

How Zoning Regulations Can Recognize, Enable and Anticipate Home-Based Work

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Technical Briefs

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Zoning offers a potential tool to enhance home-based workers' contributions to a city's economy and workforce. Photo credit: Jatin Purohit

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Key Findings

- Although zoning regulations have historically been a source of exclusion for workers in informal employment, when used differently zoning offers a potential tool to promote economic inclusion and to enhance home-based workers' contributions to a city's economy and workforce.
- A supportive regulatory framework for home-based work would:
 - Recognize home-based work: Zoning regulations can recognize home-based work through particular terms and definitions, or by the spatial inclusion of particular housing typologies, target income groups and scale of enterprise.
 - Remove hindrances for home-based work: Hindrances to home-based work can be removed primarily through zoning for mixed-use. From there, a tiered classification of industrial uses and scales can be used to determine compatibility with residential uses, and prescribe amendments for spatial requirements to address risks and hazards.
 - Enable home-based work: Regularization of tenure through zoning and community-led upgrading can address infrastructural challenges facing homes as workplaces, and enable home-based work.
 - Anticipate home-based work: Zoning regulations can anticipate and plan for home-based work in urban development through proactively mapping vacant land for mixed use, while including categories that recognize home-based work.
- Pathways for policymakers to recognize home-based work, remove hindrances, and enable and anticipate home-based work include: (1) modifying existing zonal regulations in which home-based work occurs, (2) defining zoning and development control regulations in dialogue with communities for in-situ upgrading and for (3) resettlement when in-situ upgrading is not possible to design for workhomes, and (4) providing for mixed-use low-income housing in all forms of new urbanization.

1. Introduction

Home-based work is a significant source of livelihoods in the Global South. However, home-based workers, most of whom are women working in small-scale operations from home, are among the most vulnerable workers in the world. Producing goods and services in and around their homes, these workers often juggle production and care work in insecure conditions, and are precariously located in complex value chains (Chen and Sinha 2016). Home-based work inherently does not conform to a strict separation of residential and commercial uses, however many areas where home-based workers operate are zoned for single use, which stigmatizes their work and contributes to their vulnerability (Nohn 2011, Sohane et al. 2021). This represents a failure of planning imagination. In this brief, we argue that zoning regulations, combined with other regulatory tools, offer potential as a site of intervention for infrastructure improvements, improving access to services, strengthening tenure

for home-based workers, and enhancing economic inclusion as a result.

In this brief, we offer a framework (Figure 1) for how zoning regulations can support home-based work and illustrate its application across cities. As we review examples of interventions and advocacy for zoning for home-based work across the Global South, we apply an analytical framework of four propositional principles for zoning regulations for home-based work through case studies from India, Brazil, Thailand and Kenya. In each case, we explore and analyze how zoning regulations can (1) recognize home-based work, (2) remove hindrances, (3) enable and (4) anticipate home-based work. While the framework is meant to travel across cities, the conditions in each city are particular. We encourage policymakers and home-based workers to use this framework to analyze their own contexts and to identify opportunities for context-specific zoning regulations and interventions for home-based work.

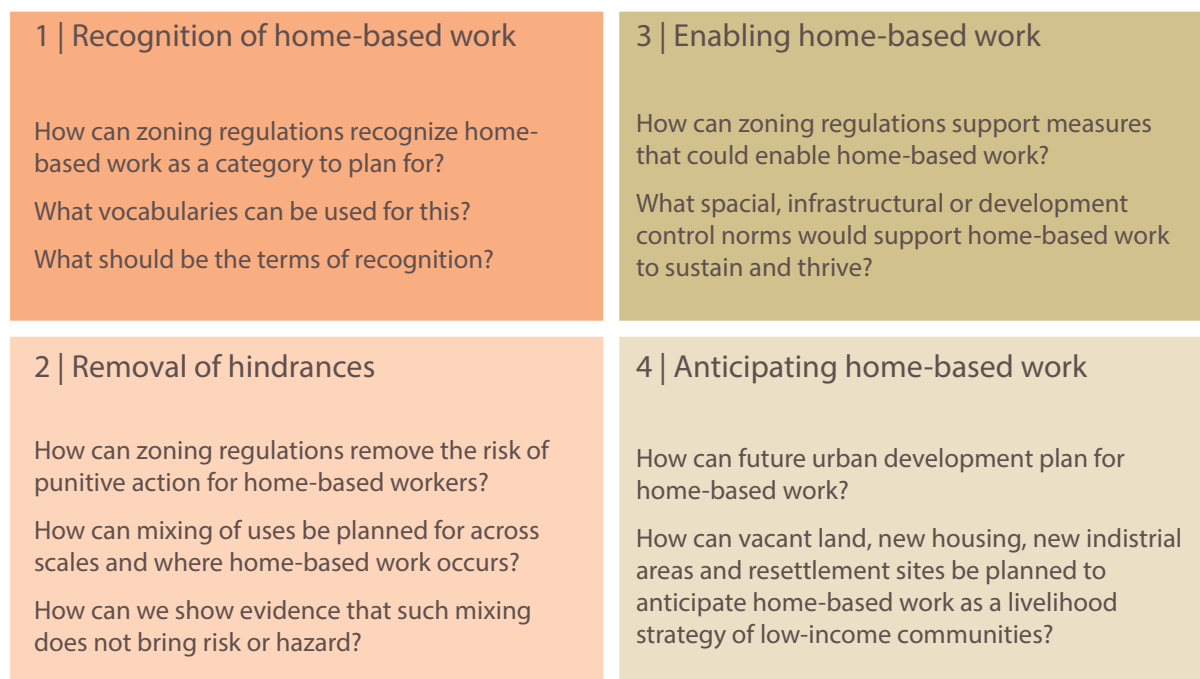


Figure 1: Framework for zoning for home-based work

The first two sections of the brief introduce zoning as a planning tool, and look at how zoning regulations have shaped conditions for home-based work. The section that follows introduces the analytical framework for inclusive zoning for home-based work, based on principles of recognition, removal of hindrances, enabling and anticipating home-based work. The brief then applies the framework in four cities from the Global South:

- The case of Mumbai focuses on the category of “home occupation” to recognize home-based work and the broad use of mixed-use zoning to recognize, remove hindrances for, enable and anticipate home-based work.
- The case of São Paulo discusses how zones of social interest and innovative strategies for operationalizing mixed-use zoning can allow for recognition, enablement, hindrance removal and anticipation of home-based work.
- The case of Bangkok discusses the use of community-led upgrading to enable and remove hindrances to home-based work.
- The case of Nairobi illustrates upgrading in a special planning area to recognize, remove hindrances, and enable home-based enterprises.

While some of the regulations discussed in these cases may be applicable to types of housing and industry arrangements beyond the scale of home-based work, each case offers a way to conceptualize enabling regulations for home-based work. The final sections of the brief move from an analysis of the four cases to offer four pathways for zoning regulations to recognize home-based work, remove hindrances, and enable and anticipate this work.

2. Background to Zoning

Zoning is a spatial planning tool that regulates land as a finite and fixed resource, and enables the regulation of population

density and the management of natural resources. Zoning is operationalized across different scales in cities through planning and policy instruments. For example, land use plans in master plans outline land-use zones, zonal development plans may be linked to layout plans in certain cities, and development control regulations detail strategies for implementing zoning regulations. Country and city-specific schemes and missions may also fund or spatially delineate zones for development with particular norms, for example, area-based development in “Smart City” missions in India, and special economic zones in or adjacent to city limits.

Zoning shapes urban development by outlining areas in the city and prescribing uses of land through separate land-use zones – such as residential, commercial and industrial-use zones. It can also prescribe mixing of uses through mixed-use zones. Zoning regulations may delineate areas for special uses or exceptions and prescribe guidelines for these. At the macro scale, areas may be delineated as Special Economic Zones, Zones of Social Interest, or Coastal Zones. Sometimes exceptions may be indicated within a zone at the street level, at a micro-scale. These street-level exceptions are important as they match the particular scale of home-based work.

Zoning through urban planning was originally introduced as a public health response to the negative effects of industrialization and rapid growth in cities of the Global North (Nohn, 2011). The main stated objectives of zoning were to safeguard public health, safety, welfare and morality, and to prevent harm (Babcock 1966, Bassett 1936, Bressi 1993, Freund 1904, Haar and Wolf 1989, Platt 1991, Toll 1969, Nohn 2011). This was primarily achieved through the separation of incompatible land uses, such as residential and industrial areas, to mitigate potential health hazards and enhance living standards (Maantay 2002).

The context of cities of the Global South is different. While several southern cities have inherited colonial planning legacies and northern planning imaginations (Watson 2009), much of their built form has developed outside the purview of planning. In several urban areas, plans may not be applicable, may not be enforced, or in many urban areas planning regulations and zoning may be imposed post facto mixed-use development. Thus there is often a tension between zoning regulations in southern cities and the existing urban built form for much of the city. This regulatory tension holds across types of urban development, including elite industry as well as for home-based workers.

What this effectively means is that it is common in southern cities for residential, commercial and industrial activities to coexist within close proximity (Prakash 2022) and that these are not as separated in reality as prescribed by zoning. Zoning is often applied retroactively on existing mixed-used neighbourhoods. While separation of uses through zoning may aim to address health and safety, a strict or rigid separation reproduces existing inequalities by not considering the needs of informal workers, and further exposes them to punitive action in the form of penalties, evictions and higher utility charges.

Zoning as a tool can be used towards inclusionary and exclusionary outcomes, as it is framed by the intent of policymakers and the political environment. For example, in the United States, even after explicit race-based zoning was banned, planners still used zoning to exclusionary ends by placing development restrictions on white neighbourhoods (to constrain supply) and designating black neighbourhoods as commercial, among other exclusionary strategies (Rouse et al. 2021). On the other hand, inclusionary zoning measures adopted by policymakers and urban planners in the recent past include reservations and mandates for affordable

housing, employment creation and small businesses (Ramakrishnan et al. 2019). In this brief, we focus on the relationship between zoning and home-based work, illustrating how zoning regulations can recognize, enable and anticipate home-based work.

3. Home-Based Work and Zoning

Home-based work entails the production of goods and services in or near workers' homes (Chen and Sinha 2016), such that domestic and productive activities happen in or adjacent to the space of the home (Sohane et al. 2021). Domestic activities include all forms of household work, unpaid care work as well as social relations of the household, such as interactions with neighbours, and activities that maintain the home and the household. Productive activities pertain to wage or own-account work, including all forms of paid work, piece-rate work, as well as unpaid work in family or household enterprises. Examples of home-based work include artisan production, commercial production (often for domestic or global supply chains), personal services, trade, repair services, clerical work and professional work (Sinha 2015).

While home-based work is a significant form of informal employment in the Global South, the home-based worker is often precariously located in a complex value chain (Chen and Sinha 2016). The operational scale of enterprise, whether piece rate work or for self-employed home-based work, is most often very small. While their labour significantly contributes to larger economic activity, the workers are relatively isolated and unsupported by other actors in the value chain. In several sectors of industry, the occupational risks and overhead costs of an enterprise are shifted from larger enterprises and borne by the worker within the work-home.

While precarious, home-based work is a particularly significant livelihood strategy for women – it allows for flexibility for workers to engage in productive work while managing domestic work, within the constraints of social roles or with limited access to space.

Home-based work has a particular economic and spatial geography (Sohane and Bhan 2023), contextual to different cities. Home-based workers often live and work near the industrial and economic zones of the city that their goods and services are required. This work predominantly occurs in vulnerable neighbourhoods, where work-homes are not only materially vulnerable, with inadequate access to basic services, but are also often in tension with tenure and planning. It is this tension with planning that zoning regulations can address, if imagined differently.

Home-based work inherently does not comply with the strict separation of work and home that is prescribed by single-use zoning. The different requirements of living and workspace are negotiated and manoeuvred by workers themselves within the small scale of the unit of the work-home (Sohane et al. 2021), and the neighbourhood thus has residential and industrial or commercial activities occurring in parallel. However, the strict separation of domestic and productive activities prescribed by single-use zoning regulations does not account for the reality of home-based workers and instead renders work-homes in violation of planning norms. This makes home-based workers susceptible to punitive action and compounds their vulnerability in various ways. Restrictive zoning regulations increase tenure insecurity and threat of eviction, adding a layer of illegality to home-based workers' livelihoods (MBD 2020) and stigmatizing home-based work (Nohn 2011). A work-home in violation of single land-use zoning

may not only be at risk due to the status of the housing title (which is separate from land use), but also because of the home's actual use for both residential and commercial activities.

Planning restrictions of single-use zones presume the co-existence of all forms of work or enterprise with living spaces to be hazardous to the health and safety of residents. Advocates for home-based work argue that this is not a concern due to the particularly small scale at which home-based work operates (Nohn 2011). For example, the activities of a worker who stitches buttons in her home, or watches her children in the neighbourhood while in her kitchen she is cooking food to be sold nearby, are not comparable to the health hazards of a large-scale factory. Rather, these are community-scale efforts for social and economic development that enable the safety of neighbourhoods and economic autonomy of women – outcomes that planning must provide and plan for.

Yet, instead of home-based work being recognized as a legitimate form of work with occupational health and safety requirements met, home-based work is invisible in planning. This means that most zoning regulations do not direct adequate infrastructure and mesoscale design guidelines in development control regulations in existing urban areas, and while planning for new urban development. This gap contributes to the challenging living and working conditions of workers in informal employment in work-homes (Sohane and Bhan 2023) and frames the guidelines that shape the size of the home, with designs that do not recognize or anticipate the need for material storage, and where service loads and tariffs for water, sanitation and electricity for neighbourhoods are calculated for domestic requirements alone. Zoning regulations may also influence taxation and base rates for access to services and

infrastructure, such as water and electricity (Owais 2020). This has implications for affordability of not only housing, but also the operational costs of running a home-based enterprise. Restrictions also make it difficult for work-homes to access social protection and economic empowerment schemes that workers should be able to avail, as they are found to not comply with planning norms.

In sum, restrictive zoning regulations fail to address the needs of home-based workers, which include tenure security and protection from evictions, possibilities of upgrading home and work infrastructure, access to finance and affordable services for the work-home. The status quo approach to zoning in areas where home-based workers operate often renders their work illegal, exacerbating vulnerability and stigma. However, as we discuss further through the framework below, re-imagining zoning regulations has the potential to address some of the occupational health and safety risks of home-based workers while also enabling livelihood opportunities.

4. Framework for Analyzing Zoning and Home-Based Work

This brief reviews examples of interventions and advocacy for zoning for home-based work across the Global South from secondary literature, and uses an analytical framework of four principles to assess and re-imagine zoning regulations for home-based work. These are (1) recognition of home-based work, (2) removal of hindrances to home-based work, (3) enabling home-based work, and (4) anticipating home-based work.

1. Recognize home-based work:

Recognition of places of informal work builds a foundation for transformative social protection for workers in informal

employment (Bhan 2024, Alfery, Lund and Moussie 2018). Lack of recognition leaves the needs of home-based workers unaccounted for in planning processes. This recognition has tensions and needs to be addressed carefully. For example, making geographies or economies of home-based work visible might bring them under legal and regulatory scrutiny, hence hampering continuity of such work. Categorizing and defining home-based work might run the risk of excluding lesser known forms of home-based work or future kinds of home-based work. The terms of recognition in zoning regulations thus need to be considered carefully.

This principle raises the following questions: How can zoning regulations recognize home-based work as a category to plan for? What vocabularies can be used for this? What should be the terms of recognition?

2. Remove hindrances for home-based work:

The conventional function of zoning has been to separate different kinds of uses, with the idea that these are not conducive to mixing, and could even be hazardous if allowed to mix. Home-based work in single-use zones, therefore, faces economic and regulatory hindrances in the form of punitive action and additional charges. Given that home-based work is a significant means of employment for the economically vulnerable across the Global South and operates at a particularly small scale, permitting the mixing of non-hazardous uses can remove these hindrances for home-based work.

This principle raises the following questions: How can zoning regulations remove the risk of punitive action such as penalties or additional charges for home-based workers? How can mixing of uses be planned for at the zonal scale as well as within the building unit?

How can mixing of uses be imagined for industrial areas where home-based work may cluster? How can we show evidence that such mixing does not bring risk or hazard?

- 3. Enable home-based work:** Moving ahead from removal of hindrances, zoning regulations can enable and support the flourishing of home-based work. By reframing home-based work as a category that needs to be planned for, zoning regulations can address the occupational health and safety requirements with possibilities of upgrading, tenure regularization and better access to light and ventilation for home-based work. These improvements would encourage livelihood and employment opportunities.

This principle raises the following questions: How can zoning regulations support measures that could enable home-based work? What spatial, infrastructural or development control norms would support home-based work to sustain and thrive?

- 4. Anticipate home-based work:** Rapid urbanization and population growth often outpace formal planning processes, leading to the spontaneous emergence of mixed-use neighbourhoods where people live, work and engage in commerce in close proximity (Roy 2005). These are also sites of home-based work and, thus, must be anticipated during city-planning processes.

This principle raises the following questions: Given that home-based work is a significant form of informal employment in the Global South, how can urban development better plan for it in the future? How can vacant land, new housing, new industrial areas and resettlement sites be planned to anticipate home-based work as a livelihood strategy of low-income communities?

To consider these principles further, and questions raised, we reviewed examples of interventions and advocacy for home-based work across the Global South, using secondary literature. There are several ways in which zoning regulations can be framed to recognize, remove hindrances, enable and anticipate home-based work.

In India, for example, in Mumbai, the category of “home occupancy” (Mumbai DCPR 2034) and in Karachi, the category of “cottage industries” (Owais 2020) offer ways to think about how home-based may find *recognition* in planning. Recognition could also be through registration of home-based workers with city councils or municipalities. In George, South Africa, there is a system for the registration/licensing of home-based enterprises (Smit and Donaldson 2011). In Delhi, informal housing and labour groups organizing around the Delhi Master Plan 2041 argued that zoning regulations should spatially recognize home-based work, through mapping clusters of home-based work in the city (MBD 2020). Several cities, including Mumbai, São Paulo (Brazil) and Nairobi (Kenya), illustrate ways to plan for mixed-use development, which can *reduce hindrances* to home-based work. Zones for upgrading as designated in the case of São Paulo can improve tenure and infrastructure such as electricity, water, drainage, road connectivity and access to affordable transport. Community-led upgrading in Bangkok, Thailand, can *enable* home-based work through improving, extending or reconstructing the housing unit to increase space for work and storage, and secure tenure can provide safety and access to credit and investment. Modifications to development control regulations as in the case of Mumbai, through advocacy by SPARC – an NGO working on housing and infrastructure issues for the urban poor – to enable loft space (Patel and Bartlett 2016) is another example of enabling home-based work. Mapping vacant land in São Paulo and planning for home-based work

through campaigning and advocacy in master plans (MBD 2020) are other ways of **anticipating** home-based work.

In the next sections of this brief, we take a closer look at four cases (Mumbai, São Paulo, Bangkok and Nairobi) to explore how zoning regulations can recognize, remove hindrances, enable and anticipate home-based work. We discuss these cases to offer ways to propose zoning regulations for home-based work. The particular regulations discussed in each case may be applicable to other forms and scales of housing, work or industry beyond the scale of home-based work. Yet each case offers a way to conceptualize regulations for home-based work now or in the future.

5. Case Studies

Case 1: Mumbai's Development Control and Promotion Regulations

- Removal of hindrances for home-based work through zoning for mixed use in India in Mumbai's Development Control and Promotion Regulations.
- Recognition through the category of home occupation.
- Enabling and anticipating home-based work through the general building regulations.

Zoning regulations for Mumbai are framed by the Mumbai Development Control and Promotion Regulations (DCPR), which are revised periodically. These regulations define land-use zones, the combination and extent of use and permissibility, and

the control and parameters that apply. This includes conditions and restrictions on plot sizes, height, set-back and floor space index, thus laying out the rules of the city's morphology. All parcels of land under the limits of the municipal corporation of Greater Mumbai follow these development control regulations, with the exception of special planning areas.

Mumbai's DCPR 2034 illustrates ways to recognize home-based work through definitions of categories such as "home occupancy", removal of hindrances to home-based work through "mixed use zoning" at both the scale of the zone and the unit/building. The city has a history of advocacy for zoning reform that has led to modifications in development control regulations for housing rehabilitation and resettlement to enable and anticipate home-based work (Sohane et al. 2021).

Category of Home Occupation as a form of recognition

Home occupation is a key concept defined¹ in the Mumbai DCPR 2034. It focuses on work within predominantly residential units, effectively serving to recognize home-based work. While it permits commercial activities, it imposes specific conditions, including the non-allowance of hired labour, no external advertising, non-hazardous operations, and limitations on equipment and electrical load. These limitations are not exclusionary for the particular scale of home-based work. Rather, they recognize and define the scale of operation, allowing for similar occupations at the discretion of the

¹ As per the plan, home occupation "means **customary services** provided to the general public other than that of eating or a drinking place, by a member of the family residing on the premises **without employing hired labour**, and for which there is **no display to indicate from the exterior of the building** that it is being utilized in whole or in part for any purpose other than a residential or dwelling use, and in connection with which no article or service is sold or exhibited for sale except that which is produced therein, which shall be **non-hazardous** and not affecting the safety of the inhabitants of the building and the neighbourhood, and provided that **no mechanical equipment** is used except that as is customarily used for purely domestic or household purposes and/or employing licensable goods. If motive power is used, the total **electricity load should not exceed 0.75 KW**. "Home Occupation" may also include such similar occupations as may be **specified by the Commissioner** and subject to such terms and conditions as may be prescribed" (Mumbai DCPR 2034, p. 13).

commissioner. These conditions are ways to align with zoning's principle to "do no harm". They allow zoning regulations to target the particular scale of home-based work and prevent larger scale units from passing as home-based work.

Permission of mixed use at the zonal scale in residential and commercial zones

At the zonal scale, while the plan does not have an explicit definition of a mixed-use zone in and of itself, residential zones are described as "mixed use" indicating the potential allowance of other specific uses alongside residential ones. Similarly, in the commercial zone, the concept of mixed use is mentioned, suggesting the possibility of work-home arrangements within this zone. However, the industrial zone definition outlined in the Mumbai DCPR 2034 does not envision any combination of commercial and residential arrangements within its parameters.

Home-based economic activities as a permissible use also falls under "commercial use" and can be integrated into various development schemes, such as urbanizable and green zones 1 and 2, alongside a blend of residential and commercial zones. The plan does not explicitly define home-based economic activities and the specific activities falling under this category. Additionally, it does not specify the extent

of residential and commercial development permissible within urbanizable or green zones. So, there is recognition of home-based economic activity but with ambiguity.

Use and condition defined by the plan (pages 271-273, see Table 1) outlines the conditions and parameters for allowing "home occupation" in different zones. One cannot use these synonymously with "home-based economic activities" as the plan does not explicitly define the scope of home-based economic activities. Green signifies good for home-based work, yellow indicates conditional allowance and red means non-allowance. As the table illustrates, home occupation, as defined with specific conditions, is permitted in residential zones without additional restrictions. In commercial zones, "home occupation" activities are only allowed in independent plots, buildings, separate wings, or floors with separate access. However, in industrial zones, the master plan does not permit "home occupation" for any residential unit.

At the zonal scale, it is important to note that the possibility of mixed use is an enabling framework for home-based work in residential and commercial zones in Mumbai. However, permissions for mixed use are not extended into areas in the Mumbai plan that are zoned as industrial zones. This remains a hindrance for home-based work

Use & Occupancy	Conditions and Parameters		
	Residential Zone	Commercial Zone	Industrial
Customary home occupations, including professional, in all homes, such as detached, semi-detached and multi-family houses	Permitted	Independent plot OR Independent building OR Separate wing with separate access OR Separate floor with separate access	Not permitted

Table 1: Conditions and parameters for allowing 'home occupancy' in Mumbai DCPR 2034

precisely in settlements² where home-based work is likely to occur in close relation to the industrial zone, and remains a key gap that requires addressing in zoning reform for home-based work in Mumbai.

Use at the unit scale: commercial units within residential buildings

The definition of a residential building unit in the Mumbai DCPR 2034 primarily focuses on household activities such as sleeping and eating. It does not explicitly include small informal commercial businesses at building level. However, it does acknowledge the potential for lodging and hostels within residential buildings. The inclusion of convenience shopping³ in residential buildings suggests a potential integration of work and home environments. This provision entails shops located on the ground or first floor of residential buildings, with internal access⁴ linking residential and commercial units. Such arrangements at the unit level

could enable and anticipate home-based work and be particularly beneficial for slum rehabilitation initiatives and new low-income housing, where informal work, especially home-based work, often takes place.

Provision for home-work in slum rehabilitation clause

The Mumbai DCPR 2034 includes provisions for accounting for home-based work during slum rehabilitation. If someone eligible for slum rehabilitation already owns a commercial property built before a cut-off date set by the government and they also own both residential and commercial spaces without a shared wall,⁵ they qualify for a combined unit for living and business.⁶ While this clause does not particularly target home-based workers, who typically would not have separate residential and commercial spaces in the existing settlement, the clause does allow for home-based work to occur in the new unit.

² The paper "Living and Working in Slums of Mumbai" focuses on Dharavi, particularly settlements like Bharantinga Nagar Ekta, Kalina and Matfalan. Despite growing in tandem with surrounding industrial and manufacturing areas, these settlements suffer from inadequate physical infrastructure and precarious housing conditions. The community nevertheless engages in a diverse range of work within and around their residential spaces, including leather processing, jeans and garment production, bangle production, and industrial gloves production. They have become vital suppliers of resources to nearby industries. The paper suggests that the restriction on home-based work not being permitted in industrial areas should be reconsidered, given the circumstances (Gruber et al. 2005.)

³ (i) Includes food grain or ration shops. (ii) Pan shops. (iii) Shops for collecting and distribution of clothes and other materials for cleaning and dyeing establishments. (iv) Tailor or darning shops. (v) Groceries, confectioneries, wine and general provision shops (vi) Hairdressing salons and beauty parlors. (vii) Bicycles hire and repair shops. (viii) Vegetable and fruit shops. (ix) Milk and milk products shops. (x) Medical and dental practitioners' dispensaries or clinics, pathological or diagnostic clinics and pharmacies, each with a carpet area not exceeding 100 sq. m. (xi) Florists. (xii) Shops dealing in ladies' ornaments such as bangles, etc. (xiii) Shops selling bakery products. (xiv) Newspaper magazines stalls and circulating libraries. (xv) Books and stationery shops or stores. (xvi) Cloth and garment shops. (xvii) Plumbers, electricians, radio, television and video equipment repair shops and video libraries. (xviii) Restaurants and eating houses of area not exceeding 100150 sq. m (xix) Shoes and sports shops each with a carpet area not exceeding 100 sq. m.

⁴ 'means shops, each with a carpet area not exceeding 50-30 sq. m, except where otherwise indicated and comprising those dealing with day-to-day requirements, as distinguished from wholesale trade or shopping, provided on the ground and/or first floor of building **with internal means of access.**' (Mumbai DCPR 2034).

⁵ 'In the rehabilitation component, the Built-Up Area (BUA) for commercial, office, shop, or economic activities existing before a specified date determined by the government, subject to provisions outlined in the sub-regulations, shall be provided. If an individual possesses both residential and commercial premises without a common wall between them, they will be considered eligible for a residential/commercial unit. This unit, including the BUA for commercial, office, shop, or economic activities, will be provided free of cost, with a carpet area not exceeding 27.88 sq. m. In this provision, individuals deemed eligible will receive BUA for commercial, office, shop, or economic activities up to 20.90 sq. m of carpet area, or the actual area if it is less, as part of the rehabilitation project, without any cost. Any excess area beyond 20.90 sq. m, up to the existing area, may be sold on a preferential basis at the commercial rate within the free-sale component.' (Municipal corporation of Greater Mumbai DCPR 2034, p. 213).

⁶ This combined unit, including the space for their business, will not cost them anything, but the area for business cannot be more than 27.88 sq. m. They will also receive up to 20.90 sq. m of free space for their business. If they need more space for their business beyond that, they can buy it at a special rate set for commercial areas within the project.

Case 2: São Paulo's Zones of Social Interest and Mixed Use Zoning

- Recognition and enabling of home-based work through zones of special interest that prioritize area-based development strategies.
- Removal of hindrances for home-based work through mixed-use zoning that defines compatibility and conditions for mixing uses.

Zoning regulations in São Paulo are framed through the zoning laws and São Paulo's city master plan. This regulatory framework assigns a zone type to every block⁷ in the city of São Paulo. Zone types determine permissible uses. Most zone types allow multiple building uses, but some do not. In addition to determining the building area ratio, the zoning regulations importantly enable direction of funds to particular urban strategies as determined by the master plan.

A significant feature of zoning regulations in São Paulo is the opportunity to target low-income groups through zoning according to housing typologies. Zones of Social Interest allow for upgrading and for area-based development strategies to respond to the particular needs of the demography and context-specific spatial constraints. This recognition includes

low-income home-based workers and opens up an enabling framework for regularization of tenure and for upgrading of low-income settlements. The mixed-use zoning category that has expanded into Zones of Social Interest removes hindrances in zoning for economic activities in residential areas and for home-based work. The zoning of vacant land under Zones of Social Interest (ZEIS) also allows for anticipation of and planning for low-income housing that can include home-based workers.

Zoning to prioritize area-based development strategies

In 2016, the zoning laws were reformed⁸ in parallel with the enactment of the Strategic Master Plan of 2014 for São Paulo. Zone types were linked to three development strategies – transformation, qualification, or preservation.⁹

The 2014 Strategic Master Plan of São Paulo has a mandate to integrate housing and employment opportunities, and has 38 zone types. Of these, ZEIS and Mixed Use Zoning, which fall under the Qualification territories, are zoning tools of key interest for home-based work.

Zones of Social Interest (ZEIS)

As a zoning tool, ZEIS has its origins as one of several tools introduced in Brazil's City Statute of 2001 to recognize the "social

⁷ São Paulo has over 46,000 blocks (Anagol et al. 2022).

⁸ Zoning Laws in São Paulo have seen three major reforms – in 1972, 2004 and 2016 (Anagol et al. 2022).

⁹ As translated from Gestão Urbana SP, a digital platform of Urban Management set up by the Municipal Department for Urban Development.

Territories of transformation aim to promote the constructive and population densification of economic activities and public services, the diversification of activities and the landscape qualification of public spaces in order to adapt land use to the provision of collective public transport.

Qualification territories seek to maintain existing non-residential uses, promote productive activities, diversify uses or moderate population density, depending on the different locations that make up these territories.

Preservation territories are areas where the objective is to preserve consolidated low and medium density neighbourhoods, specific urban complexes and territories destined to promote sustainable economic activities combined with environmental preservation, in addition to cultural preservation.

function”¹⁰ of land. Other tools to realize the social function of land include compulsory parcelling¹¹ and progressive taxation.¹² As Gestão Urbana SP states:

Special Social Interest Zones are portions of the territory intended, predominantly, for decent housing for the low-income population through urban improvements, environmental recovery and land regularization of precarious and irregular settlements, as well as the provision of new Social Interest Housing (HIS) and Popular Market Housing (HMP) to be equipped with social equipment, infrastructure, green areas and local businesses and services, located in the urban area (ZEIS as translated from website).

The 2014 strategic master plan outlines five ZEIS¹³ categories – mapping areas that are occupied or vacant land with priority given to low-income communities and families whose incomes are below three minimum wages.

The zoning of *favelas*, and vacant land for future development under ZEIS, earmarks areas where financing for affordable housing projects or upgrading of existing settlements and regularizing land within informal settlements is directed. The zoning tool offers an enabling framework for upgrading infrastructure in existing settlements in ZEIS 1. The other ZEIS categories that map vacant land and properties, including those with access to

infrastructure, anticipate future housing for low-income groups, which can include housing for low-income home-based workers. The “solidarity share” mechanism mandates that large developments in ZEIS above 20,000 square metres must donate 10% of built area to affordable housing (SMDU 2014).

The 2016 zoning law further expanded new zones of the Mixed Zone of Social Interest (ZMIS) and Centrality Zone (ZC-ZEIS) to the Zones of Social Interest with the objective to diversify land use to ensure livelihood opportunities alongside affordable housing.¹⁴ ZC-ZEIS was created in lots adjacent to internal roads of ZEIS 1 to guarantee diversity of uses in areas not yet regularized on some of the main roads of settlements within ZEIS 1. ZMIS was created on the perimeters of ZEIS 1, including areas that had been regularized and urbanized, as an extension of Mixed Use Zoning as permissible by the plan.

Mixed-use zoning and determining compatibility for mixing

The mixed zones in São Paulo are areas earmarked for both residential and non-residential uses, with a greater residential in low-to-medium densities. The aim behind mixed use is to have a diversity of uses that can preserve the existing morphology of the zone and accommodate new uses, instead of a rapid urban change in the area.

¹⁰ As per article 39 of the City Statute 2001, “Urban Property fulfills its social function when it meets the basic requirements for establishing order for the city expressed in the masterplan, assuring attending the needs of the citizens concerning quality of life, social justice and development of economic activities, respecting the rights established in article 2 of this law” (Cities Alliance & Ministry of Cities, Brazil 2010).

¹¹ FAR is established through zoning regulations. Plots that are underutilized can be parcelled, built upon or its use can be changed (as they are not fulfilling their social function).

¹² An underutilized plot can have a progressive increase in taxation in lieu of not realizing its social function.

¹³ ZEIS 1: Areas characterized by slums and irregular settlements, occupied mainly by low-income populations.

ZEIS 2: Areas characterized by vacant or underused land, suitable for urbanization.

ZEIS 3: Areas with vacant or underused properties, irregular tenements or damaged buildings, located in central areas.

ZEIS 4: Areas characterized by vacant land, suitable for urbanization and construction in watershed protection areas.

ZEIS 5: Properties or group of properties, especially vacant or underused, located in areas where there are services, facilities and infrastructure.

¹⁴ To “promote economic activities in territories with little job offer in proportion to housing (ZEIS1 marked in the PDE), at the same time that these zones ensure the permanence of the low-income population” (website translation).

There are four kinds of mixed zones - ZM, ZMa, ZMIS and ZMISa. Of these, ZMIS and ZMISa are mixed zones of social interest, which focus on low-income housing and economic opportunity for this as areas of social interest, with and without environmental guidelines.¹⁵

There are different categories of industrial uses¹⁶ that determine different development controls for the mixing of uses within the residential and non-residential uses in mixed zones. Similarly, non-residential uses are also categorized into nR1, nR2 and nR3 categories, based on compatibility, tolerability and possibility of nuisance to the neighbourhood. These categorizations enable conditions in development controls that can enable permissions for mixing of non-residential uses. This is useful to conceptualize a framework for zoning for other contexts to address hazards in uses, and to enable home-based work in areas that are not conventionally zoned for its occurrence.

Case 3: Bangkok's Baan Mangkong Programme

- Enabling and removal of hindrances for home-based work through a community-led upgrading programme. Low-income communities residing in slums collectively negotiated for tenure, funds, and sites suitable for their resettlement. This curbed evictions, reduced their risk of flooding, and provided access to better infrastructure.

The Baan Mangkong Programme (BMP) offers an example of identifying areas for upgrading through Thailand's National Housing Programme. The BMP, with the objective of providing secure tenure and improving housing quality, is a slum-upgrading programme operationalized through community participation (Boonyabanacha 2005). It uses a city-wide and community-led approach, where upgrading is planned for across the city, rather than as individual project-based approaches. Here, the community has agency to determine, based on their needs and capabilities, what their spatial layouts would look like. For communities residing on land parcels with economic, commercial and political pressures without secure tenure, the access to finance and collectivization through the BMP allows for

¹⁵ *Mixed Zone of Social Interest (ZMIS): portions of the territory predominantly characterized by the existence of regularized popular housing settlements, combined or not with non-residential uses, intended for the production of housing of social interest and non-residential uses.*

Mixed Zone of Environmental Social Interest (ZMISa): portions of the territory predominantly characterized by the existence of regularized popular housing settlements, combined or not with non-residential uses, located in the Macrozone of Environmental Protection and Recovery, intended for the production of housing of social interest and non-residential uses, with parameters for subdivision, use and land occupation compatible with the guidelines of the aforementioned macrozone.

¹⁶ Categories of Ind-1a and Ind-1b permit "Industrial activity, not nuisance, compatible with the residential neighbourhood with regard to the characteristics of lot occupancy, access, location, traffic, urban services and levels of noise, vibration and environmental pollution."

However, the category of Ind-2 refers to "Industrial activity that generates urban and environmental impacts, which implies the establishment of specific standards relating to the characteristics of lot occupancy, access, location, traffic, urban services and levels of noise, vibrations and environment pollution."

Ind-3 refers to "Industrial establishment whose operation may cause harm to public health, safety and well-being and the integrity of regional flora and fauna, prohibited in the Municipality of São Paulo."

relocation to suitable land parcels that the communities can purchase (Bhatkal and Lucci 2015).

Through its community-first approach to planning, the BMP has enabled home-based workers of Bangkok by mitigating their risk of flooding, providing them with improved living and working spaces, secure tenure, access to infrastructure and amenities, and agency to choose and design their physical spaces, thus enabling them to account for non-residential uses, access to formal credit and investment (Norfold and Virsilas 2016).

Home-based work and housing upgrading in Thailand

A WIEGO study on home-based workers in Bangkok identified recurring flooding and non-participatory upgrading or resettlement as key issues faced by home-based workers (Horn et al. 2013). High risk of flooding and vulnerable housing endangers lives and properties of households residing in low-lying areas, and exacerbates the vulnerabilities of those engaged in home-based work. It also impacts storage of raw materials and finished products, as well as the physical workspace, and moves time and capital away from home-based work into recovery and priorities. Households are often displaced to sites away from commercial areas in the urban core to the peripheries, which often lack road infrastructure and access to affordable transportation. This means poor connectivity between raw materials, the home-based workers and their customers/clients and lowers their earnings.

Community-led upgrading

In BMP projects, the slum community is involved from the initial stages of planning and financing their project. The scale of each project is relatively small – 250 to 350 households per project. The community decides the nature of upgrading – whether it

is in-situ, reconstruction or relocation – and collectively negotiates for tenure, ranging from cooperative ownership to permission to use land. In Thailand, more than 78% of the households have been upgraded with cooperative ownership or long-term-lease tenure rights (Bhatkal and Lucci 2015), thus reducing their risk of eviction.

Apart from an increase in housing quality and access to basic services, granting of tenure has had several positive implications for the upgraded communities and, by association, for home-based workers. A formal residential address allows households to access formal credit and investment in their businesses. Tenure also allows households to invest in their housing units, making them more conducive for non-residential uses based on the household's needs. For client-facing businesses that operate from home, an upgraded, well-maintained unit is likely to attract more customers. Moreover, the flexibility to self-customize the housing unit allows households to include an income-generating space in their units, based on their preferences, needs and capabilities (Tonmitr and Ogura 2014).

Communities have used Baan Mankong infrastructure grants to establish drainage systems, communal septic tanks for sanitation, household connections for water supply and electricity, and more. Tenure security has helped households to secure legal access to water, sanitation and electricity and reduced their cost (UN Habitat 2006). An evaluation of Baan Mangkong in 16 communities reported a 10% reduction in monthly expenditure on water and a 5% reduction on electricity (TDRI 2014). For home-based workers in these sites, these improvements in infrastructure mean improved quality of workplace conditions and productivity – not only reducing operation costs, but also increasing income and time for other activities.

In the process of upgrading, the community can seek the opportunity to construct amenities such as multi-purpose halls, community centres or creches. These spaces may be utilized as workspaces or storage spaces for clusters that engage in home-based work and other commercial activities. For this, processes of upgrading must imagine improving home-based work, and not just providing shelter. The case of upgrading discussed ahead in Nairobi illustrates this further.

Case 4: Upgrading in Special Planning Area in Nairobi

- Recognition of home-based enterprises in special planning areas and rehabilitation.
- Enabling home-based work by accommodating the need for livelihood opportunities in rehabilitation projects. Better planning, structure and connectivity further enabled home-based enterprises to attract more business.

Zoning regulations in Nairobi are influenced by Kenya's Constitution and Physical and Land Use Planning Act, 2019, and shaped and implemented by the Department of City Planning of the City Council of Nairobi.

In the Physical and Land Use Planning Act, the principles and norms include promotion of sustainable use of land and liveable communities, which integrates human needs in any locality; and planning of development activities that integrate economic, social and environmental needs of present and future generations.

The Act defines "special planning areas" – an important tool for city municipalities to designate zones as areas that need urban renewal projects, or implementation of slum upgradation projects. These are common sites of informal work, including home-based work.

Where a county government has declared an area as a special planning area, development in the area could be suspended for two years, until a physical and land use development plan in respect of that area has been approved.

The City Council of Nairobi outlines 20 zone types. Each zone is assigned permissible uses. Of these, mixing of uses (residential, commercial, industrial) is possible in some but not all zones. Some zones, such as Zones 16 and 17 which include industry, also permit the category of mixed residential development.

Rehabilitation in Mathare

Mathare Valley Squatter Settlement falls in Zone 7, which is a special planning area and previously was a site-and-service scheme (City Council of Nairobi). The valley is a highly dense residential area and a site of informal settlements.

Mathare Valley is one of Nairobi's largest and oldest low-income residential areas. It is divided into four sections and this case study focuses on Mathare 4A. Mathare 4A Housing Project is a joint effort between the Government of Kenya and the Federal Republic of Germany, and was implemented by Amani Housing Trust (Kigochie 2001, Muthoka 2005). Mathare 4A is densely populated and 92% of its 23,000 residents were tenants paying rent to absentee owners. The project began as a pilot scheme in 1992. The rehabilitated units were rented out and the money was used to cover administrative costs, maintain the infrastructure, and finance the rehabilitation of other structures in the project (Kigochie 2001).

Mathare 4A's principal goal was to rehabilitate shelter with zero displacement by building new and affordable units on open spaces in the settlement and only then demolish the old structures. In areas where open spaces were lacking, tenants were moved to temporary

shelters constructed by the project. The old structures were then demolished and replaced by new ones (Muthoka 2005). Before demolition, the project calculated the cost of materials used to build the older structure and the unit owners were reimbursed. Tenants were often allocated the same number of rooms they had occupied in the old units. To ensure that business enterprises were not lost during rehabilitation, and to enable residents to create jobs, some of the new housing units were constructed with work space. Residents who operated home-based enterprises in the old structures were allocated some of the units with work areas, while former hawkers were given stalls detached from their homes. In an effort to create job opportunities, the project increased the number of home-based enterprises in the settlement. All stalls and most home-based enterprises are located on the project's main street and for convenience a few are also located in various parts of the Project (Kigochie 2001).

Impact of the upgrading project on home-based enterprises in Mathare 4A

Better planning and structure implied that the new home-based enterprises were more organized and their house numbers made them easier to locate. With most of the enterprises on the main street, commuters were easily able to shop on their way home.

The new home-based enterprises have better infrastructure and services including paths, sewerage, water, street lights and garbage disposal areas. Electricity is also available for those who want to install power in their enterprises. The provision of electricity created opportunities to diversify the nature of work and extend working hours. Improved road connectivity made it easier to transport supplies and finished products (KfW Development Bank).

Increased space for work and storage allowed workers to produce more and store their products safely. Residents were allowed to make changes that upgraded the units, and most did so by cementing floors, installing electricity, plastering and painting walls, and installing secure doors to protect their home-based enterprises. The willingness of residents to upgrade their homes can be attributed to security of tenure. Along with secure tenure, the home-based enterprises are not taxed, and do not pay for licences (Kigochie 2001).

In Mathare 4A, the government recognized the larger zone as a special planning area, provided the land, changed building codes to make units affordable, and changed tax and registration regulations to enable proprietors to run their home-based enterprises. This played a crucial role in recognition, enabling, and removal of hindrances for home-based work.

6. Pathways for Home-Based Work in Zoning Regulations

As illustrated in Figure 2, the cases of mixed-use zoning in Mumbai, zones of social interest in São Paulo, upgrading on a city-wide scale in Bangkok, and rehabilitation in Mathare, Nairobi, illustrate different ways to recognize home-based work, remove hindrances for home-based work, to enable and to anticipate home-based work.

The framework of recognition, removal of hindrances, enabling and anticipating home-based work offers ways to suggest pathways for reform in zoning and associated development control regulations. These pathways may vary across geographies, given the governance contexts, political moment and particular spatiality and nature of home-based work. This framework offers four such pathways in the short and long

Recognize	Remove hindrances	Enable	Anticipate
<ul style="list-style-type: none"> Categories in zoning and regulations of 'home occupancy' in Mumbai's OCPR, 'social interest' in ZEIS in Sao Paulo and inclusion of home-based enterprises while planning slum upgradation in special planning areas of in Nairobi illustrate different ways of recognizing home-based work. In Mumbai, the category of home occupancy pertains to permissions for small scale home-based work. In Sao Paulo, the premise of recognition is not of the nature of work but a recognition of the presence of low-income groups and housing typologies of favelas and informal settlements within which home-based workers are one of many kinds of workers. In Mathare in Nairobi, the premise of recognition is to ensure zero displacement of home-based enterprises during rehabilitation. Recognition of home-based work in zoning regulations may have ambiguity in definitions, but it is important for this ambiguity to be read expansively and applied according to what is most useful in local contexts. Recognition of home-based work is important in areas where home-based work occurs and zoning regulations do not accommodate it, as well as in areas where new zones may emerge. 	<ul style="list-style-type: none"> We see through the cases different ways of zoning for mixed use to remove hindrances for home-based work. In Mumbai, there is no 'mixed use zone' defined in and of itself. Yet all residential and commercial zoning regulations permit mixed uses within a predominant use category at the zonal scale and unit scale. While mixing of uses is permissible in Mumbai within residential and commercial zoning, there is however scope to expand permissions for mixing uses to the industrial zone. In Nairobi, zone numbers are assigned permissible uses, and some zones permit mixed residential development with industrial activity. In Sao Paulo, zoning laws dedicate a set of mixed zone categories (ZMs). Each type also has different kinds to address the different conditions in these – including environmental constraints and the presence of informal settlements. Questions of hazards and how to mix uses through zoning is addressed by a tiered categorization of industrial uses as Ind1, 2 and 3 and nRI, 2 and 3 that determine mixing if compatible with residential uses, and measures for amending spatial requirements such as access if the need arises. 	<ul style="list-style-type: none"> The cases illustrate how recognition can further form the basis of enabling home-based work during upgrading or rehabilitation projects. In the case of Mumbai, the OCPR enables allotment of commercial space along with living space in slum rehabilitation. In Nairobi, recognition of home-based enterprises also enables the construction of new housing units with work space, and paying attention to the location of the home-based enterprises – along the main street and different parts of the special planned area. In the case of Sao Paulo, the Zones of Social Interest earmark areas for a recognition that creates conditions for enabling home-based work through regularization of tenure and upgrading of low-income housing. The case of Bangkok further discusses a community-led enabling framework in more detail for a city-wide scale of housing upgrading that enables home-based work by addressing key infrastructural challenges of flooding and better design of units and streets. 	<ul style="list-style-type: none"> There are different ways to anticipate home-based work. In the case of Mumbai the residential zone can be viewed as anticipatory through permissions for home occupancy and the inclusion of commercial units within residential units through convenience shopping. In Sao Paulo, Zones of Social Interest outline vacant land in anticipation of future urban development for low-income housing. In Bangkok's Baan Mangkong Programme, communities are able to negotiate different degrees of tenure that anticipate their long term livelihood and presence in the city. The Nairobi case illustrates an increase in the number of home-based enterprises, and adding stall areas for hawkers in the new project area.

Figure 2: Illustrations of the framework of recognition, removal of hindrances, enabling and anticipating home-based work for zoning in Mumbai, São Paulo, Bangkok and Nairobi.

term, to recognize home-based work, to remove hindrances, to enable and to anticipate home-based work:

- 1. Recognize home-based work and remove hindrances:** Modifications in existing zoning regulations in zones where home-based work occurs.
- 2. Enable home-based work:** Defining zoning and development control regulations in dialogue with communities for in-situ upgrading.
- 3. Enable home-based work:** Defining zoning and development control regulations for resettlement when in-situ upgrading is not possible.
- 4. Anticipate home-based work:** Affordable housing zones for new low-income housing.

6.1 Recognize Home-Based Work and Remove Hindrances: Modifications in existing zoning regulations in zones where home-based work occurs

Regulations for industrial zones

Home-based work often occurs in and along the peripheries of industrial zones, as an essential component of several industrial value chains. Allowing home-based work in industrial areas where it is currently not permitted can allow home-based work to benefit from the backwards and forwards linkages and economies of scale that arise due to being in close proximity to an industrial area. By excluding hazardous industries as defined by the country-specific industrial codes, home-based work could be permitted as a mixed-use category in industrial zones and influence zones that are peripheral to industrial zones.

The permission to allow home-based work from industrial areas could be conditional on the industrial zone's ranking as light or heavy, polluting or non-polluting. For example, in India, industries are classified

as white, green, orange and red by the Central Pollution Control Board. São Paulo has Ind-1, Ind-2 and Ind-3, which determine industries permitted in mixed use. Home-based work could be allowed in non-polluting or light industrial areas.

Regulations for other single-use zones (residential/commercial)

In zones where home-based work is happening but is in violation of the existing zoning regulations, non-hazardous activities that are compatible with the neighbourhood could be permitted in the form of mixed use, home occupancy, or non-residential uses. For example, in Mumbai, home occupation is allowed under certain restrictions with respect to the scale of activities. Similarly, in Kenya, "extension of use" is allowed, which means that apart from the registered use of land, additional use is permitted while maintaining the dominance of the registered use, with the condition that it is compatible with the neighbourhood.

Here, a key point of deliberation is to consider how the concept of hazard is defined, and what impact the particular small scale of operation might have on adjacent activities. What is permissible could be defined at the local level, as in communities; or, as in the São Paulo case, through a classification of activities and scale of enterprise as compatible, tolerable, non-compatible – on the basis of social and environmental impacts. In Mumbai, the scale of work is limited by definition of energy consumption, labour employed, and display signs.

Regulations for mixed-use zones

While mixed-use zones allow multiple functions of land in a zone, there are often restrictions on mixed uses in the same unit or plot. These norms could be relaxed for non-hazardous activities that are compatible with the rest of the unit, and

follow necessary space guidelines as with non-residential uses.

A relaxation to development control norms may be permitted according to industry/sector compliance for occupational health and safety, which would be different for different kinds of work. For example, a home kitchen with dining space, poultry shop, and a textile unit with hired labour have different “spatial and temporal footprints” (Sohane et al. 2021) and different kinds of compatibility with uses.

6.2) Enable Home-Based Work: Defining zoning and development control regulations in dialogue with communities for in-situ upgrading

Upgrading zones at the city scale

Several studies have recommended upgrading settlements where home-based work occurs as a key means to address the occupational health and safety risks that home-based workers face, and to address spatial and infrastructural requirements that may be specific to the types of work that they are engaged in. Different types of work have different temporal and spatial footprints (Sohane et al. 2021) and upgrading is a critical means to enable home-based work in settlements where it already occurs. Slum upgrading programmes must be designed with this in mind, as illustrated in the case of upgrading in Nairobi.

As shown in the São Paulo case, where zones are mapped for upgrading, zoning regulations can map and identify existing zones for upgrading. Recognition of zones may be done at a city scale through means suitable to each context. In Delhi, as suggested by a peoples-led campaign, such zoning could be done in areas where there are already agglomerations or clusters of

home-based work (MBD 2020). The location and spatiality of home-based work will be particular to different cities. This spatial targeting can also be done through income level or housing typologies, as discussed in the cases of São Paulo and Bangkok, which would include home-based workers among residents in an area.

Zonal/neighbourhood Detailed Project Reports

Most planning frameworks have provision for “local area planning” – defined differently across countries – with some form of local or community or sub-city scale planning. Drawing from the cases of upgrading, we recommend the development of zonal and neighbourhood Detailed Project Reports (DPRs) targeting local area planning. These should be developed in consultation with residents, based on a needs assessment of the sectors of home-based work, the spatial requirements, occupational health and safety requirements, and the scale at which home-based work is occurring in existing settlements.

The needs assessment should recognize the existing commercial hazardous activities that must be planned for in the upgrading plan, with the aim to mitigate and reduce risk for workers, residents and the neighbourhood. While conventional zoning conceptualizes a separation of uses to prevent harm or nuisance and to address safety concerns, it is also possible for zoning to address the risks spatially through specific development controls that enable livelihoods. Zoning also can refer to sector-specific guidelines on occupational health and safety that can be modified with time as technological advancements and sectors of work evolve. For example, in a site zoned for upgrading where brick kiln work happens within the neighbourhood, space may be demarcated with sufficient setbacks, building heights and infrastructure to allow natural ventilation/

exhaust ventilation systems to be installed. The specific DPR should be developed in consultation with residents and workers.

At the neighbourhood scale, DPRs must allocate space for community infrastructure. This can include community centres, multi-purpose halls, parking space, wide roads, income-generation space and child-care centres. The amounts of space and specific uses must be determined in consultation with the community based on needs assessments. Upgrading projects must plan for access to water, sanitation, electricity loading requirements, as determined by a needs assessment, and after recognition of not just the requirements of residential units but also of the commercial activities in the upgrading zone.

At the unit level, the upgrading must enable expansion of working and storage space along with living space, to account for home-based work and to anticipate future home-based work or income-generation space. Design modifications can increase light and ventilation in units, and can also increase unit-level access to services including electricity, water and sanitation.

6.3 Enable Home-Based

Work: Defining zoning and development control regulations in dialogue with communities for resettlement when in-situ upgrading is not possible

In some cases, in-situ upgrading may not be possible or desirable. This could be due to the land being unsuitable, uninhabitable or untenable for in-situ development. For example, in Bangkok, some communities with access to finance enabled through self-help groups and the Baan Mangkong programme chose to buy and relocate to suitable land parcels instead of in-situ upgrading on land that was low-lying and prone to flooding, or where negotiating for tenure was not an option.

In such cases, in consultation with the community, resettlement with a no- eviction clause can be planned for in affordable housing zones that are close to existing settlements, while ensuring that these zones provide for and are capable of providing necessary infrastructure such as water, sanitation and hygiene (WASH), electricity, connectivity to affordable transport, and linkages to commercial and industrial areas.

Similar to the previous recommendation for upgradation, Zonal Detailed Project Reports and needs assessments prepared in consultation with the community being resettled must form the basis of these projects at a local scale, and not at the scale of city-level development control regulations.

A resettlement project may offer the opportunity to further expand the size of the settlement, providing residents with the option of increasing the size of their housing unit to accommodate their workspace, or availing additional space in the vicinity to carry out home-based work. The site could also allow for designation of commercial units in the settlement and community infrastructure as previously suggested for upgrading. It is critical for resettlement projects to recognize that it is not just shelter, but also work-homes that are being resettled. This is important to ensure that home-based enterprises are surveyed alongside houses, and then to design according to people's needs, as was done in the cases of upgrading in Nairobi and Bangkok.

6.4 Anticipate Home-based

Work: Providing for mixed-use low-income housing in all forms of new urbanization

Planning must anticipate and reserve vacant land for mixed-use low-income communities and plan development control

regulations accordingly across all forms of new urbanization. This includes anticipating home-based work within affordable housing zones that reserve land for low-income housing, new industrial parks, new urban corridors, and special economic zones that reserve land for industry.

For example, São Paulo ZEIS 2-5 includes vacant land to target future urban development in anticipation of the need for low-income housing. These zones must have certain standards for providing infrastructure such as WASH, electricity, connectivity to affordable transport, and linkages to commercial and industrial areas.

At the neighbourhood/project level, mixed-use residential development should be permissible to anticipate for home-based work in both plotted housing as well as apartment complexes. Mixed use must also be permissible at the unit level, and adequate space should be allocated for community infrastructure in the future - the use of which may be determined by future community committees or resident welfare associations. This is a non-exhaustive list of suggestions and should be complemented with other guidelines to address development control regulations for multipurpose community infrastructure and other systems and services that anticipate home-based work in affordable housing.

7. Conclusion

This brief uses a framework of four principles (recognition, removal of hindrances, enabling, anticipating) to analyze zoning regulations from four cities in the Global South – Mumbai, São Paulo, Bangkok and Nairobi. Through this framework and cases, we discuss how home-based work may be recognized through particular terms, definitions and vocabularies, or by the spatial inclusion of particular housing typologies and target income groups. Hindrances to home-based

work may be addressed through mixed-use zoning where a tiered classification of industrial uses can determine compatibility with residential uses, and also prescribe amendments for spatial requirements to address risks and hazards. Regularization of tenure through zoning and community-led upgrading can address infrastructural challenges and enable home-based work. Zoning regulations can anticipate and plan for home-based work in future urban development through mapping vacant land, including mixed use and categories that recognize home-based work in future urban development.

We propose four pathways for policymakers and workers to recognize home-based work, remove hindrances, enable and anticipate home-based work in zoning regulations, as suitable to the socio-political, economic and spatial context of home-based work in their cities, and timing of the planning intervention. Interventions may include modifications in zoning regulations in existing areas where home-based work occurs, defining zoning and development control regulations in dialogue with communities for in-situ upgrading and resettlement, and providing for mixed-use low-income housing in all forms of new urbanization. It is critical for these interventions to be planned not just for shelter, but for work-homes.

As economic geographies of home-based work are particular in different cities, as are political moments, advocates for home-based work may use different pathways that suit their realities and also prioritize different principles. A key consideration to deliberate on is the idea of scale in home-based work, and on reframing the idea of hazards in zoning regulations for a regulatory framework that supports economic inclusion of home-based work.

Zoning operates in a regulatory and political environment along with several other planning tools and economic and

regulatory measures, such as tenure, taxation, and cost of services. While zoning regulations have implications on taxation and costs of basic services, interventions outside the purview of zoning – for example, self declaration/ licensing of home-based workers – can also enable targeted access to subsidies for home-based workers. Interventions in zoning as suggested by this brief need to also consider the realities of the other regulatory tools, and work in tandem. For example, in São Paulo and Bangkok upgrading is possible because land tenure is also regularized in the neighbourhoods.

Also, tax exemptions given to home-based enterprises of the resettled community of Mathare further enabled these enterprises.

The framework introduced by this brief can be used by policymakers, workers, researchers and educators for advocacy for home-based work. This can be used to analyze the current landscape of zoning regulations for different contexts to enable and anticipate home-based work. The framework also offers pathways for interventions to use zoning regulations to address the needs of workers for better infrastructure and access to services, and to strengthen tenure for home-based work.

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Women in Informal Employment: Globalizing and Organizing (WIEGO) is a global network focused on empowering the working poor, especially women, in the informal economy to secure their livelihoods. We believe all workers should have equal economic opportunities, rights, protection and voice. WIEGO promotes change by improving statistics and expanding knowledge on the informal economy, building networks and capacity among informal worker organizations and, jointly with the networks and organizations, influencing local, national and international policies. Visit www.wiego.org.