is not the only task of the architect. He will also be a mediator between all the different actors. The architect is for instance able to talk to the city council about the rights of the slum dwellers, or to an NGO about providing water.

The power of the architect has to be defined beforehand by the slum dwellers and the architect together. But the architect will always be the one who must “sell” himself. He has to prove to the slum dwellers that they need him.

The method the architect uses to predict how the slum will grow exists of five steps:

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43 This can for instance be seen in the book (there is only one) about housing schemes in Bangalore. This book is called Mané. (organisation 1987)
44 See also the part in this document about slums
45 As can for instance be read in the Master Plan 2015 of Bangalore. (Authority 2007) P31
Step 1: The architect uses demand planning
Demand planning for architecture has its basis in forecasting. It is used in businesses as a means to provide reliable information to customers. It also enables the company to plan purchase orders more efficiently, so a better production scheme can be produced.\(^46\) For architecture this method can be used to predict, project and estimate the future building life\(^47\) and help with a better understanding of how and when certain decisions have to be taken within its life.

In demand planning two kinds of estimations play a role. First there are the time series. This can be described as a sequence of data points, measured typically at successive times and spaced at time intervals.

Secondly there is the cross-sectional data. This is a type of a one-dimensional data set. Cross-sectional data refers to data collected by observing many subjects (such as individuals, firms or countries/regions) at the same point in time, or without regard to differences in time. Analysis of cross-sectional data usually consists of comparing the differences among the subjects.

In the scheme described above the demand planning plays a double role. The time series are a tool to analyse the past and to use that information to extrapolate into the future. The cross-sectional data uses the current situation and looks at the differences between the different dimensions and it tries to understand how the future can be rightly balanced in the scheme.

When these two estimations are combined a framework for decision-making is the result. This framework exists of accurate user demand predictions (for instance the slum dwellers want more TV’s), it leverages historical usage schemes (for instance it can see if more water will be used in the future) and it manages the inventory replenishment (for instance it can see if the saved money will grow or not). Demand planning for architecture shows the architect what the need for the building is in the future. The architect can then use this tool to decide what decisions he or she should take. Of course the criteria’s that are used for this prediction have to be defined differently in every project.

Step 2: Analyzing the predicted plan
The architect knows now within a reasonable assumption what the future of the slum might look like. He or she then analyzes this process. He or she looks at the points in the planning where things might go wrong, or what things can be improved. He does this to get to know where the main problems lie in the future of the slum.

Step 3: Backcasting for architecture
The architect uses the analyzed data as a basis for setting a goal. This goal is defined by the backcasting model. Backcasting allows long term goals and visions

\(^{46}\) (Microsoft s.f.) only visible with “internet explorer”

\(^{47}\) The building life starts at the cradle and ends at the grave of the building
of different stakeholders to be set and helps develop a strategy to meet those goals. It does not focus on predicting the most likely future scenario, but it interactively defines the criteria that belong to a sustainable future. From there a common future vision is designed alongside the policy changes needed to reach that future.

In the slum this means that the architect sets a goal for the future. This could for instance be providing a “high” quality of life for the slum dwellers. The architect defines what the requirements of that quality are and he or she uses that as a goal. He or she then combines the improved demand planning and the backcasting model. In a sense that is looked at how the “high” quality of life fit in the improved demand planning.

**Step 4: Making a usable vision**

A future vision has been created in step 3. Now the vision has to be taken back to the current situation. The architect uses step 3 to define the focus points for the project. So he analyzes step 3 and looks at the most important points in that vision. These points are meant to be the usable conclusions of that vision. Points that can serve as guidelines for the architect.

**Step 5: A new building plan**

The guidelines that were the result of step 4 are used by the architect to design a new building plan. The architect then knows what the best ways for the slum to develop are. This building plan doesn’t only involve the physical building, but mainly explains how the overall quality of life for the slum dwellers in that specific slum can improve (this involves for instance also the social and employment part) over a certain time. These new requirements can be formulated in a “programme of possibilities”.

When the architect has finished this five step process he will go to the slum dwellers and he will explain to them the steps that are needed at the short term. He will explain what the benefits and flaws are. He could explain what the long term benefits are, but since most slum dwellers don’t have a long term vision (they live from day to day), the effect of the long term benefits will be poorly accepted. The architect should convince the slum dwellers that his plan is a good one and that they have to work together. If the slum dwellers accept the plan of the architect then the actual realisation will start.

**The things after the five step plan**

When the actual realisation of the slum improvement has started the architect will play a facilitating role. He will for instance help the slum dwellers with the realisation of the building and he will talk with the other actors that are involved (like the government and the NGO’s). The architect will look after the interests of the slum dwellers and he will have to provide them with practical information.
This could for instance be ways for the slum dwellers to get drinking water or a method for them to earn more money.

After a certain period (for every project this amount of time is different) the architect will have to go through the five step plan again. He will then be able to make a new plan about what the slum dwellers might need in the future and what steps they have to follow from that moment on.

The whole process as described above is a cyclic process in the sense that it repeats itself over time $x$. In another part of this document the method as described above will be explained through a real example. This is a slum near the centre of the Indian city of Bangalore.
Architect

Architect comes from the Greek word arkhitekton⁴⁸, which means “master builder”. Arkhi means chief and this word leads to archon. In 1659 this word is defined as a ruler⁴⁹. Tekton means builder or carpenter and this word leads to the word texture. Texture is in 1425 defined as a network or structure⁵⁰. So the word architect actually means that an architect is a leader who makes (tek- from textura refers to “to make”) a network or structure.

This means that an architect of a building actually realises it. He must know the whole structure and lead the building of that structure. It means that the architect is involved with the main structure of a building, but not with the filling in of that structure. He can set out the main focus points and realise those, but will let the filling in over to other people.

This notion of the architect influences the design process in this project very much. The project has to be designed by an architect, a person who creates the main structure of the building. A structure was in 1440 defined as an “action or process of building or construction”⁵¹. So actually the architect leads the process of building or construction. It is someone who leads the creation of the design and leads the making of the actual building. It is someone who does both. It is a person who starts with nothing and ends with a building, but does this only in the big sense. He does not do the filling in of the building. He makes the contours of a building possible, but not the interior. He does not place the chairs, the copiers or the carpets. He only does this if it is needed to realise the building. He leaves the placing and thinking out of all the things not necessary for the process of building over to other people, but he is the ruler over the building process.

So the architect is someone who starts with nothing and he starts making a building. Before 1624 making was the process of doing something. For instance in the sense of “to make Latin”, meant “to write Latin compositions”⁵². So this means that the architect starts making a building, but he does not necessarily finish the building. There does not have to be an end point.

So the architect has initially nothing. He starts with nothing and develops an idea. This idea is translated in the process of building. He initiates the building and keeps doing that. There does not have to be an end point. The only end point would be the demolishing of a building.
The same idea can be found in the philosophy of Hegel. The philosophy of Hegel consists of an absolute idea\(^{\text{53}}\). Everything is always trying to get to the absolute idea. The absolute idea is the truth.

Because of the complexity of the philosophy of Hegel it would take a too large part of the essay to give a full description. For that reason his philosophy will be explained with an example. Suppose you see an object. You have never seen it. You start to reason and you define the object (the thesis). Then someone else or yourself says no, that is not true, your definition is incomplete (the anti thesis). So then you start to reason again and make a new definition (synthesis and again a new thesis). Then again someone will come (or this happens in your mind) and say that your definition is not correct (the anti thesis). This process repeats itself into the infinite. Hegel says that at first you just know one piece of the puzzle and you think that everything is at rest. If you start to understand (construct) the real you will see that the object is in motion and you will see the whole puzzle. The truth about your object you will never know, because there will always come a

\(^{53}\) (Osborne 2007) P108
A tool to define the possibilities for the architect

Hegel provides the philosophical background for how an architect can construct a building. For the project the truth is defined by the best building possible. First there will be an indeterminate building. Or in that sense, there is no building at all. Then an architect will come and he will make a design. This design (or actually a modification) is the thesis. The users of the building will at a certain time have a will for modifications. So a new demand will be formulated. This is the anti thesis. The architect has to change the design. This is the synthesis and the new thesis at the same time. This process will keep going till the building doesn’t exist any more.

If a building of an architect would be build in our current time it would mean an architect would be involved with the building for all his life. He would bare total responsibility for the main structure of the building. It would mean that if the building after a certain time would not be good any more, that the architect would have to make the adjustments to the building so it functions well again. For this
the people that use the building will have to give input to the architect when the building doesn’t function any more\textsuperscript{54}. The architect then makes the adjustments. But because the structure of the building has to function well, he has to make the adjustments of the building with the help of the users. They have to give the input, the feedback, to make the building a success again. Discussions between the architect and the users are then needed.

This approach means a much bigger control over the building for the users, then is currently the case. If they think something doesn’t function well, the architect has to adjust the building. But also the control of the architect gets much bigger. He has the power to change the building at any time. He bears all the responsibility, but also has most of the power.

The architect can because of the above not make the “best” design in the begin. He can only learn what the best design for the building is over time. Because he has to make adjustments to it over time, it changes. And it changes towards the optimum. The best design. But he will never reach it, because reaching this goal is a never ending discussion with the users about what the best design is. Over time fewer adjustments would be needed, but the “best” design is unreachable\textsuperscript{55}.

For this reason the initial design, the design to start with, can never represent the “best” design. Because it will have to be adjusted over time. Also the requirements of the design will only be learnt while the building is going on. Not beforehand, but only over time the requirements for the building can be known.

The building gets very dynamic because of this approach. It changes over time, the staticness is gone. It adjusts to its surroundings and its neighbouring buildings adjust to that. In the end much more motion will be introduced into the build environment. If someone needs an extra room, the architect will design it and it will be added to the building, but because of the responsibility of the architect he can not design something that the neighbours do not agree with. They can file lawsuits, but the architect can also not do nothing and just sit, because than the users of the building can file lawsuits. The architect has to find the best solution for the place. He has to find the best possible way to add the room to the building.

\textsuperscript{54} This can still be seen in the legal structure that for instance in The Netherlands protects the design of an architect.

\textsuperscript{55} This is more clearly explained in the chapter about Hegel
The relation between design and research – the architect-as-cultivator

The architect and the position of him within the building process have now been explained. More should now be said about the design process itself. An explanation has to be given about how the architect comes to a design and what role research plays within the design. The design process itself is a “subjective” process, in the sense that it cannot be fully captured by rule-based propositions. As such, the process of designing is different from the process of researching, which is rooted in rule-based frameworks56. In his Critique of Judgement, Kant held that our enjoyment of art is inherently “indeterminate”. So it is not definable by proportional terms. According to Kant, the faculties of reason are aligned in fundamentally different relationships when engaged with aesthetic judgements than when engaged with determinate (sometimes called “scientific”) ones. Kant thinks that aesthetic experiences are part of the domain of reason – even though they cannot be fully captured by formulas, words, or other determinate modes of communication.

Kant holds that during aesthetic pleasure, the mental faculties sense a heightened “membership with nature,” and this leads to all the mental faculties being engaged “in play”. This produces a “purposive momentum” that in turn generates “aesthetic ideas”. It is these aesthetic ideas that strive for expression in empirical forms. This, in short, is how figural schemas emerge to produce what Kant calls “a completeness for which no example can be found in nature”. Kant calls this process a “poetic drive”. But this is also the case for the architect, the composer, the painter and the metaphysician.

The entire process of art production (under which figural design production can be subsumed) is indeterminate; that is, it cannot be fully captured descriptions, and yet it is within the domain of reason. So Kant’s aesthetic theory provides grounds for the idea that generative productions of art and architecture are rooted in different regions of the human faculties of reason. These generative productions do not play “second fiddle” to the analytic processes of the faculty of understanding, which itself is only another manifestation of the workings of reason.

So for instance all the things which are of any influence to a design (like an idea of water expressing the essence of timelessness, the empirical input received from images, the suggestions of teachers) contribute to the payoff his mental faculties to produce the figural scheme that represent “a light bulb going on” (the generated design idea). These complex factors all represent the workings of reason, although a reason that is not limited (and cannot be limited by) pure propositional definitions.

56 (Wang 2001) p104
In short this means that as an architect you receive a lot of different forms of information. This can be everything, from texts to the eating of an ice-cream\(^{57}\). Over time all these different impressions are “understood” and connected by your mind. If this process of mental reasoning is successful a usable idea is generated. This is the “light bulb that flashes on”. This can also be seen as the first “thesis” within the construction scheme. It is the way the first idea is generated for a project.

The way in which this process is used by architects is in a very simplistic way. As taught at a lot of architectural schools (like the faculty of architecture at the TU-Delft), the students normally learn to start the design by making very simple figural schemas, while the actual problems are very complex programmatically and socio-culturally\(^{58}\). Normally over the design process, a schema is analyzed, refined, tested, analyzed again, and so on, until a more responsive schema emerges. This way of education can be seen as the objectivist system. Herein knowledge exists outside the self and is passively absorbed by the self. Another and better approach is the constructivist system. Herein knowledge is actively constructed by the self.

In the next table the differences between the objectivist and constructivist system are pointed out\(^{59}\):

<table>
<thead>
<tr>
<th>Objectivist</th>
<th>Constructivist</th>
</tr>
</thead>
<tbody>
<tr>
<td>- One correct way to structure the world in terms of properties, entities and relations</td>
<td>- Many ways to structure the world, determined by experience and interpretations of the learner</td>
</tr>
<tr>
<td>- No prior knowledge or experience required. Prior knowledge might cloud understanding</td>
<td>- New knowledge is built on prior knowledge and experience</td>
</tr>
<tr>
<td>- Meaning is external to the learner and is independent of the understanding of the learner</td>
<td>- Meaning is imposed on the world by us and is indexed by experience</td>
</tr>
<tr>
<td>- Knowledge can be fragmented into specialized categories</td>
<td>- Knowledge is integrated and proceeds from simple wholes to complex wholes</td>
</tr>
</tbody>
</table>

Universal: Regardless of self, time and place
Teacher centred

Contextual: Rooted in self, time and place
Learner centred

The objectivist idea of knowledge corresponded to our earlier understanding of the human brain as a ‘processor’ of random, independent bits of information. This mechanic model has been replaced by our present understanding (the constructivist approach) which indicates that the brain is a ‘creator and sustainer of patterns’ which are based on a sequence of our lived experience. Just like Kant has shown.

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\(^{57}\) Le Corbusier got the idea for the roof of Ronchamps from a seashell

\(^{58}\) (Wang 2001) p114

\(^{59}\) (Badrinarayanan s.f.) P215
Design has to be seen as a “cluster of requirements” that has to result in an integrated solution. An example in the book “Architectural Research Methods” shows this with an example:

“The window is another unavoidably multidimensional component. As well as letting in daylight and sunlight the window is also usually required to provide a view while retaining privacy, and to offer natural ventilation. As an interruption in the external wall the window also poses problems of structural stability, heat loss and noise transmission, and is thus arguably one of the most complex building elements.”

Even a very common object like a window is a very complex object and for that reason it should be treated in that way also. The architect needs to learn to approach the design in multidimensional ways.

Not only the multidimensional approach to the design should be central, also should the architect work together with other disciplines. In the current post-industrial economy, projects have increasingly become large and complex. For that reason the design process calls for the expertise of a wide variety of disciplines and also for a more participatory approach.

Traditionally there have been two kinds of architects. Those that could be called the “architect-as-technician” and the “architect-as-artist”. Both these models not only set the architect apart from others, they also bring about a disjuncture between what architects design and what everyday clients may want. That is why the “architect-as-cultivator” has been proposed by Linda Groat. The “architect-as-cultivator” encourages five things:

- He or she emphasizes process, meaning that the architect’s spirit is collaborative and participatory
- He or she encourages interdisciplinary design, where different disciplines contribute to concert to a solution; community is inherent in this process
- He or she has a sensitivity for the cultural as the soul of design, meaning a vision for the common good with the architect motivating his or her team to recognize that a successful environment can only be realized by fully engaging the social and cultural milieu in which it is embedded
- He or she makes a lasting commitment to learning and self-renewal
- He or she is willing to take risk and experiment

The architect-as-cultivator is a person that oversees the whole scope of the building process and he designs the structure of the building. This structure

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60 (Wang 2001) p115
61 (Wang 2001) p115
62 As has been pointed out as one of the demands for a better approach for slums. See also the chapter about slums.
63 (Wang 2001) p116
64 (Wang 2001) p117
65 (Wang 2001) p117 and (Barrett s.f.)
66 For that reason the “real” architect, as described above, forms the basis for the architect-as-cultivator

72
starts at the cradle (the idea for a building) and ends at the grave (nothing of the building is left anymore). The tasks for the architect have thus now been explained in general and as part of the building process.

Also from the perspective of building for slum dwellers this kind of architect is needed. As has been shown in the chapter that dealt about slums the complexity of the slums is so big and the amount of actors and factors are so diverse that a solution that does not take all the relevant points (as are pointed out in the chapter about slums) into account will be a failure. The architect for that reason can only be a person that provides the structure for the design. He is the leader that shows the actors (from slum dwellers to government) which direction the project should go. But because everything is always in motion (as has been explained before) the solution is not a permanent one. Everything must be able to change when change is needed in the future. This means that the architect is leading a constantly changing process. The goal of this process is to improve the lives of the people that live in a particular slum. So the architect is trying to find a sustainable solution for the bad living conditions in a particular slum. But the question then arises what sustainability is.
Sustainability

Before something useful can be said about sustainability a clear definition is needed about the subject. The Compact Oxford English Dictionary refers to sustainable when is searched for sustainability. And it defines sustainable as: “I able to be sustained, 2 (of industry, development, or agriculture) avoiding depletion of natural resources.” The Cambridge Advanced Learner’s dictionary also refers to sustainable and this one defines sustainable as: “1 able to continue over a period of time, 2 causing little or no damage to the environment and therefore able to continue for a long time.”

Already in these two explanations of the word sustainable a difference can be seen. This is actually a difficulty found in the whole discussion about sustainability. Not a general agreement on the definition of sustainability exists. The main difficulty here exists in the word “to sustain” and durable. What can be agreed is that durable has to do with the time a product exist and that “to sustain” is about the time a process exists.

Another point of attention must be given to the second part of both definitions of sustainable. The first one talks about the natural resources and the second one about the environment in general. In the discussion right now it is not really clear what belongs to this part of the definition. Some say it has to do with the three words: People, Planet and Profit. Some only focus on a small part of the total process of natural resources and others only try to focus on the whole process of a product, but not at the planet and profit part. Another difficulty is why the definition of sustainable focuses on natural resources alone. It would be a consequence that everything is part of the definition. Able to be sustained already focuses on avoiding depletion of natural resources, but it also focuses on avoiding the destruction of theatre plays.

A natural consequence of the word is that it is conservative. It talks about the keeping of things and not about the losing of things. It is for that reason questionable to say that taking sustainability as a focus point will provide the best basis for an architectural object. It does not provide an objective basis for research since it automatically means a conservative method will and has to be used.

What can be done though is look at the important focus points out of the “normal” architectural field. The different subjects connected to this will have to be defined firstly. These subjects differ in every project. For instance in not every project it is useful to look at the importance of the depletion of natural resources, the generation of better social qualities or to see money as an important thing.

Sustainability in itself if just a word. It is not a concept like for instance the Bruntland definition. But that definition is about Sustainable development and not about sustainability in itself.

67 (Bruntland s.f.)
This Bruntland definition in itself is worth mentioning here. Because it is a conservative notion, but still of an essential quality. It talks about the conservation of the human species. It is in that sense very important. It states that it must be the main goal of sustainable development to guarantee the existence of the human species. It is a very complicated statement too. How do you guarantee the future of the human species for instance? Especially the aspect of the future is a very complicated one. According to the definition we have to survive. So a big question then arises. How do we predict how the humans can survive? Especially in a time when the climate is changing. Not only do we have to think about how the humans will survive on this planet, but also what he should do when the planet changes. About the humans on a not changing planet can only be said they have to generate the best way they can live on it. What the best way is, is not part of this argument. This could for instance be with or without religion, with or without money, or with or without equality. The only thing is that they have to make life the best the humans (whoever that might be) think it could be. One thing must be said though, that a human always lives with a certain paradigm or mindset and that he can never and will never know the real or best solution.

But now the world gets much more difficult when the world is changing. This doesn’t only mean that the humans have to think about themselves, but also how they can live in a changing world. There are four approaches towards this. Firstly the humans could do nothing. They could just try to get the best life themselves and they don’t recognise that the world is changing. Secondly the humans can try to adjust to the changing world. In that case the human says that he cannot do anything about the changing world and that only he can adjust him by for instance designing warmer clothes or better water systems. Thirdly he could try to change the world. In that case he could think he is the origin of the change and he starts to stop or change what he thinks he is doing wrong, or he could think he is not the origin of the change, but still wants to change it. Fourthly the humans could think a combination of the three firstly mentioned solutions would be the solution.

Three of these approaches have some difficulties. The first solution doesn’t give an answer for sustainable development. It says nothing about the future. Then humans that try change the world, or want a combination all think they can change the future, in the sense that they think that they know that their actions will stop the changing of the world.

Why the prediction of climate change can be seen as a difficulty is because currently there is no knowledge about how humans changed or adjusted to climate changes. That there have been climate changes that have affected humans before is known. For instance of the culture (the Aryans of which their highest cultural times were around 2000 till 1500 be) that influenced India, North Africa and Europe and everything in between is known that their settlements in

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68 (Philip Oldenburg 2007)
Turkmenistan (the biggest population in the then living world) moved according to climate change. But since only few people are focussing on this subject not much is known about it.

The only correct approach for that reason seems to be adjustment to the climate change. To try and find a way to achieve the best life possible on a changing world. In a sense as to adjust to it all the time. So if the climate changes a little bit, the humans will follow this change and try to make the best again.

Because we now live in a time the climate is changing the architect should help with providing measures that help humans to adjust to the climate change. Especially in slums this is important, because slums (as can be read in the chapter about slums) are affected more by climate change than other parts within the same city. This means that the architect has to find ways that the houses in the slums won’t be affected by the climate change. This could for instance mean that materials have to be chosen that will still be available in the future, or find passive and decentralised ways for electricity.

Conclusion about the system
Till now the problems concerning slums have been explained and some focus points have been given. The problems with modern Indian architecture have been pointed out and a possible solution for analyzing slums and giving a direction has been given. The “real” task of the architect has been explained and also how the architect gets his first idea, how he should construct a building and what his tasks are. Also it has been explained that the world is constantly changing and how the architect should take this changing (for the design, the building and the climate) into account.
Part 2

In this part this system that has been explained in part 1 will be explained through a project. First the city, Bangalore, where the project will be placed will be analysed and an explanation will be given why this city has been chosen as a location for the project. More information will be given about the slums in Bangalore. The opportunities of the location of the chosen slum will be explained. Then elements in the neighbourhood will be explained. After this the five step plan will be used to make a programme of possibilities for that specific location. Then the steps to improve quality of life within the slum will be explained.
Bangalore was founded in the 18th century and consisted of two parts. One was a fort and the other a small protected town on the north side of it. The most important activities were the cotton and silk industries. The origin of Bangalore was probably a hamlet of no particular importance from around four and a half century ago. There was a network of water tanks that supported mixed farming and market gardening activities. In the sixteenth century a fortified settlement emerged from the hamlet under the rule of Kempegowda. A network of temples and tanks in the settlement attracted many merchants and artisans who took up residence there. During the reign of Immadi Kempegowda (1569-1623) four towers were established around the city to show the power over the agricultural region.

Bangalore was located on an elevated ridge that sloped west to east. To the west were rocky hills, while the eastern areas were undulating. The British took over the region in 1799. The British made a new “city”, called the Cantonment. This part remained rather strictly military till the Indian Independence, but was accompanied by a Civil and Military Station. The old and new cities were separated by the 1864 Cubbon Park. The old city mainly was a cotton and silk textile centre, while the new was dominated by trades and services.

The big difference between the new and the old part was that the old existed of areas that “were enveloped in a warm, fetid air, rising from both human and animal excrement,
mixed in with smells of waste products from the textile and dyeing industries.”69. It existed of a dense warren of streets. With economic, religious, and domestic activity. This scale allowed for a full interplay of the human senses with the surroundings. For the British that build the new part this urban form “epitomized the very worst of city planning, and nourished disease and death”70. For the planning of the new part the relationship between the public space and the social and private life was redrawn. The streets were not the left over’s after the houses were set up. But it was a designed space that was made for moving things, like wheeled vehicles, bicycles or soldiers on parade. On the Indian side the layout of the streets were made by urban designers, which meant a grid. In this part more freedom, more space and less health problems happened. There was also a difference in the main economic activities of the both parts. In the Indian part cotton and silk stayed the most important ones, while the English part mainly focussed on the military, trades and services.

By the year of 1924 reached a population of 300000 people. Those people were mainly attracted by the trades, but also consisted of an expanding military base. English people who didn’t return to England after they had served the army, often went to Bangalore. This was mainly because of the mild climate and the way the English part of the city was planned. With wide open lanes and lots of green, the city got the name it still carries, “The green city”.

If we compare the beginning of the 20th century with the beginning of the 21st century than we can say that the city didn’t grow really fast. Only after independence everything began to change and by 1960 everything had changed. The city had now one legal system, it had expanded very much, the population had risen very much, from about 400000 in 1935 to around 1,2 million people in 1960, and the main economic activities had changed very much. In 1960 the public sector became the most important one of the city. Especially the aircraft, telephone, machinery and electronics sector were quite big. This change kept on going. By 1980 the amount of citizens had almost doubled and there lived around 2,9 million people in the city. Also the main economic activity had changed. It now focussed on the electronic and electrical businesses. Another very important thing was the arrival of Texas instruments. This company triggered an ICT boom in the city. This not only had a very important impact for the city, but it also had an impact on a national and international scale. Lots of foreign companies started to base their ICT activities in Bangalore. This attracted more and more people to the city, which resulted in one of the fastest growing cities of the world71. In 2006 an estimate of 6,5 million was made of the population in Bangalore72.

69 (Nair 2006) P45
70 (Nair 2006) P46
71 (Mayors s.f.)
72 Because the last census was held in 2001 only estimates can be given of the population in the city. Source used: (Union s.f.)
Because of this explosion of population coming to Bangalore and because of the companies that are going to the city the construction sector is, next to the ICT sector, the second main industry of the city.

Figure 19 – Different impressions of Bangalore

Because of the very big growth of the city it seems like an impossible task for the government to keep up with the demands of the city. There are a lot of problems for the city. The most urgent is the infrastructure (power, airport, public transport and roads) need. Multiple big companies have threatened to leave if the infrastructure doesn’t improve. When companies are really going to leave the city than that might change the prospect for a high tech economy in the city and in that sense tackling the infrastructure problems is a very urgent one.

There are a lot of sources referring to these problems, here I give two of them: (Kumar 2005) and (English 2005)
Why Bangalore has been chosen as the city to locate the project

Until the early 1970s Bangalore counted only a total of 132 slums with a population of about 123000. Twenty years later, there were approximately 450 slums with an estimate population of 900000. This is around 20 percent of the urban population. Also the government and private sector have not been able to reach the same levels of growth as the city itself did. Mainly this resulted in densely populated areas and illegal settlements. As has been explained above Bangalore is called the “green” city and has a lot of high-level jobs. Also Bangalore didn’t contain many slums in the past. This means that the city is right now at a point where action is needed to stop the city from becoming a city with many slums and a big inequality. The project will be able to provide with a solution for the slums that the regular upgrading – and development schemes cannot provide solutions for.

Slums in Bangalore

The city of Bangalore recognises several key issues that cause for concern in the city74:

- Overcrowding is a problem. In 2001 still 37% of the households had only one room housing. About 64,5% of the lower income group and 53% of the middle income group are occupied by the two room houses and only the higher income group experiences a more favourable situation with an average of 3,5 rooms per house.
- The stagnation of occupancy status: In 1991 there were about 50% houses that were occupied by tenants against 46% household owners.
- The persistence of tenants in small houses (one room): Among households with only one room accommodation, the tenants are more in number with 57% against 38% of household owners.
- Insufficient level of amenities in housing: Only 53% of the households have a water tap in their house.

There is an annual growth rate of 2,89% of the residential area (built and occupied). This doesn’t match the annual population growth rate of 3,28%. In addition, the numbers of households are increasing, which implies that the demand for housing has also increased. The deficit is therefore compensated by smaller sized housing and most probably by densification of space already urbanized. This data also reveals that there seems to be a rising disparity between the different economic classes leading to the expression of housing concerns for the economically weaker sections. The absence of affordable alternatives, that results in informal and under equipped type of housing.

Other major shift has happened in the public housing sector. On the one hand the public housing has declined (43,1% in 1991 to 22,8% in 2001), while on the

74 (Authority 2007) P31
other hand the informal housing in form of plots / sites has grown (from less than one quarter in 1991 to 55.9% in 2001). The private builders got a bigger share from 0.8% in 1991 to 5.2% in 2001.

In Bangalore there were 468 slums in 1999, but the city considered also a 20% more. A 10% growth rate was assumed for the next two years, which indicate an estimate 680 slums in the year 2001. The city acknowledges that the slums form a growing problem and they are searching for a solution. In the “Bangalore Master Plan 2015” the city explained her vision.

The government thinks it will have to be both a provider and a facilitator to expedite the process of providing affordable housing. They think that much of the housing need can be satisfied through redevelopment and upgrading of existing built-up areas. The way they are suggesting to do this is through:

- Shifting from plotted housing to group housing for optimal utilization of land;
- Encouraging private sector participation for development/redevelopment; and
- Encouraging optimum utilization of land and facilitating viable projects by removing unnecessary controls on height, set-back, etc.

As part of the housing strategy the government wants to see:

- The concept of land as a resource. This would mean that housing will be developed with private sector participation and investment.
- The provision of accommodation should be based on cost, with suitable arrangements for funding/financing keeping in view the aspect of affordability and capacity to pay including support from state and central government programs involving both Government and non Government agencies.
- Community Based Organizations (CBOs) and NGOs should be closely involved.

The government furthermore states that the slums are intricately linked economically and otherwise to the surrounding localities and consequently that the preferred development would be in-situ.

A distinction must be made though between the declared and undeclared slums. Declared slums are eligible for slum improvement measures (if the land slum dwellers occupy is owned by a government agency), while with undeclared slums that is not possible. Also undeclared slums can be more easily removed than declared slums. Even when improvements are made in declared slum-areas, slum dwellers are not necessarily more secure. The basic illegal characteristic of dwellers living on illegally occupied land remains. Slum improvements in Bangalore do not include transfer of landownership to hut-dwellers, unlike in several other Indian cities.

A clear-cut and visible distinction between ‘legal’ housing areas and ‘illegal’ settlements is not always made. Some of the older, more centrally located slums can
hardly be distinguished from adjacent non-slums, and within the category of ‘slums’ there can be wide variations\footnote{Also see the chapter on slums}. Slums in Bangalore are generally not big in size. As can be seen in the above figure\footnote{(Schenk 2001) P289}. The area of most slums is mainly between 0 and 3 acres. Also the population within slums is not very big. Most slums are not bigger than 1000 people. And from the slums that are between 0 and 1000 people the slums are mainly small.
A number of government agencies are responsible for activities which are directly relevant to the habitat conditions in slums. The three most important public agencies are the Bangalore City Municipal Corporation (BCC), the Bangalore Development Authority (BDA) and the Karnataka State Slum Clearance Board (SCB). The BDA and the SCB are controlled by the ministry of Housing and Urban Development of Karnataka State. In addition to these three major agencies, a number of others perform specific tasks, such as the Bangalore Water Supply and Sewerage Board, at the request of the SCB, BDA and BCC.

Government agencies do not, however, hold the monopoly regarding slum improvement and poverty alleviation. NGOs are also active in the city. They approach the problems from a wider perspective. For instance they run vocational training programmes, create employment opportunities or rehabilitate street children, etc. The NGOs may collaborate with Community Based Organizations (CBOs) at the slum level; and with locally established organizations of slum dwellers, or with active individual slum dwellers. CBOs and slum dwellers in Bangalore do not necessarily rely on government agencies or NGOs to fight their cause. In several slums, active men and/or women have taken initiative themselves to improve their social and physical living conditions.
Figure 20 – The locations of slums in Bangalore
**Location**

The chosen slum is situated in the east part and it is located at the border between a newer and an older part of the city. The slum is chosen as the main focus point for the project because of several reasons.

1. The location of the slum is quite central, with a lot of facilities nearby. This means the focus can stay on the location. The architect doesn’t have to focus on the provision of facilities. There are for instance multiple schools, multiple temples, a post office, a hospital and a bus station near by. The slum is also in the centre of a shopping area.

2. The infrastructure is quite good. The location only has to be connected to different infrastructures. This makes the development of the site less complicated and the focus can stay on the location itself.

3. The site is clearly defined. The side has a triangular form. On only one side there is a road. The other two sides consist of a canal and other buildings. Because the space is clearly defined, a lot of preconditions (like the possibilities for growth and the location of the entrances) are set.

4. The site is not big. This helps the architect to understand the location and the problem quicker. This will result in a quicker or more detailed initial design.

5. The location functions as a boundary. The location is on the boundary of a Muslim and Hindu area and a richer and poorer area. The location gives the possibility to help overcome differences between them.

6. The location forms the centre for shopping in the neighbourhood. This makes it easier to generate work. Shops can be placed to connect the shopping streets.

7. The location has a high potential. As can be seen in the master plan 2015 a neighbouring neighbourhood will be redeveloped. This transformation can give a boost to the neighbourhood where the slum is located and in that way help the neighbourhood itself.

8. The slum is almost not developed. This provides in a much bigger design freedom than would be the case in an almost fully developed slum.

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**Figure 21 – The chosen slum for the project**
An electricity pole is the cause for the current slum. The ground is presumably owned by the electricity company. This resulted in an empty space around the pole. People without housing then started building their house on that spot. That caused the current slum.

If the slum will gain a secure residential status stays a question. On the one hand does the city council not move slums any more, but on the other hand it is quite a prominent place in the neighbourhood. The value of the location also helps in feeding the impression that the electricity will be put under ground and that the location will be developed. If the slum people will be allowed to stay and live on the space will than stay a question. During the project will be assumed that the electricity pole will go away and that the slum people will be allowed to develop their slum with the help of an architect.

Currently the facilities within the slum are poor. There is no water tap point, there is no sanitation, there is no electricity and there is no waste collection. Cooking doesn’t happen in the houses. The soil is bad so the area doesn’t have a good drainage. In the slum 168 people are living. For that reason it can be said that there is an over population in the slum. There is right now no improvement scheme and no NGO or government institution is paying attention to the slum.

There are several types of houses, but the main one exists of brick walls with a sloping roof. The roof exists of wooden beams, steel plates, thatch and plastic. The structural quality of the houses is poor and the houses get very warm in summer and don’t have any sound insulation.

The income of the slum is mainly generated through work on construction sites, but because the people have to apply for a job each time a project has been finished their income is not stable. The people in the slum don’t save money and they don’t work together to improve their current situation.
Understanding the location

The surroundings of the slum are well defined. Many functions, like a bus station, multiple schools, multiple temples, a post office and a hospital, are nearby. In the surroundings a distinction can be made between the bigger transfer and shopping streets and the more residential streets.

The bigger streets are characterised by:

- Shops (on the ground, first and second floor)
- Trees
- Street stalls
- Religious buildings
- Electricity in the streets
- Garbage
- The sidewalks are used to put tubes and also to stall shop products

Figure 24 – One of the mayor shopping streets in the neighborhood

These buildings along these streets are mainly from one to five floors high. They don’t have finished roofs (so the building can be extended in the vertical direction in the future) and they are painted in many different colours.

The smaller streets are characterised by:
- Relatively small streets (not possible pass another car)
- Trees
- Flat roofs (so the buildings can be extended in the vertical direction)
- Different colours
- Electricity in the streets
- Tubes under the pavement

In both the bigger and the smaller streets the transfer between the interior and exterior of a building is characterised by a height difference. The ground floor is mainly located higher than the street level.

Also it is important to understand the difference between the slum and the neighbourhood. When it is put very boldly this is mainly characterised by:

<table>
<thead>
<tr>
<th>Slums in the city</th>
<th>City centre and surrounding neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less vehicles</td>
<td>More vehicles</td>
</tr>
<tr>
<td>Lots of people on the streets</td>
<td>Less people on the streets</td>
</tr>
<tr>
<td>Low rise ($\leq 3$ floors)</td>
<td>High rise ($\geq 3$ floors)</td>
</tr>
<tr>
<td>Less trees</td>
<td>More trees</td>
</tr>
<tr>
<td>Lot of waste in streets</td>
<td>Less waste in streets</td>
</tr>
<tr>
<td>Less smog</td>
<td>Lot of smog</td>
</tr>
<tr>
<td>Lots of animals (dogs, cats, chicken, goats, cows)</td>
<td>Not much animals</td>
</tr>
<tr>
<td>The street is the sanitation</td>
<td>Sanitation is in the house</td>
</tr>
<tr>
<td>Big social control</td>
<td>Not much social control</td>
</tr>
</tbody>
</table>
Positive elements from the neighbourhood that can be used in an improvement of the neighbourhood are:

- Add shops
- Add trees
- Responsibly handle waste
- Use the sidewalks as a transfer between the interior and exterior and put tubes under them
- Make flat roofs and provide the possibility to extend the building in the future
- Add sanitation

**The five step plan on the location**

The five step plan has been used for the location. On the cd the worked out version for this location has been given. Here only the several steps will be explained.

- An analysis of the location has been given.
- For each family an analysis has been made concerning the shape of their house, the amount of people that live in the house, the kind of materials are used in the house, the amount of waste one family produces and how much water they consume, what kind of jobs the people with in the family have, which income they have and what the expansion possibilities of their house are in relationship to the neighbouring houses.
- Concerning the size, expansion, income and quantity of people a value was given. The combination of these four decided how prosperous one family is and what their chances for improvement are.
- Then a prediction was made with the use of the chances for improvement of each family.
- The result was one building that lead to a programme of possibilities.

<table>
<thead>
<tr>
<th>Lot of visible children working</th>
<th>Not much working children visible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street is playing ground</td>
<td>Street is for cars</td>
</tr>
<tr>
<td>The self-made houses have a lot of colour on the facades</td>
<td>Not much colour on facades</td>
</tr>
<tr>
<td>Near rails, water, electricity masts, dump yards</td>
<td></td>
</tr>
<tr>
<td>Not English speaking</td>
<td>English speaking</td>
</tr>
<tr>
<td>More Females and Children on the streets</td>
<td>More men on the streets</td>
</tr>
</tbody>
</table>
Programme of possibilities

The programme of possibilities can be found on the cd. But it consists of the different kinds of people and what kind of rooms they need. How big their rooms must be, on what floor their rooms must be, if they can share their room with other persons. It also gives information about:

- The amount of toilets, showers, taps and stoves
- The interior climate (Temperature, air, lightning and sound)
- Plants
- Water
- Soil
- Fire safety
- Traffic
- Building materials
- Electricity
- Cooling
- Food
- Waste
- Stability
- Work (where they need to work and how big their workspace should be)
- The place where can be build
- The kind of elements that can be added to the project

The Programme of Possibilities gives many practical guidelines for the project. They are not rules though. They are practical building guidelines that the architect and (to a little extend) the community can use to design the building. With this programme of possibilities the real project can be started. This consists of three parts. First money will be generated so the community has money to invest in their location. Secondly the location will be improved and thirdly the improvement of the lives of the community members will get better.
The approach

1. HAVE SOME MONEY
   - Attract an architect
   - Form a community
   - Get some members to follow an "entrepreneurship training program"
   - Let the community take a loan from a bank
   - Let the community start an enterprise
   - Use the dividend of the enterprise to improve the slum

2. BUILD WHAT YOU NEED
   - Community wants a space
   - Community and architect choose location
   - Workshop to build the space
   - Design sheets, workshop remind posters and website as "help" information

3. IMPROVE YOUR LIFE
   - Get schooling
   - Get a higher income
   - Get access to networks
   - Get "official" house
   - Get safer living environment
   - Get the possibility to vote
1. Generate some money

Attracting an architect

To improve the lives of the slum dwellers first an architect is needed. As has been described before the architect is a leader who makes a network or a structure. He is the person that oversees the project and is able to steer it into a desired direction. The architect has for that reason a leading role in this project. He will have to guide the upgrading of the slum, but to achieve that goal he also needs to motivate and school the slum dwellers (for instance form a community), he needs to generate (for instance by starting an enterprise) and be efficient with funds (for instance by saving money through cheaper water systems) to realise the upgrading and he needs to make the building work (for instance by treating waste). In the following chapters the different elements for a successful project will be explained.

Building a community

Already several things have been said indirectly regarding community building. For instance that the people within the slum are shareholders of the slum and of the business within the slum. This way the slum dwellers all have an interest in the slum. It means for instance that if you are a slum dweller and you have an interest in the slum as the place that generates your income and that gives you shelter there is a high chance you want also the other slum dwellers (share holders) to work hard to make the best of the slum. Because they are share holders they will directly “feel” if the business or the slum is not a success. Because the slum dwellers are share holders it is also possible for them to move out of the slum (sell their share). The architect has to be the one that helps the slum dwellers to sell their share in the most profitable way. Also the self help groups will help to bind the community within the slum.

Schooling the community members and taking a loan from the bank

Except for employment generation also some financial schemes are needed. As has been pointed out in the chapter about slums there are four different dimensions of urban poverty. Three of the four can be found in the slum that has been taken for this project. Those are low human capital, low social capital and low financial capital.

To overcome this poverty several steps are needed. First some slum dwellers will have to be selected. These slum dwellers will be the ones who will bear greatest responsibility within the employment scheme that has been described earlier. These slum dwellers are democratically chosen by the people of the slum and the chosen slum dwellers know that the profit that will be the result of the final business will be for the whole slum. These slum dwellers will follow a course at a “self employment training institute”. These institutes exist over the whole country.

77 This means in a participatory manner. So the community will have, because the project is about improving their lives, a veto and will be the main decision makers.
and they are owned by different banks. Also do most organisations, government and others accept the model? The main goal of these institutes is to change the mindset of people and make them active entrepreneurs instead of passive employers. A quote by Dr. D. Veerendra Heggade, who is the president of one of the institutes, is: “Instead of writing someone else’s account through wage employment, after three to five years of collegiate education, it is more meaningful to write one’s own account by embarking upon some self-employment”

The purpose of the training is not only passing information but it is to give a sense of confidence among the trainees, to change their attitude of dependence, and form the habit of thinking positively. Another difference is that the training is mainly based on learning by doing, and not learning by listening. The goal of these short-term training is to enable beneficiaries to set up and manage their own enterprises successfully. The success of the scheme lies not only in effective training but also in a combination of pre-training orientation and post-training facilitation. There are four stages within one training:

1. Orienting the person to the training
2. Developing the motivation
3. Giving information and exposure for selection, preparation and launching of the project
4. Managing the enterprise

After the slum dwellers have finished the course they are able to take a micro credit loan from the bank that provided the course. This loan can then serve as the initial investment in the employment scheme.

**Let the community start an enterprise**

As was shown in the chapter about slums, creating employment for the people that live in them is crucial. Without a form of income generation any slum upgrading scheme will be a failure. For that reason next to the overall scheme an employment scheme is needed. Before has been explained how some people within the community are educated so they are able to start an enterprise. The schooling institute will help to motivate the people from the community to start an enterprise and to make them get a loan from a bank. But only the schooling is not enough. Much guidance and professional designs are needed to make an enterprise really successful for a community of 168 people.

In 1989 a company called MAYA organic was started. Its main goal was the eradication of child labour, working with communities across slums and low-income areas of Bangalore. It saw that this wasn’t enough and now it says “it draws
from the premise that merely providing greater access to economic capital or training for the informal economy workers is inadequate to support them to develop capabilities to appropriately enhance their skills.”

“In today’s knowledge-based economy highlights the complex dimensions of capital as a combination of various aspects such as knowledge, finances, capabilities, political influence, etc. In such a situation, MAYA ORGANIC believes that partnering in a manner that is mutually supportive and beneficial is the only way forward.”

As an explanation can be given the train of MAYA that won the UNESCO seal of excellence in 2004. In the scheme MAYA made a professional design. This design is given to the people of a slum. Several people of the slum would then start making the separate parts of the product (for instance someone the wheels and another person the bodies of the trains). If they finished their parts they would sell their parts internally to someone else in the slum who connects the different parts. This is done to introduce some quality control (if a wheel is not good this person doesn’t buy it). Then the person connects the parts and a train is finished. He then sells this product to MAYA organic. The slum dwellers are also allowed to sell it to other companies. In the end the international markets are opened by MAYA organic. So the selling power of the slum dwellers gets much bigger.

The possibilities for generating work at the chosen location are quite big. It is located on the corner where two shopping streets connect to each other. If shops are placed than the community can sell their products directly from these shops.

**Use the dividend of the enterprise to improve the slum**

Once the employment scheme starts generating profits these profits will be collected and put in a fund. This fund will be owned by the community. The different community members are in that sense shareholders of the slum and of the business. This fund will, through a micro credit scheme, be at the bank that provided the course. The community members (share holders) have to decide together what happens with the money on the bank. This money will always be used for the slum or the business.

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81 (Maya organic concepts s.f.)

82 The profit is the money that is available after everything has been paid. So that means also the slum dwellers that work in the business have been paid.
There is also some relief aid. This means that some NGO or the government will provide aid to the slum dwellers. This aid can only be provided after the slum dwellers have first made an investment themselves. An example could be a water tap. The slum dwellers will pay with their fund for the water tap. The NGO will then provide water for free for a certain period. The main rule has to be that the aid is always offered after the slum dwellers have made an investment themselves. This construction is needed to prioritise the investments and also to ensure cooperation by the community.

Except for the fund there could be other saving schemes between slum dwellers on a more private level. These saving schemes will be in the form of so called “self help groups”. These groups are widely known in Bangalore and very popular. This could be women saving money together. They save together (for instance a certain amount every week) and in that sense make a sort of bank. Because they save together they have a bigger amount of money to provide loans. The women then can take loans from that bank. An example could be a woman that can’t pay the weekly fee for her son because she had to spend the money somewhere else. Because the woman has saved money through the self help group she will be able to pay the weekly fee. Another benefit of the self help group is the possibility to take a loan for a cheaper interest than would be needed at a regular bank.

The architect has to organise that the slum dwellers learn how to use these kinds of finance schemes. He can for instance organise this by approaching banks and NGO’s to help the slum dwellers.

To conclude these financial schemes have to provide the means to stop the poverty in the slum and to get the slum dwellers out of the poverty trap. The low human capital can be solved by the self help groups. The low social capital can be solved by a combination of the self help groups and the new business and the fund that is connected to that. The low financial capital can be overcome by a combination of education scheme, the new business, the fund and the aid. The fund, the self help groups and the aid also have the function to take the unpredicted peaks in costs away.

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83 There are a lot of those self help groups. Sometimes they are started by NGO’s. One example is a NGO called SBHR that is located in Bangalore and is supported by Philips
The role of the NGO’s, the government and the architects’ union

In the slum the NGO’s play mostly a facilitating role. They will help the slum dwellers in different ways. They can for instance help them with setting up self help groups, providing long term aid (for instance for the delivery of water) and help the slum dwellers in other ways. This could be for instance what the role of women is, what the rights are of the slum dwellers are, how the slum dwellers can achieve family planning (and in the mean time also providing condoms), or provide free medical consults for the slum dwellers. If a space is available that is big enough then this last function doesn’t have to be limited to their own slum. Then also people from the surrounding slums could come and learn. The task of the architect here is to try to get the NGO’s to the slum and he could coordinate them to provide in the need of the slum dwellers. Because the architect is independent he can also control if the NGO is doing its work correct, otherwise he can warn the slum dwellers and then they can decide that they don’t want that specific NGO any more or that that specific NGO has to change its way.

The role of the government is a difficult one, because they have to be able to trust the architect. They need to trust him because he needs a lot of freedom. The way the building is going to look in the future is not known yet. The government can in that sense play a facilitating role. It has the law and an urban plan that can be used as means of controlling the site. So the boundaries on of the plot can be defined and the structural quality of the building can be known. The architect then has to make sure that those rules are met. But the government has to provide the possibility that the building can grow over time and that the building will never be finished. The government has to accept that the building will change all the time. In this specific project the government could define the project as an experimental project. So the possibility to grow in this way will not be provided elsewhere, only if this project succeeds then more places can function in a similar way. Because this approach is new it could also be of great value to the government. If it succeeds than the city of Bangalore will always be mentioned as the city where this “success” story was started.

The architects’ unions will be the institution that controls the architect. This level of control is needed because the architect will be at a crucial level for the upgrading of the slum. His power must for that reason be controlled. This control will be done by a commission of wise men within the architects’ union. This control has the form in reporting to the commission and research by the commission (for instance visits to the slum or organising interviews with the slum dwellers). Another task of the architects’ union will be to research different and new solutions for slum improvement. These don’t only exist in the provision of new ways of building, but also concern for instance the materials and the social cohesion within a project.

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84 Success can be measured here by the speed that the quality of life in the slum improves
To conclude can be said that the control system has been explained. It functions the same as in the “separation of powers” of Baron de Montesquieu.\(^85\) The architect is the legislative power (he or she makes the “laws”), the slum dwellers are the executive power (they are the real “makers” of the building) and the architects’ union is the judicial power (they control if the architect isn’t misusing his power).

2. Build what you need

Materials

As has been explained in the chapter about slums, labour intensive solutions have to be used while building. While the building method has been explained, nothing has yet been said about the materials that the slum dwellers should use to extend their houses. Because of the overall concept the choice of materials can change over time, in the end it might not even be the ones selected by the architect at all. As has been explained before the architect has only the power to advice. If the slum dwellers don’t want to use the material the architect suggests, then the architect has to accept their choice.

Historically the buildings in a human settlement are determined by the relative wealth and poverty of its individual inhabitants. This means that houses and monuments were constructed with the material easily available in the vicinity\(^86\). Only the elite attempted to procure articles and materials from distant regions, in addition to the local materials. Historically this was true, but in the current world it gets more and more easy for poor people to use materials originally not available to them. Clearly this can be seen in the use of concrete. Reinforced concrete has swept middle-class South India. Some houses reflect traditional forms, no longer functional, in concrete. Others only express surplus wealth. Tawdry decoration, functionless frills and alien expanses of glass appropriate to dim northern climes are the vogue. Such buildings are not only more expensive to put up, paradoxically; they require excessive energy to cool and light. Large picture windows must be veiled with thick curtains to keep out glare and heat\(^87\). Quite often the only reason for using this material is the easy access to it and the status it has. An example is the mud mosques in Mali\(^88\). Historically these mosques were made of mud. This material had a very good thermal quality. Furthermore it had a big social component. Every year the rains would affect the building and when the rain season had ended the people of the community would come together to rebuild the building. This didn’t have to be in the original form, but an extra tower could be added, or some other part could be made bigger.

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\(^85\) (Philosophy 2003)
\(^86\) (Qaisar 1988) P1
\(^87\) (Cooper 1998) P168
\(^88\) (Snoeks 2005) P112
The restoration of the building made the community come together and let them celebrate the start of a new fertile year. In a lot of cases these mud mosques have been replaced by concrete structures. The reason for this is that there is no reason any more for the people to restore the building. This makes the whole building in the end cheaper. But the concrete structures don’t have a good thermal insulation, so inside the mosque it would get very hot. Also did the social relation with the community change. This means that in the long run the building gets more expensive, because for instance more insulation has to be provided.

The choice of materials then has to be looked at very closely. In the current world connected to climate change, the sustainability and durability (next to the aesthetics) of materials must be studied, before making any decisions. In India there are two main materials that were used by the common people. For the communities that didn’t stay at one place for a long time, because they lived by hunting, food gathering and slash-and-burn cultivations, there were the materials that were in their nature equally impermanent: brushwood, light timber, reeds, wattle coated mud, and thatch. For the settled communities, the universal material was mud for the walls and light timber and thatch or tiles for roofing. A solid mud house has a lot of benefits. It endures, is permanent, needs only minor annual repairs, is cheap, climatically sound, provides security, and does not need any great effort to construct. A joint family could easily erect the mud walls and the only expert required was the potter for manufacturing the tiles. Even when forest timber was plentiful, the mud wall was preferred because the timber house

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89 (Guinea February 21, 2007)
had many problems. A fully wooden house, of the kind found in Russia, required finely cut timber in large quantities, and the assistance of a carpenter at all stages of construction. In addition, the timber had first to be seasoned otherwise it would bend and crack and make the dwelling unliveable. That was the reason why even in timber-rich regions of ancient India an all-wooden house was never constructed. Even the load-bearing portion, namely the walls, were never wholly of wood. The plain mud wall was at all times more economical and equally, if not more, efficient in providing shelter. It was the roofing which could not be made of mud – as it was in the Middle East, using vaults and domes – because of the heavy rains of the monsoon, and hence the use of burnt tiles supported by light timber framing was the only alternative. It was again the relatively wet climate which prevented the manufacture of sun-dried bricks for use in walls, and all mud walls were made by hand, placing layers of mud one over the other, the walls being slightly sloped inwards to prevent overturning through slight errors in alignment90.

Usually wet mud is used directly, mixed with cow dung, and perhaps given more body by adding chopped straw, gravel or stone. A wall is built up in courses about 30 cm high, each left to dry until it can bear the next. This is the most common method of mud building. There are also alternatives, like the Santal tribe of Orissa and Bihar use a variant, souring earth by the addition of vegetable waste and leaving it to mature. The decaying waste produces tannic acid and other organic colloids, greatly improving the mud’s plasticity. It is then cut into slices to use as building blocks.

In Ladakh, where rainfall is very low, another form of mud construction involves the use of wood shuttering within which a course of mud rich in river gravel is beaten down. When a course is dry the shuttering is raised, and the process repeated. The result is a compact, well consolidated wall. The picture shows this kind of wall.91

The leatherworkers of the Kohlapur region make building blocks by pounding a mixture of mud and pebbles into large square moulds, then drying them in the sun92. When agricultural wealth accumulated, a family would change to one of brick (burnt brick).

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90 (Pramar 2005) P210
91 (babasteve April 13, 2006)
92 (Cooper 1998) P21
In eastern India bamboo became a more prominent material of construction, due to its plentiful growth in the wet and humid climate of that region. But the defects of bamboo were two-fold. One, it does not last, being easily destroyed by fungus and also steadily weakened by moisture. Two, bamboo has little resistance to bending, especially to loads imposed upon its length, so that it cannot efficiently be used as beams to carry any great weight. To meet this weakness, the typical dwelling of Bengal used bamboo to construct the roof by giving it a reverse bend upwards, making it like an arch. By this means, the bamboo was able to better resist bending downwards under load.

The walls could also be made of bamboo uprights with the spaces filled in with reeds, but this whole system of construction was flimsy and inherently weak and was never used for any significant architecture. Bamboo has been and is used for the construction of temporary structures such as sheds and pavilions. But it must be noted that there are 700 species of bamboo in the world and 200 in India alone and that they provide some of the richest resources found in the plant world. They vary greatly in size.

Tiles compete with thatch as the principal material for pitched roofing throughout India. Amongst several forms of locally made terracotta tile, most common is the ‘Roman’ type, semicircular in cross-section. Another roofing media were paddy and coconut thatch (both inflammable).

Stone has mostly been used to make ashlar, brackets, door and window surrounds, coping and jali (latticework). In a hot climate the lattice screen is a perfect replacement for glazed windows. On the principle of the lace curtain it protects privacy, gives a view of the outside world and allows a through draught.

South Indian granite is too hard to feature in traditional architecture except as rubble or for door surroundings, pillars and steps. Laterite is a primary building material in western coastal states such as Kerala, Karnataka and Goa, and is used in all types of structures.

Timber was used for most of the early monumental construction in India. Over-exploited despite conservationist legislation, timber has become increasingly expensive, thus less used. Of the timber sorts, deodar (Indian cedar) and saag (teak, Tectona grandis) are of importance. Because teak forests have been shrinking now anjili (Artocarpus hirsute) is used more often. Another sort that is used in the south of India, apart from teak, is the timber of the jackfruit tree for joinery, whilst shemmaram (soifruida fibrifuga) is by tradition popular with Hindus for their houses. A tree not very commonly used in construction, but cut in sufficient quantities near Bangalore by the Karnataka Forest Department, is

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93 (Pramar 2005) P211
94 (Cooper 1998) P36
95 (Cooper 1998) P28
96 (Cooper 1998) P29
97 (Karnataka forest department 2005 - 2006) Table 4
the Eucalyptus. This tree is suitable for construction and it is cut in a sustainable way.

Palm wood, especially from coconut (Cocos nucifera) and Palmyra trees, is popular for building where available. The timber is strong, flexible but very fibrous – good for ridge beams which tend to curve downwards, battens, rafters and posts. It is useless for carving.¹⁹⁸

**Materials in the project**

Generally there are a few materials which will be used mostly. For the project described in this document CSEB will be used as the main building material for the walls. This material has its basis in the mud structures as described before and it has many benefits⁹⁹:

1. It is a local material. The production can be done on the site itself by using the auram press 3000. In this way it will save in the transportation, fuel, time and money.

![Figure 29 – The auram press 3000](image)

2. It is a bio-degradable material. If the building falls down and a jungle grows on it then the bio-chemicals contained in the humus of the topsoil will destroy the soil cement mix in 10 to 20 years. Meaning that the nature will absorb the whole material.

3. Firewood is not needed to produce CSEB. In this way forests will be saved.
4. It is energy efficient and eco friendly. It requires only a little of stabilizer and then the energy consumption in a m³ can be from 5 to 15 times less than a m³ of fired bricks. The pollution emission will also be 2,4 to 7,8 times less than fired bricks.
5. It is cost efficient. The CSEB is produced locally, with a natural resource and semi skilled labour and almost without transport. This results in fewer costs.
6. It is an adapted material. Because it is produced locally it is easily adapted to the various needs. Technical, social and cultural.

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¹⁹⁸ (Cooper 1998) P32
⁹⁹ (Maini s.f.)
7. It is a transferable technology. It is a simple technology that requires semi skills, which are easy to get. Simple people are able to learn how to do it in a few weeks. If schooling is provided it can be learned in one week.

8. It is a job creation opportunity. CSEB allows unskilled and unemployment people to learn a skill. This gives them the possibility to get a job and rise in the social values.

9. It creates market opportunities. According to the local context, the final price will vary, but in most of the cases it will be cheaper than fired bricks.

10. It reduces imports. Because the material is produced locally by semi skilled people, there is no need to import from far away expensive materials or to transport it over long distances.

11. It is easily socially accepted. As has been demonstrated since long, CSEB can adapt itself to various needs: from poor income to well off people or governments.

To guarantee the quality of the CSEB over a longer period they can be made water proof or a plaster layer can be added. The benefit of the water proof CSEB is that less maintenance is needed on the building, but with the waterproofing the material is less ecological friendly and can not be re-used without loss of quality. That is why in this project CSEB with a plaster layer will be used. Because different parts of the building have different requirements, three different types of plaster will be used:

1. As a plaster on the outside side of the wall the “Gohber leaping” method\textsuperscript{100} will be used. This is a traditional waterproofing in India and consists of one part cow dung and five parts earth.

2. As a plaster on the outside surfaces where people will walk a stabilised earth waterproofing\textsuperscript{101} will be used. This is a plaster based cement, lime, tannin and alum. This technique has been developed by the Auroville Earth Institute, which is a UNESCO chair for Earth architecture.

3. As a plaster in the “wet” interior zones of the building a tadelakt\textsuperscript{102} plaster will be used. Tadelakt is a plaster technique originally used in Morocco. By adding different additives it is possible to get different colours. The material has a very smooth feeling and it temporarily changes colour when water gets onto the surface. This plaster is not known in India. It will provide the slum dwellers with a new technique that they can use for employment.

Wood will only be used in the doors and the windows of the building. As has been described above eucalyptus wood is a good choice because a guarantee can be given the wood is cut responsible. The exact of this kind of wood is not known at this moment. If the costs of the wood seem to be too expensive then another kind of wood can be chosen.

\textsuperscript{100} (ITDG Volume 26/Number 1 June 1999, ATBrief No28)

\textsuperscript{101} (Institute s.f.)

\textsuperscript{102} (Casasud s.f.)
Integrated Sustainable Waste Management and water in Bangalore

The combined effect of service deficiency in the solid waste, sanitation and water sustainability forms a big problem in Bangalore. Solid waste is collected regularly, but the waste treatment is an issue of concern. While 2200 tons of waste are produced every day, only 300 to 350 tons of waste are treated every day for composting. The remaining waste is disposed in an unhygienic manner. Also the sewage network is not sufficiently providing services. In 2001 only 30% of the Bangalore population had a sewage network connection. The lack of connections in relationship with potable water forms a major concern for the city. Also water poses a problem for the city. Water resources constitute mainly surface and groundwater. Regarding water in Bangalore there are many problems. There is a pressure on existing water resource surface, there is inefficiency in water use, there is deteriorating water quality and there is a depletion of ground water resources. These three points ask for special attention when building a project in Bangalore. That is why special programs will be used in the project.

The Urban Waste Expertise Programme

In Bangalore an integrated sustainable waste management programme exists. This programme has three dimensions:

1. The stakeholders involved in waste management
2. The (practical and technical) elements of the waste system
3. The sustainability aspects of the local context that should be taken into account when assessing and planning a waste management system

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103 (Authority 2007) P45
104 (Centre s.f.)
105 (Scheinberg December 2004) P7
In Bangalore specifically the programme focuses on:

- Solid waste management
- The encouragement of corporate relationships in the delivery of urban services
- Facilitating community participation in services, thereby increasing transparency and efficiency
- Facilitating greater interaction between citizens and service providers
- Spreading awareness on environmental and civic issues by targeting the general public, students and community-based groups

The programme will help to dispose the waste produced on the location in a safe way; it will teach the people in the slum how to treat waste in a good and efficient way. It will also save the community money and it will help to reach a better and more hygienic environment.

**Water and sanitation**

Regarding water a distinction must be made between rain water, drinking water and used water. The rain water will be used to charge the groundwater. As has been pointed out before, Bangalore runs out of groundwater quickly and it needs to be charged. This means that the ground surface of the location will be made of baked stones with sand in between them. The water will be able to penetrate the ground through the sand. If there is too much water (for instance during the monsoon), then the excess water will be directed towards the canal.

For the drinking water and the used water a different system exists. The drinking water will be pumped up to a water tank. The used water will be (if it is reasonably clean) pumped to a UV filtering system. This filtering system is based on PET bottles which are put in a series chain on the roof of the building. The UV of the sun will filter the water so it can be re-used for drinking. When the water is filtered it is also directed to the water tanks and mixed with the “new” water. This way water will be saved. The PET bottle system is very cheap as a filtering system and quite easy to fabricate. The re-use of water will save water and costs. Water that has become too dirty will be directed too the sewage network. The different
functions within the building will define if water will get too dirty or if it doesn’t get too dirty.

The toilet will be a composting toilet, also known as the nonolet\textsuperscript{106}. This toilet can be made by the community. It is a relatively small toilet that works on the principle of covering the faeces with a high fibre paper to stop odours. The urine is separated from the faeces through a tube which is connected to the back side. This tube needs a connection to the regular sewage network of the city. Some benefits of the system are that it is cheap, it can be made by the community, it needs only small tubes and it is easy to place at different places within the building.

\textsuperscript{106} (centre 2007)
The building tools

As has been explained before the slum will be upgraded. This will happen through:

1. An architect comes
2. A community is formed
3. Some members from the community follow an educational course that learns them how to be entrepreneurs
4. The community takes a loan from the bank
5. The community starts an enterprise
6. The dividend of the enterprise will be used to invest in the slum
7. The actual building will happen

The actual building happens through different steps and tools. There are four different tools that provide information for the actual building process:

- The design sheets:
  These sheets provide information concerning the structure and the basic elements of the building. It gives maximum and minimum distances. For instance they explain what should be the minimum of blocks between one corner and a window. Another example is the height of the window. The design sheets use blocks as the measurement system. The design sheets are mainly used by the architect and other professionals. The community will use them less.

- The workshops: The workshops are used by the architect and other professionals to explain how a certain space can be build to the community. The community will build the spaces themselves and the architect will explain them how it can be build. The community will learn how to build by doing and not by reading. Suppose the community decides it wants to build a communal bathroom. Then the architect and the community will walk on the location and decide together where the bathroom can be build. The architect will then guide the community in building the space. So first they start with making the ground ready for building, and then they start to make the foundation, etc. The function of this method is that the community will learn how to build themselves. This means that during the construction of the first
spaces the knowledge and guidance of the architect is really needed. After a certain amount of spaces the architect will be less needed, because the community has learned how to build the spaces themselves.

- **The workshop remind posters:** These posters provide information concerning the actual building of a part. For instance it explains how the foundation should be build. It gives this information with photographs and it contains almost no text. These posters can be used by the community. Suppose that the community has built a foundation already many times, and then they have learned how this foundation has to be build. The architect will be less involved in the building of the foundation. The community can then use the workshop remind posters when they cannot remember how a certain step within the building of the foundation has to be done. The picture on the remind poster will show them which step has to be taken.

- **The website:** The website is the supporting element within the building scheme. It is a tool the architects’ union can use to provide information concerning the building method. For instance the drawings for a certain building will provided on it, but also the website can be used to provide research findings of the architects’ union.

**The building parts**

To guarantee a coherent building after the community has built the different rooms there are several building parts. These consist of:

- **A routing to keep** — Gradually spaces will replace the “old” slum. To ensure a rational way of building a routing will be kept free. This routing will be based on the existing slum.
- **Brick making place** — A place on the location has to be kept free to place materials and the auram press 3000. This place will be used to make the compressed stabilised earth blocks from the 240 series.
- **Streetbench** — The streetbench serves multiple purposes:
  1. It is a social place that people can use to sit or lie down. It is also a reference to the village architecture of India where these kinds of places are well known.
  2. It provides space for tubes.
  3. It forms a boundary between the interior and the exterior space.
- **Open spaces** – Within the routing to keep some spaces can still be left open. For instance to provide a better lightning or a more efficient interior to the building.

- **Entrances** – The entrances are quite deep within the façade. This has three reasons. Firstly it provides in a more gradual transfer between the interior and the exterior. Secondly it leaves the sun out and thirdly the depth of the door defines the interior space more clearly. The doors in the entrances are made in the same way as they are building currently in the slum. This has been done to serve as a reference to the “old” slum when the building is finished.

- **Windows** – The windows have the same depth as the entrances. For the windows the reasons are threefold. Firstly it can be used by the community members as a balcony or a bench when the windows are closed. Secondly it helps to provide shading to the interior of the building and thirdly like the entrances also here the depth of the windowsill defines the interior space more clearly.

- **Stairs and water tanks** – The stairs are vertical elements on which a possibility exists to place a water tank on top of them. In the chapter on water and sanitation more has been explained concerning these tanks. The stairs themselves are made of spiral staircases. This solution has been chosen because it saves space and also it provides a good basis for the water tanks.

- **Walls** – The walls will be, as has been explained before, made from CSEB blocks. Mainly the wall will consist of blocks from 240 x 240 x 90 mm. Half size blocks will be used to construct the railing and the shafts. Other blocks that will for instance be used are the pipe blocks (to transfer tubes through the façade) and U – blocks (for making lintels).

- **Shafts** – The shafts have three main functions. Firstly they are used as a cooling device. Secondly they function as a vertical element in the façade and thirdly they provide space for the vertical placement of tubes.

- **Floors** – In the building two kinds of floors can be found. First there is the floor that will be used for the communal spaces. This floor exists of Ferro cement channels with in-between them hourdi blocks. The Ferro cement channels provide additional light and air in the rooms. The second type of floor is used for the not communal rooms. This is a closed hourdi – and T-beams floor. Both types of floor have an overhang of 180 mm.

**The building**

The construction of a space, as has been explained before, is done by the community with the help of an architect. The architect explains and guides the community with building the space. For spaces on the ground floor this is done in 16 steps:

1. **A location is chosen** – The community members and the architect walk around on the location and decide together where the best place for the space can be.

2. **The location is made ready for building** – The chosen location is marked and is cleaned. In case there is a house at that spot, then first a temporary space for that family must be found. After that the house is taken apart and the
materials are collected and saved so they can be re-used. Also the ground is made smooth.

3. The foundation is made – First a hole is dug and then the rammed earth foundation is made.

4. The ground floor is made – The ground floor is a brick bat floor.

5. The bricklaying is started

6. The door openings are made

7. The doorframes are placed

8. The bricklaying continues

9. The windowsills are made

10. The windows are placed

11. The bricklaying is continued

12. The roof is made

13. The streetbench is made

14. The shafts are made

15. The building is plastered

16. Extra elements are added – Extra elements could be for instance cooking instruments, sun protection sheets, solar panels and additional colours.

Figure 32 – The general construction of a space

The spaces on the second, third and fourth floor are made in a similar way. Of course the floor will then differ (because no foundation will have to be made), but the way the walls and roofs are made stays the same. In this sense the way the building is constructed is in a very repetitive manner. This means a better learning process, a quicker way to build and a clearer – and more cohesive architecture.

3. Improve your life

Previously many has been said about helping the slum dwellers and about improving their lives. To make the slum dwellers individually interested in the programme there are these next eight points that can be given as arguments why the dwellers might want to join in the community.

1. Get schooling – The members of the community will get different kinds of schooling. The NGO’s can for instance provide education concerning their rights, or about managing resources and the workshops can educate the community members in a profession.
2. **Get a higher income** – Because the community will start an enterprise with the help and guidance of different actors (of which the method has been proven previously) there is a high chance that a higher income will be generated.

3. **Get access to networks** – The participation within the community will provide the individual members with access to banks and other institutions.

4. **Get an “official” house** – The community will have a recognised position, meaning that the risk of eviction is no longer there.

5. **Get the possibility to vote** – To vote in India you need a house recognised by the government. Because the community will have this position also the individual members will gain voting power.

6. **No more overcrowding** – The building will get bigger, which means that more space will be available per person. Further more it is likely to assume that some families within the community move to a different house. This can be in the neighbourhood while on the other hand they stay connected to the enterprise. In the end this will result in less people and it will stop the overcrowding.

7. **Knowledge of three types of employment** – The community members will know three types of employment. 1. The enterprise, 2. The CSEB blocks and the building system and 3. The tadelakt plastering. This gives income security. If one of the three types of income fails, then still two other types of income exist, so the members are not forced back into poverty.

8. **Get an improved living environment** – Lastly there is the improved living environment. The gains are evident. Some of them are:
   - People get a more hygienic environment. Two examples are the possibility to wash in a clean place and the location without open sewers and garbage.
   - The environment is healthier, because it got for instance less dusty and the cooking doesn’t produce as much smoke as it does currently.
   - The spaces are structurally better
   - The spaces are water tight
   - There is electricity
   - There is running water

**One example to explain the method**

To make the system more understandable a possible solution has been worked out. This is a building that is already at some places four floors high. It is important to not that it is only one of the possibilities. There is a high chance that if the community started building a different form would be the result. Even though the project shows clearly the elements that define the façade (for example the floors, the windows and the shafts) and the interior (for example the deep doors and deep windows). The worked out example has been provided on the cd-rom. Except for the individual gains that have been pointed out in this chapter there are the benefits for the neighbourhood and the city, which have been pointed out earlier. On the next page a the possible growth of the building is shown.
Figure 33 – The way the example building is gradually being built
To conclude

As a whole the approach explained in this document tries to reach for an inclusive and adaptable method of dealing with the smaller slums in Bangalore. It focuses not only on the provision of a building, but also on other aspects like generating income and the forming of a community.

The difference with many other solutions that are currently suggested and used by NGO’s and governments is that they tend to forget to combine different disciplines and approaches. If an NGO is for instance specialised in housing it focuses almost always on only housing. In most cases the NGO doesn’t think of sustainable solutions in the form of for instance making a community and providing that community with an income.

The best existing solution that is provided today can be found from Habitat for Humanity\textsuperscript{107}. They also try to build in stages and try to let the slum dwellers “earn” their own house and they let them decide where they want to invest their money. This is very positive and is much better than has been done in most cases. But on the other hand there are many things the system doesn’t provide in, these are things like: no locally adjustable design and it is a universal approach for rural areas in different countries, no possibility to build two floors or higher, no possibility to generate income, etc. And that is where the system described in this document differs from the existing ones. It tries to break out of a tunnel vision and tries to overcome the boundaries of one profession, because for a solution for slums an integral, multi professional and context related approach is needed.

\textsuperscript{107} (Simitrarachhi s.f.)
Remarks

The chapter “slums – an analysis” is based entirely on en consists mostly of parts of the book “The challenge of Slums – Global report on human settlements 2003” by UN-HABITAT (Programme 2003). Their line of thought has been entirely followed. Some parts are entirely copied and sometimes only small parts are modified. The choice to use this book to such an extend is made because it is the most complete work on slums at this moment. If parts are not taken from this book, than the notes can be found at the bottom of the related page.
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