The effects of home-based enterprises on the residential environment in developing countries

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For many households in developing world cities, home-based enterprises (HBEs) are essential to their livelihood. The effect of Structural Adjustment Programmes and other economic events during the last twenty years of the twentieth century have greatly increased the importance of HBEs in developing countries. However, planning and other regulatory systems are rarely hospitable to HBEs, often on grounds of the environmental damage they are perceived to cause. There is only a limited amount of literature on the effects of HBEs on the home and neighbourhood environments but the negative perceptions can reduce the ability of people living in poverty to gain sustainable livelihoods.

This paper will examine the effects of HBEs on the home and neighbourhood environment to see whether they create crowding, poor environments, and the harmful effects assumed by planning regulations. Through a DFID-sponsored research study involving case studies in Bolivia, India, Indonesia and South Africa, we explore what types of services and products HBEs supply, how important they are to household economies, and their spatial and quality implications in the dwellings. Thus, we can inform the debate about whether they should be encouraged by policy instead of being regarded as illegal.

The paper proposes elements of a strategy to facilitate income generation in the home by poor households, as well as making recommendations to control the few dangerous and unhealthy uses and practices found.

Introduction

For many households in developing world cities, home-based enterprises (HBEs) are essential for a sustainable livelihood. The effect of Structural Adjustment Programmes and other economic events during the last twenty years of the twentieth century have reduced the scale of the formal sector and driven many people to earn their living in the already active informal sector. Because setting up shops or workshops can be both complex bureaucratically (de Soto 1989) and prohibitively costly, new and longstanding micro-enterprises benefit from being in the only space households can use without further cost: their domestic space. Thus, HBEs are important, and are likely to be increasingly important, in developing countries. Their success can contribute significantly to sustainable economic development.

However, HBEs tend to be unpopular with regulatory authorities whether in response to issues of employment conditions, land use planning or building control. HBEs are perceived to be generators of poor working conditions and there is some literature documenting problems faced by out-workers who carry out part of a larger industrial process within their homes (e.g., Bhatt, 1989).

It is assumed that the HBE will impinge on already scarce domestic space to an extent that is harmful to the resident household. In fact, where there is legislation allowing some enterprises in residential building, there is often a stipulation as the maximum amount of space to be used. For example, the regulations developed for Pretoria before the end of apartheid to govern HBEs in the white suburbs allow for a maximum of *30 per cent only of the gross floor area* of the dwelling place to be used for a home business. There are no exact space stipulations in the Act of 1984 for Black Communities. Part 8.2 simply states that :

> *"the occupant of a residential building may practise the social and religious activities and their occupations, professions or trades including retail trade on the property on which such residential building is erected provided that: the dominant use of the property shall remain residential..."*

The negative externalities and threats to sustainable cities arising from industrial uses are well documented in the literature [recently by Robins and Kumar (1999) and Hameed and Raemaekers (1999)], and from these arise a perception of the dangers of

mixing industrial and domestic uses. However, people living in poverty seem to be content to put up with not only problems they may cause through running HBEs but also those caused by the HBEs of their neighbours. The benefits they derive from being able to make a living and using services offered in HBEs generally appear to outweigh any environmental concerns they may have.

Thus, in line with Schilderman and Lowe (elsewhere in this volume), we believe that such regulations are inappropriate as they are incongruent with the needs, priorities, practices and attitudes of the people occupying large proportions of our growing cities.

Hints that it is not necessarily, or even regularly, the case that HBEs create poor environments can be found in the rather sparse literature on the interface between HBEs and the housing environment. Strassmann (1987) found that HBE operators in low-income settlements had better dwellings than those without HBEs. The dwellings were one third more valuable, they occupied larger sites, they had more floor space, and they were more likely to have sewer connections. He characterizes the HBE operators as the elite of the low-income settlements.

This paper uses data from a Department for International Development (DFID)-sponsored four country comparative study of HBEs to point up some of the environmental issues raised by their presence. The study areas were chosen in Bolivia (*La zona sur* in Cochabamba), India (Bhumeheen Camp, New Delhi), Indonesia (Kampung Banya Urip, Surabaya), and South Africa (East Mamelodi, Pretoria). In each study, we interviewed about 150 households with HBEs and about 75 without HBEs living in the same study areas. Renting was not included in our study as, although it is a valid HBE, it involves no change of use from residential and so does not present the challenge to planning orthodoxy posed by, say, steel fabricating or pig keeping.

In this paper, we summarize some of the quantitative data from all the case studies. We will show that many of the fears that inform policy banning productive enterprise in the home are based on misunderstandings of the nature of most HBEs.

Introduction to the HBEs in the study

By far the most common HBE is the small shop selling daily household necessities for people who do not have a refrigerator or much storage space; fresh food, bottled drinks, snacks, soap, candles, rice, canned food, cigarettes (both in packets and single "sticks"), etc (figure 1). There are also a range of more specialized shops: second-hand clothes, paraffin/kerosene, fish, meat, vegetables, sweets, soft drinks; ice cream shops, small cafes and teashops, and beer bars. Many make food for sale outside either in the street or at places of work or schools (figure 2). Services are represented by repair shops for clothes, shoes (figure 3), cars, cookers, and balls; personal services like day care crèche, sewing clothes and furnishings to order, hairdresser or barber, doctor or traditional healer, photographer, dentist and dressmaker; rental of videos and party equipment; and office services like band bookings, telephones, photocopying and assistance with legal documents. Production HBEs are often concerned with clothing manufacture (figure 4), but we also had manufacturers, assemblers or finishers of knitwear, embroidery, electronic components, shoes, masks, golf gloves, bags, jewellery, paper packages, shuttlecocks, and stone monuments; brick making, upholstery, welding and woodwork; and a flour mill.

Figures 1 to 5 about here

In *La zona sur*, Cochabamba, the production HBEs are overwhelmingly concerned with clothing manufacture, mainly of denim jeans and jackets and of children's wear, dresses and tee-shirts (figure 5). There are also manufacturers of knitwear, shoes, bags, jewellery, and stone monuments. In Bhumeeheen Camp, Delhi, India, the most common production activities are involved in outworking based on piecework in embroidery. There are also clusters of TV tuner assemblers and thread cutters. Outworking is not as important as we might have expected in India from the literature (Bhatt 1989) and from areas studied by others (Lall 1994). In Banya Urip, Surabaya, Indonesia, there are several production HBEs manufacturing traditional Javanese furniture, decorated birdcages for export, masks of various kinds, and shoe uppers. There are many HBEs making rattan and wooden handicrafts or clothing to order. There are a few niche market HBEs: a feather artist and farmers of crickets. Renting

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In the South Africa sample, the activities in our Mamelodi study areas are very strongly concentrated on providing daily needs and household services to local residents. Several HBEs make and sell traditional beer, usually providing a rudimentary place to sit and drink the litre measures. Services offered include nine traditional healers (*sangoma*) in our sample. There is little manufacturing of items for sale to a wider market, only occasional HBEs in brick making, upholstery, welding and woodwork. One or two HBEs recycle metal into local charcoal stoves.

Employment and income benefits

It is evident in all our case studies that HBEs greatly increase the employment opportunities for low-income households especially for women. In all our case studies, at least 50 per cent more women work in HBE operating households than in those without an HBE. There are also improvements in the work participation for men except in South Africa where slightly fewer men work in HBE households than non-HBE households.

Three out of four of our case studies show respectable increases in income for HBE households in comparison with their non-HBE operating neighbours, especially at the means. In all three samples, HBE households are between one quarter and one third better off than their non-HBE counterparts at the means. In our fourth sample, in Bolivia, there is such a difference between HBEs and non-HBEs (the former are 150 per cent higher) that we suspect a sampling error has exaggerated the real difference.

Where they occur, HBEs are obviously very important contributors towards the household incomes. In all of our case studies, HBEs generate between half and three quarters of their households' incomes. In the India and Indonesia samples, they provide about half the households' income. In Bolivia and South Africa, however, they are the chief income sources for the households that have them. In South Africa, more than half of HBE households have no other income. In the other three samples, between 33 per cent (in Indonesia) and 41 per cent (in Bolivia) have no other income.

Thus, HBEs are important for the households' incomes and quality of life. Without them, many would be severely hampered and it would be beneficial if policy could take account of this when considering any harmful effects they may have. Let us now turn to the environmental effects that HBEs may have.

Condition of dwellings

Table 1 here

Unlike in Strassmann's (1987) sample, in our samples HBEs do not necessarily operate in better quality dwellings than those occupied by non-HBEs (table 1). We have grouped together descriptions of the building technologies used in the various countries in our samples to gain some comparability. We have classified Bolivian adobe, a mud technology, as permanent and equivalent to blocks or bricks because, in practice, it is comparable. In a similar vein, wood and tin (metal of all kinds but mainly galvanized iron) in Indonesia and South Africa are defined as temporary.

In our Bolivia case study, all occupy permanent dwellings, in India and Bolivia, slightly more non-HBE households occupy the more permanent structures, but in South Africa, HBEs seem to occupy better quality dwellings. Whatever the balance, there is no support for any assertions that HBEs are concentrated in the worst dwellings.

Number and area of rooms in the house

The amount of space used by HBEs, and its proportion to the whole dwelling, are important issues in assessing the impact of HBEs on the environment. In this section we examine whether HBE households have more or less space than their non-HBE counterparts and what effect taking the HBE space out has on the domestic space remaining.

Tables 2 and 3 here

Our India sample has very small dwellings, with means of 10.8 square metres and 2.1 rooms for HBE households (tables 2 and 3). These dwellings cover the whole of the plots, abutting other dwellings at the rear and sides. They accommodate a mean of 5.3 people and the HBE. When the paucity of open space and the narrowness of the streets are added to the picture, we can see how crowded they are. They also demonstrate that, at least in India, lack of space is not an obstacle to operating an HBE. The non-HBE sample has even smaller dwellings (by about 20 per cent or 2.2 square metres less at the mean).

In the Bolivia sample, the HBE operators have about twice as much indoor space as non-HBE households with a mean of four rooms rather than only 2.5. In Indonesia, the HBE operators have about 7 square metres more space but no more rooms than non-HBE operators. In the South Africa sample, HBE operators have about one quarter more space than non-HBE operators (6 square metres more at the mean) and one room more.

As HBE operators have more indoor space than their non-HBE neighbours, this is strong evidence that HBEs generate better living conditions. However, we will see below how far the presence of the HBE removes this advantage.

Use of space for HBEs

There is a great deal of difference among the samples with respect to the number of rooms and area used only for HBEs and the proportion of the dwelling that this represents. The larger dwellings in Bolivia and Indonesia contain more dedicated space than the smaller dwellings in India and South Africa. Both the former have a whole room dedicated to the enterprise at the median (and means of two thirds or four fifths of a room respectively) while the latter two have no specialized rooms at the median, and means of only a small fraction of a room (one third and one fifth respectively). In terms of space, the pattern is the same although the Bolivia sample has a substantial lead over the Indonesian (i.e., a mean three times higher). The India and South Africa samples devote very small spaces indeed (means of less than 2 square metres) exclusively to their HBEs.

The number of rooms and areas used for both domestic and enterprise uses - the fungible space (Lipton, 1980) - is greater, however, and follows a different pattern among the samples. Of the two who had most exclusive HBE rooms and areas, the

Bolivia sample has relatively little jointly used space: 20 per cent of a room and 4 square metres at the means. Indonesia, however, has two thirds of a room and 8 square metres at the means - about the same as is exclusively HBE space. The smaller users of exclusive HBE spaces have more jointly used space. In the India sample, there are means of two thirds of a room and 3 square metres jointly used while in the South Africa sample there is almost a whole room and 5 square metres.

Net domestic space

In order to assess the impact of HBEs on the space available, we have calculated net rooms and spaces used by including HBE rooms or space at parity, and mixed rooms or space used as half. We feel that this reflects at least some of the reality of room use; that the HBE may "get in the way" of domestic life in those rooms that are shared with the enterprise but does not prevent at least partial domesticity. The balance of the effects of this is likely to vary between great inconvenience where there is a fixed machine and little inconvenience where the paraphernalia of business can be shelved. Both of these cases occurred in our pilot study in India (Kellett and Tipple 2000).

There is little doubt that the ideal for most HBE households would be spatial separation between domestic and production activities, and many interviewees expressed their wish to develop a room for this purpose. However, in reality, this is difficult to achieve for many respondents given the limited space and financial resources. The one strategy that is, thus, open to them is to be flexible about domestic arrangements.

Table 4 here

It is very informative to compare HBE operators' net domestic space with that of non-HBEs to see whether HBEs cause crowding or not. Recall that HBEs have larger dwellings than non-HBEs in all the case studies. There are two patterns in our net domestic space data (table 4). In India and Indonesia, the HBEs reduce the space available to about 80 per cent as much as that for non-HBEs. In Bolivia and South Africa, HBE operators still have more space than non-HBE operators. Where plots are

very small (in India), HBE operators only reserve 61 per cent of space for net domestic uses at the mean and little more than half at the median.

Table 5 here

In order to demonstrate how crowded the accommodation is when there is an HBE, we can assess the net domestic space per person (table 5). The larger household sizes for HBE operators in India and South Africa influence them. In India, HBE households are almost ten per cent (0.4 persons) larger at the mean, while those in South Africa are a whole person larger at the mean than non-HBE households.

In the India sample, a mean of only 1.3 square metres of net space per person is available for HBE operators and represents very crowded accommodation. The South Africa sample shows in excess of 5 square metres per person and the other two case studies have more than 10 square metres per person.

Only one of the case studies (Bolivia) continues to show HBE operators with more space per person than non-HBE operators. This is largely owing to the very much larger premises occupied by the HBE sample. In the others, the differences are small at the medians but greater at the means (more than 2 square metres per person in both the Indonesia and South Africa samples).

These data show that, whereas HBE households do have more space than non-HBEs, the effect of the HBE in the domestic space takes away that advantage. Thus, the idea that HBEs might generate better accommodation than where they are absent is ambiguous. Larger dwellings occur where there are HBEs so the HBEs are probably helping to improve the housing stock. However, their households usually enjoy less domestic space so there is no conclusive evidence that HBEs are instrumental in improving residential conditions within the dwellings. The negative effect of HBEs on net domestic space per person appears to be most serious where the original provision gives rise to crowded conditions (in our India sample). Thus we may aver that, where poor conditions exist initially, HBEs are likely to have greater effects on crowding than where original conditions are more spacious.

Access to services

An important aspect of the housing environment is the access that occupants have to essential services. When HBEs are present, there are issues of whether they improve service provision by enabling the provision of better services or whether they overload services provided only for residential users.

Table 6 here

There is a varied relationship between the standard of services enjoyed by HBE and non-HBE households among the samples. In Bolivia, HBE households enjoy marginally better services than non-HBE households, but they have twice as many telephone connections. In India, the poor services of the HBE households are reflected in the non-HBEs but the latter have much poorer water and bathroom availability. Telephones and electricity are marginally more available to non-HBE operators – both of which are counterintuitive.

In Indonesia, the non-HBE sample is marginally better serviced than that with HBEs, but both are very well serviced. In South Africa, there is a slightly better servicing record for the non-HBE households but that is probably a sampling quirk arising from a slightly larger proportion's being drawn from an area where full servicing is available. Thus, our data show no general improvement in servicing by virtue of having an HBE.

This leaves the question of whether the HBEs impose unsustainable burdens on the residential levels of service provision. This is mainly dealt with below in waste generation, the presence of machinery (drawing large amounts of power), and traffic generation. However, the nature of HBEs (described above) can be used to assume water use levels. HBEs that are present and obviously require more water than domestic uses include preparing and serving food; brewing (mainly in South Africa), retailing vegetables, meat and fish; and services such as hairdressing, photography, medical and dental practices. None of these practised at HBE scale is likely to draw more water than can be supplied at domestic pressures through standard pipes. Even brewing only uses one or two oil drums full of water at a time in each HBE.

Waste generation and disposal

Waste generation and disposal are potential problems for HBEs. The waste materials generated by our samples are textile off-cuts and thread, leather off-cuts, sawdust and timber, rubber, bottles, beads, metal (wire and nails), wrappings, plastic bags, sacks, boxes, and waste food, dust and ashes, cut hair and diluted hair perming liquid, and used components. There are a few potentially noxious or hazardous wastes produced by single HBEs: cadmium, diluted acid, needles and soiled dressings, razor blades, electronic components, chemical powders, coal dust, dye, fish waste, and oil.

Waste products are generally disposed of in the same way as domestic wastes are in the area. Where collection systems are unorganized or ineffective (in India and half the South Africa sample), HBEs may exacerbate the problems. However, some also recycle wastes, reducing the overall problem. They may simply collect bottles, paper, plastic, metal, etc., and sell them on. In Bolivia, for example, there are agents who call round to buy the waste material. Some use it as their raw material in making baby clothes, or papier-maché masks, stuffing pillows, manufacturing local stoves, making footwear out of rubber offcuts, etc. Some wastes, especially wood and rattan off cuts, are used as fuel, waste food may be fed to animals kept around the house. Packaging such as sacks and bags are reused for storage; cloth, rattan and wood may be burnt for cooking or warmth in cold seasons. Polythene bags are also reused. The burning of wood, cloth, etc., for heating in winter or for cooking adds pollution to the atmosphere but probably no more than would be produced by other fuel sources.

Cadmium, produced in one of our India sample, is recycled within the HBE that produces it. A user of sytrofoam in Indonesia mixes waste pieces with fuel and makes glue for his own use. Very little is thrown away.

Use of machinery

Noise nuisance generated by HBEs is one of the arguments used against them in that it disturbs the calmness that characterizes residential areas in the minds of advocates of zoning. Machinery use is an indicator of the likely noise nuisance generated by HBEs. As we shall see from the types of machinery that are present, noise levels are fairly low.

Our samples fall into two sets with respect to machine use. Over 40 per cent of the HBE samples in Bolivia and India have some form of machinery, however small.

Machinery is much less common in the Indonesia sample and, especially, in the South Africa study area.

Most own whatever machinery they use. By far the most common are sewing machines, with some hemming and overlock machines. There are a few printing presses, and some compressors. Metal working, welding and cutting machines are used in metal fabricating workshops, carpenters may have some mechanized tools. An occasional HBE has a plastics moulding press or similar specialized machine. There are a few sound systems, and several items of hairdressing equipment. Photocopiers, gaming machines video machines, computers, and other hi-tech equipment are used in some HBEs. Refrigerators and freezers are present in some shops. Some of these machines are likely to draw more power than is available under domestic supplies.

Traffic generation

As with machinery noise and power demand, traffic generation is thought to be a harmful effect of HBEs. However, it is usually only the extra and, supposedly heavy, traffic to the HBE that is considered. The reduction in traffic from localizing work and services in neighbourhoods can be considered as a positive effect of HBEs.

Table 7 here

Perhaps the most crucial rows in table 7 are the last two, the motorized vehicular journeys generated by the HBEs. As we can see they are very few in India and between one fifth and two fifths of deliveries elsewhere. Public transport is an important mode in Bolivia and South Africa. Walking and other non-motorized forms predominate in India and are important (40 per cent or so) in Indonesia; in both cases, streets inside the settlements are very narrow.

Thus, it is evident there is some increase in traffic as a result of HBEs but that the fears about extra traffic and heavy vehicles penetrating residential areas are not very well-founded.

Some elements of a strategy to facilitate income generation in the home

The two most important elements of strategic assistance to HBEs are the acceptance of HBEs as valuable to the national, city, neighbourhood and household economies, and a change in the mind-set that sees them as antithetical to residential peace and quiet.

So often, HBEs are simply not valued or accounted for in the national economy. Their enormous contribution to people's lives is counted as worthless. This is partly because they are statistically invisible, which, in turn, arises from their illegality and the fear of their operators that they will be closed down or harassed for *ex gratia* payments to allow them to continue operation. With a hospitable attitude towards HBEs would come more trust on the part of operators and, after a grace period when the trust is being established, an ability to include them into national statistics.

The utopian dream of suburban residential areas, full of happily dozing households and quietly playing children is so far from the reality of low-income neighbourhoods as to be useless in policy formulation. In their place are vigorous, changing, challenging and productive places within which households draw layered screens around themselves to create their islands of relative peace and privacy.

A mind-set that expects HBEs in residential areas would allow for

- service levels suitable for the loads required by enterprises,
- plots large enough to work on,
- dwellings a whole room larger than planned-for occupancy rates would indicate, and
- dwelling costs taking account of the income from HBEs.

The last two deal with expectation rather than provision or compulsion. Householders would be expected to have larger and more costly dwellings than where HBEs are absent but should not be compelled to have them by prescriptive policies on housing standards.

Mains services should be provided with HBEs in mind. Their presence is not necessary for HBEs to operate but it is likely that any problems caused by the presence of HBEs will be minimized if appropriate levels of services are installed. For example, our study suggests that inefficiencies in the municipal waste disposal

systems will be exacerbated by the presence of HBEs. Thus, it is important to expect higher levels of waste generation than mere domestic uses would generate, but not necessarily different types of wastes. It may be desirable to install industrial levels of electrical voltages where HBEs are likely to be in manufacturing, e.g., in towns specializing in particular industries (see Lall 1994).

There is obviously no bar on HBEs imposed by small plot sizes. However, it is evident that the HBE has a more marked effect on domestic space when plots are very small. Thus, just as indicated in Tipple's work on post-occupancy housing extensions (Tipple 2000), plots should not be small in the expectation that a single household could just manage thereon. Instead, space for an HBE should be included in the design.

There are, undoubtedly, HBEs that we would regard as unacceptable but there are very few examples in our study areas. We did not find leather tanning (cf. Mahmud 2001) or pig keeping, but we did find the occasional kerosene seller using inappropriately dangerous technology (open drums). If there are good reasons to prevent particular uses on health and safety grounds, there should be proscriptions. However, for the rest, we would contend that our data show them to be no great damagers of the residential environment. They tend to reduce space within the home to slightly poorer levels than their non-HBE neighbours enjoy. They have some marginal effects on the environment and may impose unplanned-for burdens on services. But they are nowhere near the villains that planning rules imply.

We believe that HBEs expose the unhelpful nature of planning and building regulations for the livelihoods of people living in poverty. In line with Schilderman and Lowe (in this volume), our data demonstrate that current standards and procedures are unaffordable for informal sector entrepreneurs trying to maintain an economic advantage by working from home. The restriction of most HBEs is clearly contrary to the opinions and priorities of their neighbours. Those that may be problematic would be the ones that generate danger (including, in the South African case, those that attract crime) or excessive noise, smoke, dust, odour, etc. These, however, are in a minority. There are problems with prescriptive regulations, including those that list uses that are acceptable, as they are likely to hamper newly emerging fields of endeavour, e.g, cricket farming in Indonesia. There is little doubt that non-conformity to regulations leaves HBE operators open to extortionate

practices by officials and agents those who offer protection from prosecution, and render enterprises ineligible for formal loans and other assistance to small businesses.

From our data we would advocate not only a general acceptance that HBEs are valid in low-income residential areas but also that they should be encouraged. We believe that local land use and development control should be passed down to the local level. The appropriate agent of control will vary from one country or city to another. It may be anything from chiefs-in-council to community-based organisations, depending on what is validated at the neighbourhood level and congruent with local norms. How their decisions are made should be locally valid but one approach would be based on whether a majority of immediate neighbours were content that a use should go ahead.

In the past it has been adequate to take account only of planning issues when determining planning decisions. However, sustainable development requires that each part of the policy- and decision- making process is carried out in a holistic manner, for example when planning decisions reflect the need for economic development. The issues exposed by HBEs vividly demonstrate the need to remove sectoral blinkers in decision-making about urban activities. In the light of our study, we would argue that the decision-making process affecting low-income neighbourhoods should always take account of the need for households to make a living and, for many, their dwellings are the only places available to them.

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Figure 1 Small shops, selling daily requirements, are the most common HBE. In this one in our South Africa case study, crime is such a problem that all the goods must be visible from the steel-grilled serving window (right).

Figure 2 The preparation and sale of cooked food is an important industry for HBEs. This one is in our Bolivia sample and specializes in chicken dishes

Figure 3 Services, such as this shoe repairer operating outside his front door in India, are important in low-income residential areas and can rarely be profitable wnough to pay for a formal workshop.

Figure 4 Sewing is the most common production HBE. This woman in our Indonesia case study sews in a room occupied by herself and husband and three children.

Figure 5 This Bolivian clothing workshop is much more sophisticated and manufactures export-quality tee-shirts

Table 1. Type of dwellings with HBEs (percentage)

	Bolivia	India	Indonesia	South Africa
Brick, block, adobe, permanent, “pucca”	100.0	63.3	91.4	21.9
Semi-permanent, “semi-pucca”		30.0	8.6	
Wood, tin, temporary, “kutcha”		6.7	0.0	78.1
Non-HBE operators				
Brick, block, adobe, permanent, “pucca”	100.0	69.3	98.7	15.6
Semi-permanent, “semi-pucca”		28.0	1.3	
Wood, tin, temporary, “kutcha”		2.7		84.4

Table 2. Area of rooms (square metres)

	Bolivia	India	Indonesia	South Africa
Area of rooms (square metres)				
Mean	72.8	10.8	59.1	28.1
Median	62.0	9.0	53.5	24.5
Non-HBE operators				
Mean	36.9	8.4	51.8	22.2
Median	25.0	7.7	47.3	20.5

Table 3. Number of rooms occupied

	Bolivia	India	Indonesia	South Africa
HBE operators				
Mean	4.0	2.1	5.9	5.0
Median	4.0	2.0	6.0	5.0
Non-HBE operators				
Mean	2.5	1.8	6.0	4.2
Median	2.0	2.0	5.0	4.0

Table 4. No. of square metres net domestic space* (percentage frequencies)

Square metres	Bolivia	India	Indonesia	South Africa
Mean	47.6	6.7	46.8	23.4
Median	40.0	4.5	42.5	19.5
Percentage of area				
Mean	65.8	61.2	81.4	80.7
Median	66.7	54.2	85.7	83.2
Non HBEs (square metres)				
Mean	36.9	8.4	51.8	22.9
Median	25.0	7.7	47.3	20.5

*HBE space and half mixed space

Table 5. No. of square metres net domestic space per person (percentage frequencies)

Square metres per person	Bolivia	India	Indonesia	South Africa
Mean	11.9	1.3	10.5	5.54
Median	9.0	1.0	9.6	4.0
Non HBEs				
Mean	8.7	2.0	11.6	7.0
Median	6.0	1.0	10.0	5.4

Table 6. Services in the houses or on the plots with and without HBEs (percentage frequencies)

	Bolivia		India		Indonesia		South Africa	
	HBE	Non-HBE	HBE	Non-HBE	HBE	Non-HBE	HBE	Non-HBE
Water tap	52.1	48.0	3.3	10.7	82.9	86.7	60.5	61.8
Bath/shower room	32.7	17.3	4.0	10.6	98.7	100.0	9.5	4.4
Flush toilet	87.9	78.7	-	-	97.4	97.3	45.6	48.5
Pit latrine	15.1	20.0	-	-	0.0	0.0	34.7	39.7
Telephone line	53.9	25.3	4.7	5.3	100.0	100.0	4.8	8.8
Electricity	100.0	93.3	95.3	100.0	97.4	100.0	54.4	51.5
Sewerage	72.1	56.0	-	-	100.0	100.0	54.4	51.5
Refuse collection	0.0	0.0	-	-	98.0	98.7	54.4	51.5
Place to receive post	0.0	0.0	91.3	85.3	100.0	100.0	-	-

Table 7. Most important mode of transport of supplies to HBEs (percentage frequencies)

	Bolivia	India	Indonesia	South Africa
No supplies delivered	6.0	1.2	2.8	4.5
On foot	1.0	57.4	28.5	9.1
By animal	0.5	17.9	0.0	0.0
By non-motorized vehicle	5.5	18.5	11.7	2.6
By public transport	48.5	4.9	20.7	61.7
By light motorized vehicle	29.0	1.2	35.8	21.4
By heavy vehicle	9.5	0.0	0.6	0.6