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‘We need ground space’: urban densification and transitional housing in Ethiopia

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Abstract: Like many countries of rapid urbanisation, Ethiopia has an acute low-income housing shortage. Ethiopia’s Integrated Housing Development Programme (IHDP) can be seen as an attempt to innovate low-income housing provision. Over 200,000 IHDP units have been built since 2005. Drawing from a Post Occupancy Evaluation (POE) survey in Amhara region, this article asks how the transition to high-rise has affected household practices and energy use. The POE survey shows low satisfaction among the residents, despite energy access and sanitary facilities. The new built environment compromises and contradicts established cultural practices, reducing the residents’ well-being compared to previous living in more informal settlements where the dwelling had direct access to outdoor space and community. This means that the residents tend to view IHDP housing as transitional, disincentivising improvements in the environment or social networks. Further, the loss of ground connection causes domestic and cultural practices to move indoors, increasing energy demand and reliance on appliances. This paper argues that high-rise as the only typology for mass housing should not go unchallenged. If it is the only option, design standards should not be left open to interpretation by the developer and regulations should ensure adequate design, such as dual aspect, flexibility and privacy in floor plans, and design and designation of outdoor spaces. The findings question the idea of modernisation of housing as a linear process and challenge the literature on the compact city model as ‘the’ paradigm for sustainable cities in Southern urban practice.

Keywords: Low-income settlements, slum rehabilitation, domestic energy, urban densification, housing policy.

Notes on the authors: see end of article.

1 Introduction and context of study

According to the UN, 90 per cent of urbanisation will take place in the developing world in the coming decades. It is estimated that two billion people will live in slums. Providing low-income housing and energy access, in the context of rapid urbanisation, densification of low-income settlements, and climate change, is an urgent challenge for cities. Presently, informal settlements form a significant part of the urbanscape in Addis Ababa with more than 70 per cent of the city's population residing in them (Ozlu *et al.* 2015). In Mumbai, the figure is 40 per cent (Bardhan *et al.* 2015a). Mumbai's Slum Rehabilitation Authority (SRA) housing scheme and Ethiopia's Integrated Housing Development Programme (IHDP) can be seen as attempts to innovate low-income housing provision and increase urban density. SRA and IHDP housing are successful in many respects. They provide sanitary facilities for households who previously did not have them and offer energy access with cleaner fuel supplies such as LPG (liquefied petroleum gas) or electricity. SRA and IHDP sites can be seen as 'places of becoming' for the emerging urban middle-class and they have turned many low-income households, who are lucky enough to get them, into landlords. In Addis Ababa, an IHDP condominium unit on inner-city land can sell for up to 1.5 million birr (US$72,000) (Goodfellow 2017).

Programs like SRA and IHDP are designed to maximise the number of housing units to be built on a given piece of land. SRA, for example, is financed by offering builders incentives to create high-density developments of high-rise flats. A family apartment is only 24 m^2 and often home to six or seven people. Since 1995, the SRA, has completed over 200,000 rehabilitation units in Greater Mumbai. In Ethiopia, 200,000 IHDP units have been built since the start of the programme in 2006. Despite the high construction volumes, current studies on the IHDP (Adamu 2012, Eskedar 2012, Planel & Bridonneau 2017), or the exceptionally rapid urbanisation rate in Ethiopia (Keller & Mukudi-Omwami 2017, Alemayehu *et al.* 2018, Larsen *et al.* 2019), have not addressed the question of energy demand. On the other hand, studies on domestic electricity demand in Ethiopia (see Guta *et al.* 2015, Kebede *et al.* 2018, Mondal *et al.* 2018) seem to take the drastically rising demand for granted.

The authors' previous research assessed women's experiences and energy use in four SRA housing colonies in Mumbai (Mankhurd, Natwar Parekh Colony, Sangharsh Nagar Housing, and PMG Colony) and contrasted it with the housing policy objectives. The study was part of the British Academy Knowledge Frontiers Scheme in 2017/2018 and the findings were reported in Sunikka-Blank *et al.* (2019) and Bardhan *et al.* (2019). The SRA housing scheme has been seen as one example for the IHDP. After visiting IHDP projects in Ethiopia in 2019, the authors wanted to compare the outcomes of the SRA and IHDP housing schemes. In SRA, we had observed a

link between the building typology, women's household practices, and energy use (see Sunikka-Blank *et al.* 2019). The connection between the built form and energy use has also been discussed by Nutkiewicz *et al.* (2018), Debnath *et al.* (2019a), and Malik *et al.* (2020). Research on everyday practices in shaping household energy demand is well established in Western energy studies (see, e.g., Røpke *et al.* 2008: 595–611, Gram-Hanssen 2010, 2014, Shove & Walker 2014), but very few studies have applied it in the context of countries in the Global South (e.g., Wilhite 2008, Sahakian 2014, Smits 2015, Browne 2016, Khalid & Sunikka-Blank 2017, 2018), yet practices of energy consumption are often very different in poorer countries (Roy 2000). Each country has its own unique, socially and materially structured set of interlinking ideologies, cultural norms, and pace of progress that shape the continuity and change of practices within the society (Abdul-Qadeer 2006). This research is guided by Shove (2010, 2014) who looks at energy practices as a social construct rather than as rational behaviour: energy studies tend to see users' behaviour as 'irrational' but without acknowledging that, if technical solutions (including housing, energy infrastructure, and domestic technology) go against everyday life and practices, they will not be adopted or will have unintended consequences.

Ethiopia is an interesting case study as it is the second most populous country in the African continent and it is growing rapidly— the annual growth rate averages at 3.5 per cent. The World Bank is expecting the Ethiopian urban population to triple to that in 2020. Ethiopia's urban population is estimated to be 23 per cent. By 2028, 30 per cent of the population is likely to live in urban areas. Housing to accommodate them has yet to be built.

Before assessing Ethiopia's mass housing scheme (IHDP), it is important to understand the context of the study. In the 19th century, the process of expansion and centralisation in Ethiopia led to the establishment of towns (*Ketemas*) across the country, mostly for military and religious purposes (Ambaye 2011, Terfa *et al.* 2019). In the early 20th century, new types of towns emerged along the main transport routes. Landowners were free to construct *chika* houses (houses built by traditional methods with wood, mud, and straw), often without formal planning permission, whereas permission was required for more permanent houses. During the period 1974–91, all rural and urban land rental structures were nationalised and the *kebele* structure was put into place, *kebele* being the lowest administrative unit in Ethiopian towns. Under the communist *Derg* regime, 60 per cent of housing in Addis Ababa was rental accommodation and state-owned *kebele* housing, usually built with local wood and mud walls, accounted for 93 per cent of the rental sector. Today a lot of *kebele* housing is outdated and in poor condition, without adequate sanitary facilities.

Access to housing for poor-income households is one key point of the Ethiopian Housing Policy (Ministry of Urban Development and Housing 2016), which is

implemented by government-led programmes and cooperative housing schemes. Affordable housing schemes are supported through free land supply, taxation, technical support, established saving schemes, loan arrangements, and capacity building models. The Integrated Housing Development Programme (IHDP) is a purely government-led and financed housing provision programme for low-income and middle-income households that was launched in 2004 (1996 in the Ethiopian calendar) by State Minister Oqubay Arkebe. Within the IHDP, specific projects are undertaken on either brownfield sites or in slum areas that are cleared and the residents rehoused. Urban densification is one driving concept behind the programme and a condominium housing typology has been adopted. There are four main IHDP apartment typologies: studio, and one-bedroom, two-bedroom, and three-bedroom flats. The lowest income families can only afford the smallest units, leading to overcrowding and poor living conditions. Households who have large family sizes, or are newly married, tend to rent out their IHDP tenement and go back to informal settlements where they have more space. It has been estimated that more than 90 per cent of IHDP studio flats are occupied by renters (UN-Habitat 2011).

This research focused on Amhara region. We wanted to look beyond the capital city as studies on IHDP have been limited to Addis Ababa, where IHDP sites are located in urban peripheries, due to lower land costs and land availability, creating a set of problems from the outset that are related to commuting, and lack of facilities and local employment. In secondary cities like Bahir Dar, low-income housing can be arranged more polycentrically, encouraging smaller *in situ* compounds with reasonable density, access to jobs, schools, and other facilities, and shorter commuting distances.

Bahir Dar is the capital of Amhara region that has to meet the intense needs resulting from rapid urbanisation. Bahir Dar city has had two master plans, in 1965 and 1996, and an Integrated Development Plan (IDP) in 2006. The IDP was followed by a new Structure Plan (SP) in 2020. The main drivers behind the new SP are: the allotted land or the parcel area of the land-use types assigned in the previous plan are insufficient for the intended urban function; the shape of land use is unsuitable; modalities for affordable housing provision are inappropriate; and there are problems in building height and in regulating density. The Bahir Dar SP goals are linked to the UN Sustainable Development Goals (SDG), the New Urban Agenda (NUA), the Ethiopian National Urban Development Spatial Plan (NUDSP), and the Second Growth and Transformation Plan of Ethiopia (GTPII). 'Compactness' and 'inclusiveness' are core values in Bahir Dar SP, translated to Key Goals 1 (Compact Eco City), 6 (Social Inclusion and Urban Safety), and 7 (Affordable Housing).

Bahir Dar has around 176,600 households and an average household size is 3.3. 'Very poor' households make up 20.8 per cent of this figure, 'poor' 19.3 per cent,

'middle' 20.3 per cent, and 'high income' 19.6 per cent. The current housing deficit is estimated to be around 82,000 units. This means that more than 270,000 residents are in need of adequate shelter. As part of the national Integrated Housing Development Program (IHDP), Bahir Dar Integrated Housing Development started building IHDP condominiums in 2007. The main responsible party for IHDP developments is the City Administration Housing Development Agency. There is an increasing tension in creating new high-density housing developments and land provision. One problem is the size and shape of parcel land plots for large-scale housing projects. Small plots of 105 m^2 (7 m × 15 m) are most common in the inner city and they are inefficient for densification. Yet over 2,000 IHDP units have been built in Bahir Dar alone, half of them allocated to governmental workers.

Drawing from a Post Occupancy Evaluation (POE) of IHDP projects in Amhara region in Ethiopia, this article looks at household practices and energy demand in low-income housing. It asks: What are the (un)intended consequences from transition to high-rise? What is the residents' lived experience in IHDP projects and how has the housing transition affected household practices and energy use?

The paper is structured as follows. Section 2 presents a literature review of urban densification in the context of low-income settlements. Section 3 describes the methodology. The findings of the POE survey in Amhara are presented in Section 4. Section 5 offers a comparative perspective between IHDP and SRA policy in Mumbai, India. Section 6 concludes.

2 Literature review

There are considerable benefits to community-led, incremental, and *in situ* slum upgrading. According to the United Nations—Habitat III, participatory slum upgradation is one of the most efficient ways of creating affordable housing for future slum urbanites, and using densification can fulfil the UN-SDG-11 of sustainable communities (Evans *et al.* 2016). Slum rehabilitation or upgradation projects have been taken up by many cities of the Global South as a solution for slum-free cities. In Africa, 41 out of 54 countries have announced large affordable housing construction projects—known as slum-upgradation projects—led by state-owned development agencies (Collier & Venables 2017). However, the economic reality means that slum rehabilitation and low-income housing programmes will, inevitably, happen at scale. Urban densification is a key driver behind the IHDP. There is an ongoing debate between the 'compact city' and the 'sprawling city', or, more fundamentally, the 'compact city' and the 'sustainable city'. Urban densification is seen to be leading the debate. Yet with some exceptions (see, e.g., Nallathiga 2007, Bardhan *et al.* 2011,

2015a, 2015b) most studies have focused on Western contexts. Urban densification has been used as a strategy to develop sustainable future cities through the *compact city model.* Adopting the same in Global South city contexts comes with its own sets of implication. The core question—whether densifying already hyper-dense cities of the Global South can produce the desired effect—forms a significant part of sustainability scholarship. It is common sense to perceive that cities with high-density struggle to cope with rapid urbanisation and the associated negative externalities of congestion, contagion, and pollution. But higher population densities may not translate into well-being. Yet, research has demonstrated that densification in Global South cities can produce creative productivity and prosperity (see Bardhan *et al.* 2015b, Brown 2017, Kshetrimayum *et al.* 2020, Visagie & Turok 2020). A prominent characteristic of Southern cities is the concentration of population in informal settlements. Presently more than one billion people live in the slums of Global South cities, which by 2050 is projected to grow to more than three billion: that is, 30 per cent of the projected world population (UN-Habitat 2016). Hence, understanding the use of density for progress in informal housing needs special scrutiny when housing this massive slum population is an urgent item on the global agenda. An underlying assumption is that, by improving planning and increasing density in unruly cities, they will become more sustainable. Existing theories of urban real-estate investment are unable to explain developments in cities like Addis Ababa (see Goodfellow 2017, 2020). There is even less understanding of urban densification of low-income housing that responds to the lived reality and actual needs of residents.

The failure of a series of slum improvement programmes since Indian independence (1947) has led to a neoliberal model slum rehabilitation which relies on densification (Bardhan *et al.* 2015a). Similar projects have been adopted in Brazil, the social housing programme Minha Casa Minha Vida (My House, My Life; PMCPV); in Ethiopia, the Grand Addis Ababa Integrated Housing Development Program (GAAIHDP); in Indonesia, the Kampung Improvement Program (KIP) (see Harari & Wong 2019); and the urban villages of China (see Ren 2018). One common thread across these developments is that they are all built on the compact city model of intensifying property development by incentivising affordable housing.

Mumbai's slum rehabilitation has a development density of more than 50,000 persons per square kilometre, compared to 106,200 persons per square kilometre in PMCMV in Brazil and 61,333 persons per square kilometer in GAAIHDP in Ethiopia (Lamounier *et al.* 2019, World Bank 2019, Pardeshi *et al.* 2020). High densities are accommodated through upward expansion in the form of multistorey dwellings, thereby releasing considerable land for rapid urbanisation developments such as SRA housing. Although vertical development does not assure better living, it can reshape the built environment by liberating ground space for alternative uses. This can provide

mixed land uses, including retail and housing, which is a factor in the compact city model, the ultimate paradigm for sustainability (Bibri *et al.* 2020). While urban densification alone cannot meet the goals of the compact city model, it can be used as a proxy for the intensity of land use. Intensifying land use only offers the advantage of alleviating land resources to meet the infrastructure growth demand from rapid urbanisation, but it alone does not ascertain sustainability, especially in already hyper-dense cities of the developing world. Bardhan *et al.* (2015b) demonstrated that scaling the compact city model for realisable benefits in high-density cities of the Global South needs an integrated and contextualised approach. Solely depending on intensifying neighbourhoods can have detrimental effects on health and social sustainability (Bibri *et al.* 2020). Unlike the cities of the developed nations, the already high-density cities of the developing world have urbanised without the benefits of industrialisation and have historically witnessed organic planning. Such trajectories have led to self-organised sustainability within the hyper-dense environment. Studies on the relevance of the compact city model for high-density cities of the developing nations reinforce that, although the compact city model is achievable in these cities, most of it is operationalised through urban densification with little adherence to the attributes of the compact city model (Biderman *et al.* 2018, Nadeem *et al.* 2021). The critical fallacy in achieving sustainability through the compact city model is that economic sustainability stills remain intrinsically central to the model. This is also the rationale for high-density developments like GAAIHDP in Ethiopia or Slum Rehabilitation Housing in India. Hence what happens to health and well-being in such cosmetically induced density remains a question.

Though a common success attributed to upgradation projects is land tenure and legal rights to the city for poor urban dwellers, most of these houses are not more than 30 m^2 and must accommodate large households. Hence, the well-being effects of using densification for slum upgradation projects reveals varied results. China's 'urban villages' have been successful in producing a creative economy of local entrepreneurialism (Ren 2018), but there are mixed outcomes for India, Brazil, and Ethiopia. A series of studies conducted on the quality of life in Mumbai's rehabilitation houses shows that, while inhabitants are generally satisfied with tenured housing, the knock-on effects of high density and poor housing design have led to severe consequences on public health, skewed energy justice, gender discrimination, and the breakdown of social networks (Bardhan *et al.* 2019, Sunikka-Blank *et al.* 2019, Pardeshi *et al.* 2020). A major criticism of the PMCMV in Brazil is the spatial and social segregation that these houses create because of their location in the outlying suburbs of large urban areas. Locational disadvantages like these result in reduced mobility and accessibility to primary urban utilities like job markets, schools, and health and social services. The PMCMV is also seen to have low minimum standards in housing design

(see Kowaltowski *et al.* 2015). Ethiopia's IHDP has been hailed as a success because of its pragmatism in solving urban housing crises and subsequently generating 737,256 job opportunities (Bah *et al.* 2018). However, there is a knowledge gap of the lived experience and energy use in IHDP housing, especially beyond the capital Addis Ababa.'

3 Methodology

The research is based on a Post-Occupancy Evaluation (POE) survey of 67 households who live in IHDP housing sites in Amhara. The survey questions asked about the occupants' satisfaction in IHDP, in comparison to their previous settlement. The survey was set up and conducted by researchers at Bahir Dar University. Two types of IHDP condominium sites were mapped in the POE survey. Six sites were selected from three main cities in Amhara, two from each city: Yetebaberut (*kebele* 16) and Bemesigid in Bahir Dar (*kebele* 14) (as seen in Figure 1), Hawariarw and Pawlos in Gondar, and Mekanyesus 1 and Mekanyesus 2 in Dessie. The same overall design strategy has been implemented all six IHDP sites that were surveyed, with very minor modifications. The first-stage IHDP projects tend to have communal buildings (for example, Yetebaberut) whereas the later ones do not (for example, Bemesgid).

The IHDP building volumes can be categorised as T-blocks, L-blocks, and linear blocks. In linear blocks the stair is external to the frame. In T-blocks and L-blocks, the stair is at the junction of the wings and there is a lobby-like space connected to the landings. In most IHDP blocks the number of housing units ranges from six to twelve. In most plan layouts the kitchen and the toilet are located next to the main circulation corridor. In later project sites the typologies have improved room arrangements. Figure 2 shows how the T-type block flats have three directional views and a more generous corridor space due to its views and each household's personal corridor space.

26 per cent of the POE survey respondents had one or two family members in their household, 27 per cent had a family size of three or four, 26 per cent a family size of five or six, and the rest had more than six members in the household. Compared to SRA where the average household size in a 25 m^2 tenement was 5.5, there is clearly less overcrowding in IHDP in Amhara.

14 per cent of the respondents in the POE survey had an income of less than 2,500 birr (US$76) per month, 19 per cent of the respondents had an income of 2,500–4,000 birr per month ($76–122), 19 per cent of the respondents from 4,000–5,000 ($122–152) birr per month, and the remaining households earned more than 5,000 birr ($152) per month. An average salary in Ethiopia is typically around 8,900 ($270) birr

Figure 1. IHDP site in Bahir Dar (source: the authors).

Figure 2. Linear-type IHDP block (left) and T-type block (right) (source: the authors).

per month, so most of the respondents were well below the average salary. In comparison, the average monthly income in India is 32,200 INR ($423) and in Mumbai 36,900 ($485), the average monthly income in SRA being 10,000 INR ($132).

IHDP housing modalities include 10/90 and 20/80 models where the beneficiaries have to save 10 per cent, 20 per cent, or 40 per cent of the total housing cost. The housing typologies are G+2 for 10/90, G+4, and G+7 for 20/8.

30 per cent of the POE survey respondents lived in studio flats, 30 per cent in one-bedroom flats, 33 per cent in two-bedroom flats, and the rest in three-bedroom housing units. 40 per cent of the respondents lived on the ground floor, 19 per cent on the first floor, 7 per cent on the second floor, 24 per cent on the third floor, and the rest in buildings which had more than four floors. More than half (60 per cent) of the respondents had lived in their flat for more than three years and only 6 per cent of them had lived in their flat for less than a year.

In addition to the survey in the Amhara region, we visited IHDP sites in Addis Ababa, such as the newly built Tulu Dimtu site on the outskirts of the city and the more established Jomo 1 and Jomo 2 in the inner-city area where property prices are already higher. The site observations included transect walks, and photography and filming on site.

The survey was limited to 67 responses. The small sample size is acknowledged as a limitation of the study, but this data is very challenging to collect and to the authors' knowledge, it has not been gathered from Amhara region previously. In order to discuss the applicability of the findings beyond Ethiopia, the survey results are compared to the SRA scheme in Mumbai in Section 6. However, the aim of the paper is not to generalise the findings but to contribute to the emerging discussion on practices and energy use in mass housing, in the context of urban densification in low-income settlements.

4 Results

According to the POE survey, residents find it challenging to adjust to life in high-rise buildings and the new locations of the IHDP sites. Table 1 shows the respondents' perception of 'comfort' in their current and previous housing modalities. In Bahir Dar, 90 per cent of the respondents said their previous house was more comfortable compared to the new IHDP condominium; in Gondar the figure was 63 per cent and in Dessie 52 per cent. Table 2 shows the households' perceptions of characteristics that they perceived as positive in their previous homes ('social life') and in their new condominiums ('freedom', this translating as them owning their property). Childcare was seen to be more positive in their previous location in all sites apart from Dessie.

Table 1. Respondents' perception of 'comfort' of their housing modality before and after the transition to IHDP (in percentages).

	Bahir Dar		*Gondar*		*Dessie*			
	before	after	before	after	before	after	before	after
Comfort	90	10	63	37	52	48	64	36

Table 2. Respondents' perception of positive characteristics of their home before and after the transition to IHDP (in percentages).

	Bahir Dar		*Gondar*		*Dessie*		*In total*	
	before	after	before	after	before	after	before	after
Social life	50	0	6	0	21	14	21	7
Freedom	0	100	63	100	36	50	38	75
Outdoor space and activities	20	0	6	0	15	7	13	4
Childcare	30	0	25	0	29	29	28	14

The main reasons for the dissatisfaction with the new IHDP housing were: living in a flat, loss of ground access, and difficulties in performing cultural practices in the new environment. The traditional, vernacular dwelling unit in Amhara is based on a circular, single room, built with local materials. In traditional housing the outdoor space is used for similar practices to the indoor space. Baking traditional food like bread (*injera*), washing and drying clothes, grinding seeds and coffee, drying ingredients for cooking, and the related social and daily activities are performed outside, on the ground. Also living and working are strongly connected with being outdoors. Further, the physical layout of traditional Ethiopian home requires defined spaces for domestic practices, such as cooking, to be performed close to the 'wives' quarters', and private rooms (for example, the toilet) to be located far away from more public spaces in the house.

The survey shows that 11 per cent of the respondents had modified their IHDP condominium and 89 per cent had not. 90 per cent of the respondents said they would like to modify their housing unit if they could. For those who had modified their unit, the need for privacy was the main reason. In linear IHDP blocks, toilets are located next to the living room which is strongly disliked by the residents. Some residents in the Hawariaw Pawlos site in Gondar had changed the location of the toilet to the balcony side at the back of the flat and installed an external PVC riser. Bathing practices have the highest level of privacy in Ethiopian culture and the residents would prefer the toilet and washing space to be accessed via the entrance hall and located at the back of the flat. Other reported modifications were changes in the positions of the internal doors, steel frames added to balconies to make them part of the interior

(used as storage or an extra room), and the use of the external corridor space for children to play in, and installing a gate to protect the connection to the staircase.

Common circulation spaces (outdoor corridors, landings) were widely used as social spaces. For example, when indoor living space is not sufficient to accommodate neighbours and participants for a coffee ceremony, residents performed it in the outdoor corridor. The corridors are also used for cooking and grinding spices and, during electricity power cuts, they act as resilient space where residents can cook with wood or charcoal. 70 per cent of the respondents said the corridors are not wide enough.

Our previous research in SRA housing in Mumbai suggests that: a) transition to a more permanent home aligns with an increase in energy demand, either by necessity (for example, lights and fans) or convenience (digitalisation of social practices) (Debnath 2019a, 2019b); and b) high energy costs are a key factor in the 'rebound' effect when households have to move back to slums when they cannot keep up the monthly maintenance and energy payments (see Debnath *et al.* 2019a, 2019b, Sunikka-Blank *et al.* 2019). Figure 3 shows the energy source used for cooking in the surveyed IHDP housing, compared to previous housing modalities: 71 per cent of the survey respondents used wood and coal for cooking in their previous homes (29 per cent used electricity), but after moving to their condominium 96 per cent of the respondents only use electricity and only 4 per cent use wood or coal. Some reported liking smoke from using firewood, believing that fires, smoke, and burning incense are important aspects of the customary way of life which can be lost in the new condominium environment. Cooking practices have changed due to access to electricity. Traditional *injera* bread-making and coffee grinding are done more often with appliances after the housing transition. Table 3 shows that, in the previous housing modalities, 50 per cent of the respondents ground coffee manually, 26 per cent did it using an electronic appliance, and 24 per cent used both methods. After the transition, 83 per cent of the residents use an electric appliance to grind coffee, only 3 per cent do it manually with a pestle, and 14 per cent use both. It should be noted that coffee grinding is important in Ethiopian culture—the residents reported they want to smell the coffee when it is roasted and hear when coffee beans are ground.

Table 3. Coffee grinding practices before and after the transition (in percentages).

	Bahir Dar		*Gondar*		*Dessie*		*In total*	
	before	after	before	after	before	after	before	after
Manually with pestle	69	0	40	5	43	0	50	3
Using electric appliance	6	87	35	79	36	86	26	83
Both	25	13	25	16	21	14	24	14

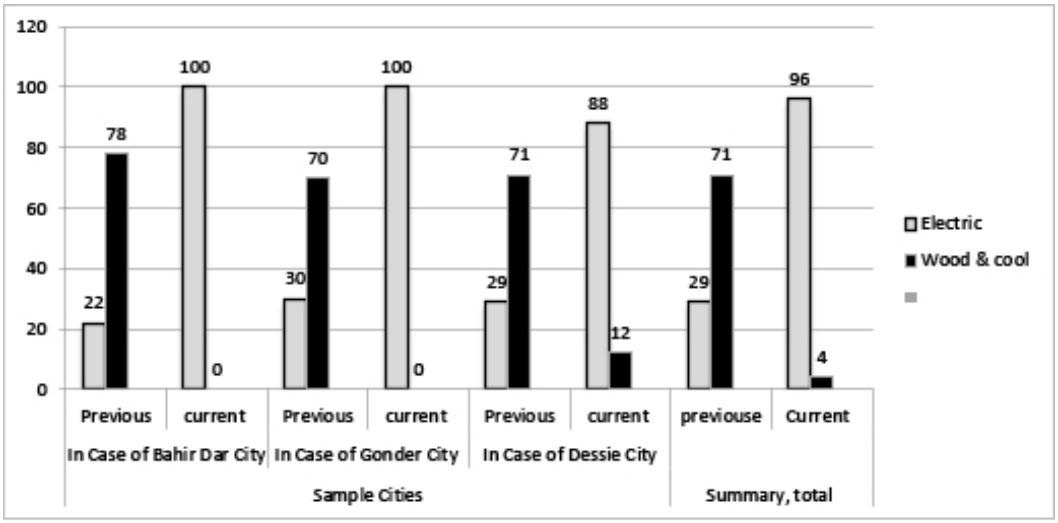

Figure 3. Energy source used for cooking in IHDP, compared to the energy source used in the previous housing modality (in percentages).

One main reason for dissatisfaction with shortcomings is the perception of IHDP sites as an unsafe environment for children, and also in smaller towns in Amhara. Yet Lappi and Gezahegn (2018) have reported that the decision to move into IHDP housing is often seen as future investment for the children, even if the transition was incompatible with the family's current lifestyle and income. The reason why IHDP sites are seen unsuitable for children is the poor quality of the open space and how it is used. 52 per cent of the respondents described the semi-public space between the buildings as 'bad'. Only 4 per cent of the respondents saw the open space as 'very good' and nobody described it as 'excellent'. By contrast, 71 per cent of the respondents described the open space in their previous housing as 'good' and 18 per cent as 'excellent'. In previous housing, children could play outside in communal pockets where women could keep an eye on them while sitting outside and interacting with their neighbours, but in IHDP condominiums children are not necessarily encouraged to play outside due to lack of safety and security. Further reasons for dissatisfaction with the open space was unallocated use (which means it is used for parking) or the housing committee using the common space for their own income generation. Some housing committes have added a guard house and a security fence to the compound and have a guard on site, paid for by the residents. Female respondents have also reported that IHDP sites have no space allocation for washing clothes and putting them out to dry (Pankhurst & Tiumelissan 2013). Those IHDP sites that do not have communal buildings use the open space for slaughtering goats and sheep. Animal slaughtering is an important cultural practice and social bond in the community.

In IHDP sites, slaughtering practices often have to take place off-site: in Bahir Dar 69 per cent of the respondents said they participate in animal slaughtering on site, compared to 85 per cent in their previous location. Further, as shown in Figure 4, only 31 per cent of the respondents prepared traditional drinks in new condominiums, compared to 61 per cent that were able to do so in their previous homes.

In those sites which were implemented in the first phase of the IHDP, there is usually a two-storey communal building on site, accommodating a communal kitchen or a laundry. In some cases they were seen obsolete by the respondents: one interviewee said that, as every household uses electric appliances for preparing *injera* bread inside their unit, they only use the communal building for occasional ceremonial activities. In areas of higher demand like Yetebaberut in Bahir Dar, the communal buildings have been rented out. The housing association, who decides on the use of communal buildings and open space, consists of the board representatives, elected among the residents. Every unit owner becomes a member of the association. The association enforces by-laws, manages maintenance and repair issues, and deals with any disputes between the unit owners. The housing associations can use communal buildings for income generation and rent them as shops, laundries, residences, or beauty salons. In the POE survey, the respondents expressed a preference for maximising the communal spaces in the main housing blocks rather than having separate communal buildings.

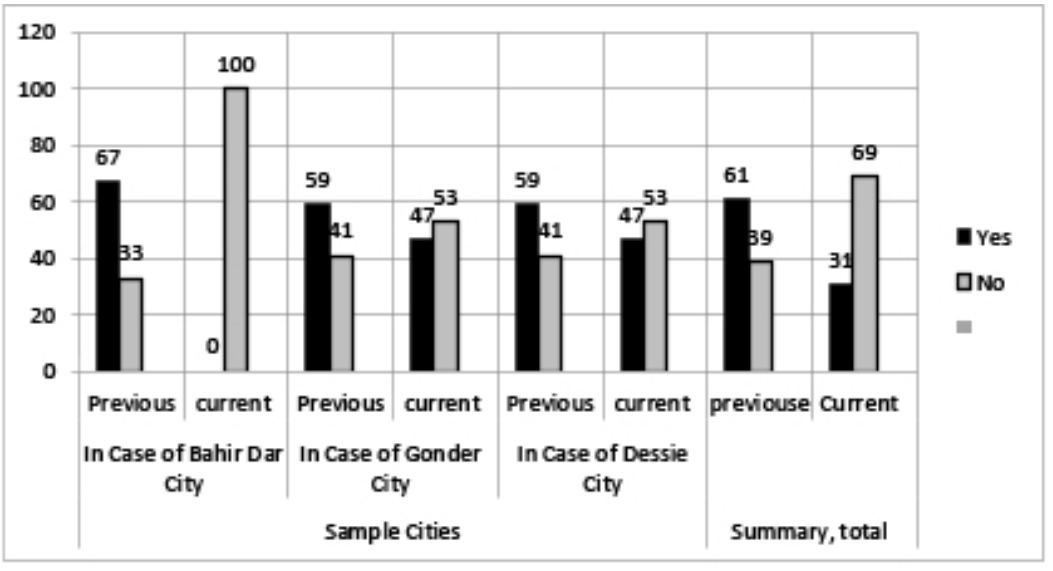

Figure 4. Traditional drink preparation in IHDP condominium in comparison to the previous housing modality (in percentages).

The social networks among the IHDP residents are weak compared to their previous communities—even if 90 per cent of the respondents said they still participate in typically Ethiopian social cooperation and associations such as '*Idir*' (a social insurance association that provides economic support for its members in case of accident, death, or damage to property) and '*Ikube*/*Iqub*' (a traditional means of saving outside the formal financial system where *Iqub* members make regular contributions to a pot that is distributed on a rotating basis). Residents of one block said they occasionally come together in cultural ceremonies, but any socialising with the residents in the next block is rare. A high number of IHDP residents are tenants and overall there is a high turnover rate because of the constantly increasing rent value of the apartments, even in Amhara region. The residents' perception of their IHDP sites has changed over time, as observed in the survey:

> *At the time the condominium buildings finished and transferred to the beneficiaries the people fears to live in but after some time the residents changed the perception on condominium housing and there is also some cultural modification now days residents especially tenants prefer and want to live in condominium housing … .*

Consequently, the IHDP condominiums are seen as transitional rather than permanent homes. This is partly due to high prices for smaller floor areas that encourage larger families to move out, inflexible and standardised building design, and the loss of ground space, which transforms cultural and domestic practices and draws them indoors and to the private realm. If residents cannot modify their housing to meet their actual needs, then they tend to view new condominiums as transitional:

> *I don't feel it like 'safer' rather I feel it like transitional type of house. Because even though we are the owner of the house we always dream to have plot type housing. We need ground space so if our income increases we will sell these house and we will buy detached housing type which has ground space.*

5 Discussion: comparative perspective

The slum rehabilitation programme in Mumbai, led by the Slum Rehabilitation Authority (SRA), was one model for IHDP. Table 4 compares IHDP and SRA schemes in terms of management, finance, allocation, landownership, design, construction and maintenance, and energy infrastructure.

Both IHDP and SRA aim to solve low-income housing crises but by very different means. IHDP has a strong lead from the state, but SRA policy is implemented through market-led mechanisms and built by commercial developers. SRA aims to incentivise the private sector to participate in slum redevelopment. In principle, this model is

Table 4. IHDP scheme in comparison to slum rehabilitation housing (SRA) policy in Mumbai, India.

	IHDP (Ethiopia)	*SRA (Mumbai, India)*
Lead	Government-led (since 2005). Aim: 400,000 new units and 200,000 jobs. 200,000 built in Ethiopia, housing shortage still estimated to be 1million in urban areas.	Developer-led (since 1990). Aim: To make slum-free city and provide housing tenure to urban slum dwellers.
Finance and allocation	Government funded. Waiting list, computer-based lottery (30% tenements allocated to women), down-payment (10–30% of the value) and mortgage. Construction cost of a unit estimated at 154 US$/m^2, 1-bedroom selling price 900 US$/m^2 (in 2007), 2-bedroom selling price US$1,300–2,000. Rental income higher than mortgage payments, turning low-income households into landlords (up to 70% units rented out).	No capital costs for the urban slum dwellers who need to qualify with a slum card and agree with the developer (mixed or *in situ* developments). The tenement is provided free of cost to a verified and registered slum dweller. No published information on construction costs. High number of SRA units rented out.
Landownership	Built on government-owned land, later the homeowners own the land together. Need to densify valuable inner-city land.	The land belongs to the government. There are special building by-laws specified by the Slum Rehabilitation Authority for building these housing units.
Design	'MH Engineering' manual sets the basic design standards, little variation and flats from studios to three-room flats, smaller units subsidised all based on standard plans. Usually 4–5 storeys high, 175–300 households/hectare, very large plots mostly in urban peripheries. Ground floors reserved for livelihoods, shops, cafes, etc.	Special planning guidelines for Slum Rehabilitation projects. *In situ* or through TDR (transferrable development rights). Different building typologies (8–10 storeys), each unit should be at least 22.5 m^2 with a toilet facility either within the unit or at a common place within the same floor.
Construction	Concrete frame, both pre-cast and *in situ*, masonry infill walls, single glazing. Government controls the Ethiopian construction industry, but there is large informal building sector.	Concrete frame, masonry infill walls, single glazing. Private contractors are liable to construct the houses following the special planning regulations for the Slum Redevelopment Authority.

Table 4. *Cont.*

	IHDP (Ethiopia)	*SRA (Mumbai, India)*
Management	Condominium Association and elected Board of Directors, management of open spaces, security and communal buildings, rubbish door-to-door collection.	Slum rehabilitation housing is managed overall by the government's special purpose vehicle Slum Rehabilitation Authority. Each building within the Slum Rehabilitation housing has a Management Corporation.
Energy infrastructure	Electricity grid, but it can be unreliable, power cuts.	Electricity and LPG access, measured use (seen as inaccurate and irregular by the occupants) and billing.

marketed to create a win–win scenario for all parties: the government, the private sector, and the slum dweller. Slum dwellers get housing ownership at zero cost; the government gets the land occupied by slums as a a resource to subsidise housing for the urban poor, while effectively tackling the problem of land shortage and reducing housing deficits. The private sector benefits from free access to prime city land, with few obligations in the redevelopment process. IHDP, on the contrary, is governed by public bodies who are therefore in a very strong position to set minimum standards and maintain medium density. Yet, due to a deposit and mortgage payments IHDP housing is unaffordable for many—even if they are lucky enough to win the allocation lottery.

The IHDP programme faces specific affordability challenges in terms of gender. While special provision for female-headed households is being addressed through the mandatory 30 per cent allocation quota for female-led households, the reality is that many of the poorest households who cannot afford any size of condominium housing are female-headed. Many are single mothers with little formal education and no employment. These women and their children are therefore excluded from the development plans. Apart from some initiatives led by NGOs (non-governmental organisations) (for example, the Lideta case study for 200 women), there are no policies, public systems, or financial support to facilitate women's access to IHDP housing. There is also no consideration of the needs of aging residents or residents with disabilities, in design or allocation. Residents with phyical or mental disabilities struggle to access condominium housing units in housing blocks in the upper floors, forcing them to permanently assign a family member to look after them (Petros 2016). In SRA, allotment is based on the head of the household who is a legal tenement of the notified slums, irrespective of gender.

The data we had previously collected from four SRA case studies showed that, due to poor design in three out of four SRA housing typologies, comfort practices had become reliant on electric appliances like fans and air-conditioning units. A survey of

1,224 households at SRA colonies in Mumbai showed that higher appliance ownership in the new slum rehabilitation housing was due to changes in household practices, the built environment, and affordability criteria of the appliances (Debnath *et al.* 2019a, 2019b). In slums, most households had paid an average INR 100 (≈US$1.5) per metered electricity connection, with an average of three or four connections per household. Electricity bills that used to be around 400 rupees (≈ $6) per month in the slums, in SRA went up to 1,000 rupees (≈$14.5) per month, on average. Increased maintenance and energy costs in SRA had pushed most households into energy poverty, whereby they spend more than 10 per cent of their disposable income on electricity and cooking fuel (reported in Sunikka-Blank *et al.* 2019). These themes have not yet been studied in such a detail in IHDP, but the POE survey indicates that practices are already becoming more reliant on appliances.

A comparison of thermal comfort and indoor air quality between the slums and SRA houses has in many instances shown slums to perform better (Lueker *et al.* 2020, Malik *et al.* 2020, Sarkar & Bardhan 2020a, 2020b). A satisfaction survey in SRA shows that more than 70 per cent of tenements are satisfied with the slum rehabilitation housing (Kshetrimayum *et al.* 2020). Yet living in SRA is associated with respiratory health burdens from diseases like tuberculosis (Bardhan *et al.* 2018, Pardeshi *et al.* 2020). All these studies have demonstrated that the poor performance accrording to energy use and health-related factors are primarily owing to the dysfunctional neighbourhood design of the SRA buildings and missed opportunity in understanding the socio-cultural context of the inhabitants. This generates a vicious cycle of poverty recycling by increasing the economic burdens from additional energy usage for achieving comfort or for seeking healthcare, which were absent in slum living. Much of the affordability issues in SRA arises from the additional energy costs and health-related expenditure, which are unforeseeable when the tenements agree to the transition. This leads to the costs of the free SRA housing outweighing its benefits. Such deficiencies in realising the latent costs of transition housing are yet to be recognised in literature or policy. In neoliberal literature, where affordable housing is considered to be less of a state subject and more driven by market speculation, mostly due to the failure of past state-led development strategies, NGOs play a critical role (Nijman 2008). The NGOs contribute to the differential citizenship by mediating the expectations of the transitional housing dweller to the government. In SRA, such mediation is transacted through hierarchical levels of cooperative systems formed by the tenements, act as mediators. However, the lack of similarity in the vocabulary of expectations between the residents and the policymakers acts as a barrier in achieving the desired welfare (Bardhan *et al.* 2019).

It became evident during this study, which started as a straightforward comparison, that the contexts in Mumbai and Addis Ababa, or in Bahir Dar, are very different.

We need to situate the findings in the context of rural–urban transformation and where the residents have come from. In SRA, households must already have lived in the city for ten years and possess a slum card in order to get an SRA housing unit, so they are already urbanised. Ethiopian cities have rapid rural–urban migration with residents who only recently may have lived in traditional housing. However, the research findings do question the ideas of modernisation of housing as a linear process, as acknowledged in the postcolonial discourse, that criticises seeing stakeholders as subjects of obligation and experts imposing on them 'the will to improve' (Murray Li 2007). Any in intra-urban comparisons, even between similar housing typologies, need to be carefully considered. However, the findings suggest a number of policy implications that are relevant beyond the Ethiopian context. These are discussed in the next section.

6 Concluding remarks and policy implications

First, the study challenges the existing literature on the compact city model as 'the' paradigm for sustainable cities in Southern urban practice and in secondary cities. The POE survey shows low satisfaction in new condominium housing, despite technically improved living conditions, and access to the energy grid and sanitary facilities. The new environment compromises and contradicts established cultural practices. This reduces the residents' well-being compared to previous living in more informal settlements where the dwelling had direct access to outdoor space and community. Therefore, the residents tend to view IHDP housing as transitional, leaving little incentive to improve the environment. This paper argues that high-rise as the main typology for low-income settlements should not go unchallenged. Courtyard housing and 1–2-storey high buildings, with ground access, should be prioritised, especially in secondary cities where land prices are not as high as in capital cities.

Second, the loss of ground connection in IHDP housing means that most domestic practices (cooking, cleaning, childrearing, entertainment) and cultural performances (here the coffee ceremony) move from outdoors to indoors, increasing reliance on electric lights, fans, and appliances. This study confirms findings from the previous literature (Sunikka-Blank *et al.* 2019, Debnath *et al.* 2019a, 2019b) that poorly designed mass housing reinforces the distributive energy injustice if poor households are locked in unsustainable housing where they are dependant on energy use they cannot afford. Energy demand could be mitigated, from the outset, in housing policy. In Ethiopia, the Ministry of Urban Development and Housing (2016) has assigned the 'Urban Housing Policy and Strategy' to bridge the gap in housing shortage but, while the Housing Policy briefly refers to 'the environment', domestic energy demand is not even mentioned.

Third, when low-rise or medium-rise housing is unfeasible, prescriptive design standards for high-rise buildings should be set. Standards for low-rise or self-build are less urgent, but in high-rise the implications of poor design are drastic. For example, in order to ensure sufficient daylight and cross-ventilation conditions, each unit should have openings to more than one direction. Floor plans should be designed to be flexible and private, supported by a wide outdoor circulation spaces and extended landings. Open green spaces need to be designed and designated for specific purposes, including the needs of women and children (play areas, laundry and drying clothes) and cultural ceremonies (here animal slaughtering and coffee ceremonies). If a mass housing programme is led by the state, rather than the market, it is more straightforward to impose and enforce the design standards.

It is acknowledged that this procedure of placing the complete onus of development on the state has failed in the past owing to complex procedures in land transaction and compensation. Such failures had let slum policies take a neoliberal turn to become contingent on the market or NGOs (Nijman 2008). Transitional housing is an adaptation of neoliberalism with the state being an apex regulating body for compliance checks with the broad slum rehabilitation policy. As in less-developed countries, where neoliberalism has been successful in fundamentally altering development strategies, transitional housing policy can be considered as a productive strategy in the housing and poverty alleviation efforts of India and Ethiopia (Harvey 2005). However, the main difference in transitional housing in the developing world sprouts from the non-statutory nature of the policy. Apart from the maximum footprint of the tenement unit, the rest of the regulations are not obligatory. This causes inadequacies in achieving desired livability outcomes, as most of the requirements are open to interpretation by the developer.

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