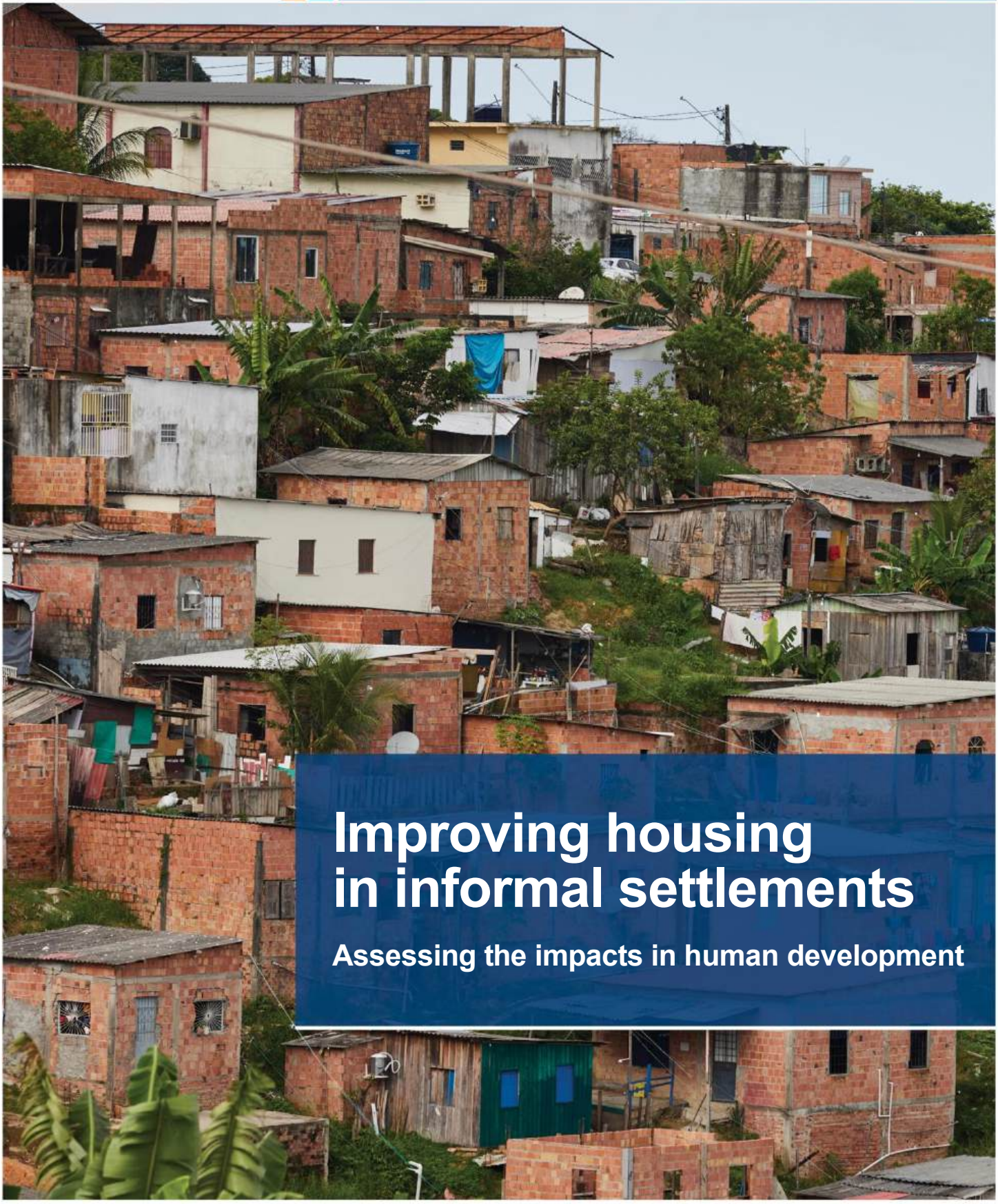
Habitat for Humanity®

Home Equals



Improving housing in informal settlements

Assessing the impacts in human development

This report was created to support the launch of Habitat for Humanity's Home Equals campaign for more equitable access to adequate housing in informal settlements around the world. It was produced in partnership with the International Institute for Environment and Development, or IIED.

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Thanks to Alainna Lynch for her research support with the data analysis.

The research in this report is part of the work of the *Housing Justice* program at the Human Settlements Group of IIED. The work was commissioned and coordinated by Habitat for Humanity under the direction of:

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Attribution

Please cite the work as follows:

Frediani, A.A.; Cociña, C.; and Roche, J.M. 2023. *Improving Housing in Informal Settlements: Assessing the Impacts in Human Development.* Habitat for Humanity International, Washington, D.C.

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Abbreviations

ECLAC: United Nations Economic Commission for Latin America and the Caribbean

GDP: Gross domestic product

GNI: Gross national income

HDI: Human Development Index

HFHI: Habitat for Humanity International

IDB: Inter-American Development Bank

ILO: International Labour Organization

SDG: Sustainable Development Goals

U.N.: United Nations

UNDP: United Nations Development Programme

UN-HABITAT: United Nations Human Settlements Programme

UNICEF: United Nations Children's Fund

WHO: World Health Organization

WB: World Bank



Executive summary

The scale of the current housing crisis calls for direct action to respond to the needs of the more than 1 billion people around the world who lack access to adequate housing in informal settlements. Responding to this human rights crisis implies dealing with all dimensions of the right to adequate housing: **security of tenure; availability of services, materials, facilities and infrastructure; affordability; habitability; accessibility; location; and cultural adequacy.** Recognizing the intrinsic value of securing equitable access to adequate housing in informal settlements, what other meaningful impacts would this have? What would be the impact if housing improvements take place at a massive scale in a country, both in terms of income, health and education for the residents of informal settlements and in other dimensions for the entire society?

This study assesses the societal returns of improving equitable access to adequate housing in informal settlements, particularly linked to human development as measured by the Human Development Index, or HDI.

Through an extensive literature review and a statistical modeling exercise, the analysis shows that adequate housing is an infrastructure for well-being and sustainability, a key enabler for dimensions of human development, with direct impacts for the residents of informal settlements in relation to living standards, health and education, and for broader societal systems.

The methodology used for the analysis was based on an extensive literature review about the connections between adequate housing in informal settlements and each of the three HDI dimensions: income, health and education. While the findings from the literature review are significant, the study goes a step further by providing an integrated approach that measures the overall societal returns in multiple dimensions simultaneously, by modeling what would happen if housing improvements in informal settlements take place at a massive scale across a whole country. To develop these estimations, the findings from the literature were translated into a series of assumptions regarding the data projected into different scenarios: from the most cautious to the most optimistic. The modeling was built using a typology of countries based on HDI and the portion of people living in informal settlements, constructing four theoretical country types that were then used to illustrate the potential impact of improving housing in informal settlements at a large scale.

The results are significant for each of the HDI dimensions:

- In terms of income, the modeling shows that at the national level, **equitable access to adequate housing in informal settlements can generate a direct impact of as much as 10.5% economic growth**, measured either as gross national income, or GNI, or gross domestic product, or GDP, per capita. This increase in the size of the economy and living standards in informal settlements is likely to be higher than the cost of securing adequate housing in many countries.
- Regarding health, **life expectancy could grow up to 4%, adding 2.4 years of life on average around the world** solely because of the direct effect of ensuring access to adequate housing in informal settlements. Globally, as many as **738,565 preventable deaths could be avoided annually**, a number that is higher than eradicating malaria worldwide.
- Finally, in terms of education, **the expected years of schooling in some countries may increase by as much as 28%** because of access to adequate housing in informal settlements. Globally, as many as **41.6 million children and young people could be enrolled in primary and secondary education** because of housing improvements in informal settlements. **This is equivalent to 16.1% of the total number of children and young people currently missing education.**

When combining the results of three HDI dimensions, the modeling shows an overall impact in the human development level for countries. Providing access to adequate housing in informal settlements could lead to **a jump of up to 18 places in the HDI country ranking** and a change in human development level from low to medium or from high to very high. **Variations in the HDI score could be as significant as 8.4%,** which means a significant increase in the average achievement of the three key dimensions of human development: income, health and education.

Certainly, the effects of securing access to adequate housing for those living in informal settlements would be higher than those computed in the modeling as direct impacts. Improving the lives of those living in informal settlements has implications that go beyond their individual well-being and affect the entire society. **When residents of informal settlements do better, everyone does better** — equitable access to adequate housing in informal settlements has broader implications for economic, health and education systems for the entire society. Moreover, it has implications in terms of climate justice (impacting environmental systems), political inclusion (impacting governance systems), and gender equality (impacting care systems), which, in turn, sustain human development progress.

The sheer amount of evidence from this study demonstrates the scale and scope of the returns across HDI dimensions when adequate housing is secured in informal settlements. Improving housing is not only a way of accelerating progress in the United Nations' Sustainable Development Goals, but also a precondition for meeting SDG targets.

Responding to the housing needs and aspirations of those living in informal settlements is an urgent task. It requires political will and action that considers the wealth of existing evidence.

To be an effective enabler of human development returns, adequate housing must be approached in an integrated way that considers the effective fulfilment of all its dimensions: Security of tenure; availability of services, materials, facilities and infrastructure; affordability; habitability; accessibility; location; and cultural adequacy.

Finally, while these findings are a call for action, the existing knowledge in this field highlights that responding to the housing challenge requires transformative and comprehensive investment and intervention. In other words, to enable and maximize health, education and economic returns while also advancing climate justice, political inclusion and gender equality, **governance conditions, political processes and participation matter**. Interventions, policies and investments in informal settlements must recognize the voices, agency and processes of those leading ongoing housing efforts from the ground as the only viable way to ensure equitable returns. Importantly, more research is needed to quantify the scope of these findings in specific countries and cities.

We need more and better housing knowledge and data produced by and about communities in informal settlements.

1. Adequate housing in informal settlements: A pathway for human development

Ongoing global emergencies have acute impacts on those living in more insecure, overcrowded and marginalized conditions. Residents of informal settlements in cities across the Global South[i,1] have been disproportionately affected by crises associated with increased energy costs, climate change, armed conflicts and COVID-19, feeding into a cycle of poverty and marginalization that intersects with inequalities in gender, race, ethnicity, class and ability. Current conditions will only get more complex amid future demographic and environmental changes.

The global housing crisis is a human rights crisis.[2] The importance of advancing more equitable access to adequate housing responds to the need and urgency of fulfilling the rights of those living in more marginal conditions, such as residents of informal settlements. As recognized by the United Nations, adequate housing is a human right that results from the combination of its seven dimensions: **security of tenure; availability of services, materials, facilities and infrastructure; affordability; habitability; accessibility; location; and cultural adequacy.** The right to adequate housing also contains what the U.N. calls entitlements, which guarantee the necessary conditions to realize the right to adequate housing in all its dimensions. These entitlements include **security of tenure; housing, land and property restitution; equal and nondiscriminatory access to adequate housing; and participation in housing-related decision-making at the national and community levels.**[3]

Acknowledging the intrinsic value and multidimensionality of the human right to adequate housing (see Box 1), this report assesses other societal returns of improving equitable access to adequate housing in informal settlements, particularly linked to human development dimensions.

Fulfilling the rights of the 1.8 billion people who lack access to adequate housing — more than 1 billion of whom live in informal settlements — is an ethical imperative. But on top of this normative position, one could argue that the international debate has put little emphasis on the hidden returns that cities, countries and societies could get from tackling the lack of equitable access to adequate housing for residents of informal settlements. A 2022 report estimates that the total investment needed to fund the necessary improvements to informal settlements is US$6 trillion globally.[4] What would be the meaningful impacts of such an investment in terms of income, health and education for the residents of informal settlements and in terms of other dimensions for the entire society? Providing clear, robust and straightforward answers to this question is challenging, given the lack of data and the complexities regarding multiple intervening and mutually dependent factors.

This report provides robust arguments and data to support that ensuring access to adequate housing from an integrated approach enables key dimensions of human development, and that when informal settlement dwellers do better, everyone does better.

The study begins by briefly discussing the challenge of assessing the societal returns of improving housing in informal settlements, looking at previous attempts and explaining the methodology and rationale of our approach. With an awareness that this kind of exercise needs to be done carefully to avoid unintended consequences, the next section identifies the risks of reproducing myths that might perpetuate inequalities. It then presents the main body of research by discussing the implications of improving equitable access to adequate housing in informal settlements for human development progress. The report looks at these returns in terms of the direct impact on income, living standards, health and education — dimensions of the Human Development Index — for residents of informal settlements. It also

i The term Global South is used here to refer broadly to the regions of Africa, Asia, Latin America and the Caribbean, and Oceania. It "references an entire history of colonialism, neo-imperialism, and differential economic and social change through which large inequalities in living standards, life expectancy, and access to resources are maintained."

discusses the broader implications of equitable access to adequate housing in informal settlements in terms of climate justice (impacting environmental systems), political inclusion (impacting governance systems), and gender equality (impacting care systems), which, in turn, sustain human development progress (see Figure 1).

The report concludes by presenting a series of policy recommendations to maximize the meaningful social, economic and environmental returns of improving equitable access to adequate housing in informal settlements. These recommendations are related to the need to prioritize housing as a human development infrastructure, the need to generate integrated and comprehensive housing approaches, a call for action to international actors, and the need for adequate local knowledge and data.

Box 1: Dimensions of equitable access to adequate housing in informal settlements

This report focuses on the human development returns of access to adequate housing in informal settlements, considering the seven dimensions of "adequate housing." In this regard, there are three important considerations:

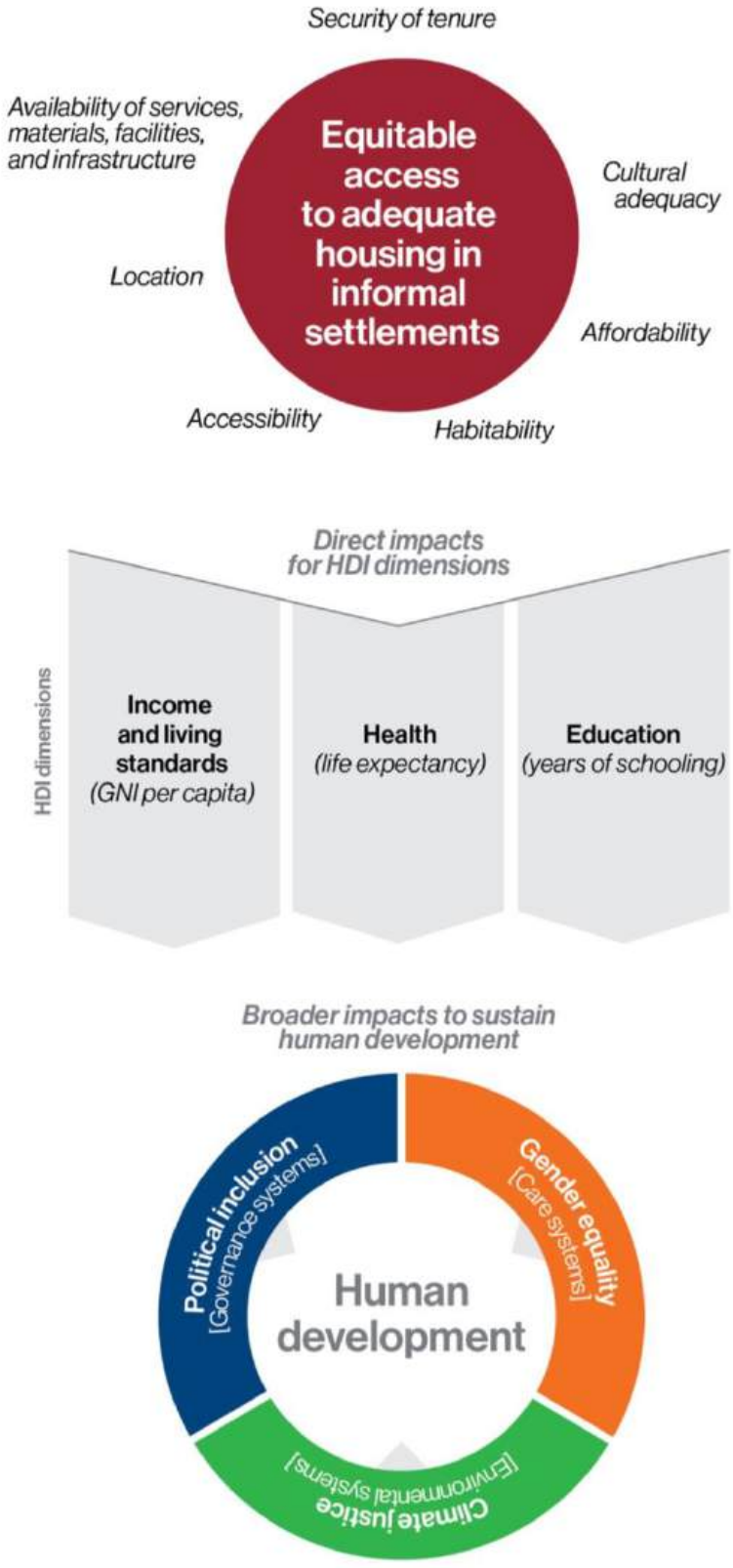
- Although **all seven dimensions** are indivisible aspects of adequate housing, this report's focus on informal settlements calls for particular attention to the foundational role of **security of tenure** and, at the base of it, **access to secure land**. For residents of informal settlements, there is no possibility of adequate housing without security of tenure, which connects to larger systemic issues about equity, recognition, urban planning and land.
- When looking at the dimensions of adequate housing, it is important to consider not only their "availability" but also the **effective access** that dwellers of informal settlements have to them. For instance, when looking at **availability of services, materials, facilities and infrastructure,** having connection to a water source is not enough if this remains "unaffordable and undrinkable."[5] Likewise, a **location** close to social services that are unreliable or too expensive doesn't fulfill this dimension of the right to adequate housing. Throughout this report, when we refer to the seven dimensions of adequate housing, we assume effective capacity to use and access such dimensions.
- The right to adequate housing, as defined by the U.N., also contains **entitlements** that guarantee the necessary conditions to realize the right to adequate housing in all its dimensions. These entitlements include:
  - Security of tenure.
  - Housing, land and property restitution.
  - Equal and nondiscriminatory access to adequate housing.
  - Participation in housing-related decision-making at the national and community levels.

In this report, we assume these entitlements as the foundation of equal access to adequate housing in informal settlements, with the focus on participation particularly relevant for the political inclusion dimension discussed later.

About "informal settlement upgrading" and housing

This report uses evidence from studies that look at the implications of access to adequate housing, along with research that has looked at housing improvements in informal settlements. Some of these studies focus on programs to upgrade informal settlements. Even though upgrading programs doesn't always include all dimensions of housing,[6] this report draws on evidence from them when they reference one or more of the seven dimensions of adequate housing. Finally, even if we tend to use the term "informal settlements" over "slums," we use "slums" when referring to data or reports (such as those from UN-HABITAT) that use the term.

Figure 1: Equitable access to adequate housing in informal settlements — understanding societal returns



2. Assessing the societal returns of improving housing in informal settlements

2.1. The challenge of impact measurement

Several studies have looked for ways to measure the broad returns of increasing access to adequate housing in informal settlements. But even if this is not uncharted territory, it is not an easy task. Data is not always available, and when it exists, causalities are often difficult to identify or individualize. Access to — and improvement of — housing tends to be embedded within wider transformations, intertwined with aspects of well-being in ways that are not always linear.

These difficulties are well documented and discussed, particularly regarding informal settlement upgrading programs that include elements of housing. A 2006 report by the World Bank titled *Impact Evaluation for Slum Upgrading Interventions*, for instance, states that while all programs should be subject to process evaluations, not all of them can be subject to impact evaluations.[7]

Previous efforts to evaluate informal settlement improvements have identified assessing the impact that a program might have on a single individual as a key evaluation problem because it is very hard to know how that individual's circumstances might have changed over time without intervention.

This implies that assessing the impact of interventions always involves working with averages and comparisons between groups. Additionally, by definition, the improvement of housing conditions in informal settlements includes a variety of interventions and components, which makes assessing the impact of housing improvements particularly complicated, requiring a comprehensive approach.[8] This issue will be discussed further later in this report.

Many evaluation efforts have focused on how effectively improvement programs have delivered on their own stated goals, and not necessarily on the implications of such interventions on other dimensions of human development. Studies have focused, for example, on identifying "what works" in improving the living conditions of residents of informal settlements, looking particularly at the extent to which programs have improved physical living conditions.[9] Alternatively, some assessments have looked at residents' satisfaction with the impact of improvement strategies.[10] A methodological report from the Inter-American Development Bank titled *Evaluation of Slum Upgrading Programs* proposes to look at outcomes at the individual, housing and neighborhood levels. The report identifies frequently used indicators at each level, such as income, health and human capital at the individual level; household size and property rights at the housing level; and transport, services and safety at the neighborhood level.[11] According to the World Bank, impact assessment has been particularly challenging in areas such as sustainability, complementary programs, administrative costs, quality control and local participation.[12]

Beyond the general assessment of the efficacy of housing and upgrading initiatives in informal settlements, a rich body of work has examined the implication of interventions in informal settlements for well-being. Some of these efforts include ambitious comprehensive evaluations of specific programs in areas as diverse as housing deficit, health, poverty, security and quality of life over time.[13] Others have developed and applied comprehensive toolkits to assess the sustainability and poverty reduction implications of informal settlements' interventions, such as the experience of the ASPIRE toolkit, which combines 96 indicators across 20 themes and four dimensions: societal, economic, institutional and environmental.[14] Some of the assessments come from more specialized literature, which has focused on particular aspects of human development, such as implications for specific diseases or health outcomes, education outcomes, or income, which is precisely the main body of research that this report draws on, as we will discuss in the following sections.

Lack of adequate data is a key barrier to meaningful impact assessment.[15] This is partly due to how costly it is to collect and systematize such data, as well as to the complicated causalities and interconnected effects of improving access to adequate housing in informal settlements. Clearly, some areas are more difficult to assess than others. The aforementioned 2006 World Bank report, for instance, identifies overlooked areas of potential impact of informal

settlement improvements, which include residential segregation, political enfranchisement, local governance, intrahousehold bargaining and gender issues, mental health and time use, among others.[16]

This leads us to fundamental questions about the very definition of meaningful indicators to assess the broad impacts of equitable access to housing in informal settlements. When looking at these implications, it is important to acknowledge that, for several decades, the growing complexity of inequalities has led to a quest for metrics and indicators that look beyond economic growth and gross domestic product, with approaches that include theories of happiness and well-being,[17] measurements of multidimensional poverty,[ii] and the increasing recognition of the Human Development Index as an alternative approach to prosperity and development. Along these lines, there have been attempts to expand and systematize ways of measuring these multiple dimensions, including locally co-produced indexes of prosperity and good life,[18] or indicators such as the Composite Global Well-Being Index, spanning 10 well-being dimensions: safety and security, health, education, housing, environment and living space, employment, income, life satisfaction, community and social life, and civic engagement.[19] This report recognizes these challenges and builds upon these reflections.

2.2. Methodological approach: Assessing the impact of adequate housing in informal settlements

This report explores the returns of addressing the need for adequate housing in informal settlements, both for the dwellers of those settlements and for societies as a whole. It does so primarily by focusing on the impact on human development progress, measured through the Human Development Index, or HDI, and its dimensions, along with reflecting on wider implications in terms of environmental justice, political inclusion and gender equality.

The HDI is a synthetic index developed by the United Nations Development Programme.[iii] It brings together indicators from three main dimensions of human development:

- A decent standard of living, measured by gross national income per capita adjusted for price level per country.
- Long and healthy life, measured by life expectancy.
- Access to education, measured by the expected years of schooling among children at school-entry age and the mean years of schooling among the adult population.

The UNDP updates the HDI annually and generates a country ranking to monitor progress on human development (see Box 2).

As a starting point, this research undertook a wide literature review of emerging evidence from peer-reviewed publications and international agencies' reports that study or evaluate the effect that improving housing conditions has on specific HDI dimensions. From this grounded evidence, relationships were established, running a series of statistical modeling to illustrate the wider societal returns on each of the three HDI dimensions, along with the general HDI level (for a more detailed explanation, see Section 4 and Annex 2). It is worth highlighting that this analysis is bounded by the available data and evidence from research on housing improvements in informal settlements.

The subsequent analysis is divided in three levels:

1. **Direct impact effect:** Based on the evidence from the studies and evaluations reviewed, the analysis first models the direct impact on informal settlement residents and the repercusions of such directs impacts in nationwide indicators. Three scenarios are produced — optimistic, moderate and cautious — depending on a set of assumptions. For each scenario, the analysis estimates the potential effect that improving housing in informal settlements would have on each HDI dimension, and the joint effect on HDI level and country rankings. This modeling was based on a country typology, as detailed in Section 4.

ii For information about the Alkire-Foster Method for measuring multidimensional poverty, see https://ophi.org.uk/research/multidimensional-poverty/alkire-foster-method/.

iii See https://hdr.undp.org/en/content/human-development-index-hdi.

Box 2: Defining and measuring GDP, GNI and HDI

The measurement of countries' development progress has been an important topic of policy debate. Since the mid-20th century, economic growth has been a dominant goal for government policymaking. As a result, policy planning and effectiveness were increasingly measured in relation to their potential and actual impact on economic growth rates. It is in this context that measurements like gross domestic product and gross national income have been used. By using GDP and GNI *per capita*, policymakers aim to assess not only the growth of their overall economy, but also changes in the gross value of their economy divided by their population. While both of these metrics are focused on income, they approach the size of a country's economy in different ways.

Gross domestic product, or GDP, captures the total monetary or market value of all the finished goods and services produced within a country's borders during a specific period. GDP does not distinguish whether products produced in a certain country are made by that country's nationals. A large amount of the income included in GDP could be generated by individuals and companies from other countries (e.g., international corporations or extractive mining companies). While this capital may be generated within the boundaries of the country, the profit will go to individuals who live in a different country, hence this metric does not fully reflect the living standards of the country where the income is generated.

Gross national income, or GNI, responds to this limitation of GDP by focusing on the value of all income produced by a country's residents within its geographical borders, plus net receipts of income from abroad. It is a measurement of all investments, goods and services that enter and stay in a country. For some countries, GDP tends to be larger than GNI, as a large proportion of their income is drawn by multinational corporations and investors. Therefore, GNI is regarded as a better measure of economic health and progress in living standards than GDP.

In the early 1990s, the United Nations Development Programme, or UNDP launched the **Human Development Index, or HDI,** as an alternative metric for development progress. The rationale is that GDP and GNI do not fully capture the quality of life of people in a country. The HDI brings together indicators from three key dimensions of human development: a decent standard of living (measured by gross national income per capita adjusted for price level per country); long and healthy life (measured by life expectancy); and access to education (measured by expected years of schooling among children at school-entry age and mean years of schooling among the adult population). In terms of its numeric value, "the HDI sets a minimum and a maximum for each dimension, called 'goal posts,' then shows where each country stands in relation to these goal posts. This is expressed as a value between 0 and 1. The higher a country's human development, the higher its HDI value."[20] HDI has captured the imagination of policymakers, expanding their narrow focus on income and economic growth by also orienting attention to multiple dimensions of quality of life. Arguably, the SDG framework also aims to move beyond GDP alone and follows a similar approach that expands on multiple dimensions by making use of a dashboard of indicators without aggregating into an index.

This report focuses its analysis of the returns of investing in adequate housing in informal settlements in terms of HDI, rather than a pure focus on economic growth and in a more synthetic manner than a dashboard of indicators. Having said that, as the HDI includes in its index a measure of economic growth, the report presents a series of findings in relation to returns associated with increase in income and economic outcomes. In the modeling section of the analysis, the report has focused on the impacts of improving housing in informal settlements on GNI per capita, as it is the indicator used for the measurement of HDI. However, the report also demonstrates that the percentage increase on GNI per capita of improving access to adequate housing in informal settlements would be equivalent to the percentage increase of GDP per capita for the typology used in the report (see **Section 4.3.1** for more details on this).

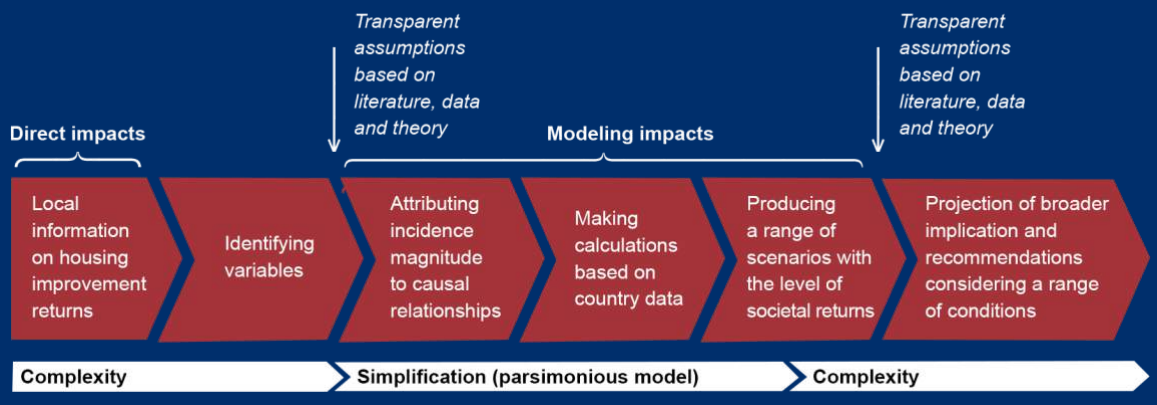
2. **Spillover effect and wider implications:** Next, the analysis discusses the range of spillover and wider benefits for the whole society. Statistical modeling is not possible given data and evidence gaps, but the analysis examines what the state of the evidence to date suggests. It sustains that when informal settlements do better, everyone does better. This is due to the interconnected nature of such impacts and their implication for wider political, care and environmental systems, which can sustain and advance climate justice, political inclusion and gender equality that, in turn, sustain human development progress.
3. **Recommendations:** By looking at what the evidence says about the potential returns and the conditions that enable them, the report builds political recommendations to maximize the social, economic and environmental returns of equitable access to housing in informal settlements.

Statistical modeling requires the simplification of rather complex realities, but the methodological approach has tried to preserve a nuanced perspective by moving the analysis over different sections of the report from complexity to simplification and then back to complexity (see Box 3). To make sure that this exercise remains framed by an equity perspective, it is important to acknowledge the potential risks of our task, as discussed in the following section. To mitigate these risks, this report was informed by two collective workshops with an advisory group from academic institutions, organized civil society, NGOs and international agencies. These workshops were key for the framing, testing and sharpening of this approach and to support the development of recommendations. A full list of participants is available in Annex 1.

Box 3: Methodological approach: From complexity to simplification, and back to complexity

All data used in this report come from evidence collected by existing grounded studies in informal settlements in different regions of the world, which measure or study the direct impact of upgrading dimensions of well-being in informal settlements. This starting point ensures that the evidence of direct impact is grounded in the complexity of local realities (left end of Figure 2). After identifying key relevant variables for the analysis, a harmonized dataset with available data from international sources was produced. The analysis then identified the intervening variables and causal relationships leading to the final outcomes. As part of the modeling process (middle section of the figure), the analysis makes a range of assumptions. These assumptions are as transparent as possible, explained in the methodological section of this report, and based on evidence emerging from the literature review, data, theory and normative considerations. The calculations in the modeling lead to a range of scenarios, from the most optimistic to the most cautious ones, looking at the broader impact on environmental, political and care systems that support human development progress. These, in turn, translate into recommendations considering a range of conditions. Details of the methodological rationale are explained in **Section 4**.

Figure 2: Methodological approach



3. Risks and myths of evaluating returns

The analysis presented in the following pages is concerned not only with access to adequate housing in informal settlements but also with the extent to which equitable access plays a particular role in expanding human development. The focus on equity translates into looking at social groups that have been systematically excluded or discriminated against by housing systems, either because of their class, gender, sexual orientation, age, ability, religion, national origin or ethnicity.

To reduce unintended consequences of the analysis that might hinder the opportunities of those systematically excluded, there are three key considerations behind this research — three key **risks of this exercise** that, if not attended carefully, might reproduce and reinforce myths that perpetuate inequities. The points below introduce those risks, what myths they might reinforce, and how this study and its methodlogy have tried to mitigate such risks. These mitigation strategies were key for framing the analysis of the literature, the identification of causal links, and the construction of recommendations.

Risk 1: Reinforcing calls for investing in housing without considering existing assets in informal settlements and the unintended impacts on different groups living there.

This study seeks to contest the myth about informal settlements as areas of cities that are "locking up" capital generation; it makes the case for comprehensive interventions in informal settlements that have impacts on the overall well-being of society. To mitigate the risk of reinforcing this myth, it is key to question the unequivocal link between individual titling and economic growth.

In the early 2000s, Hernando de Soto's book on *The Mystery of Capital* was extremely influential, labeling informal settlements as "dead capital" and encouraging individual titling as a way to unlock their productivity. Many countries in the Global South have used de Soto's work to justify the implementation of large-scale titling programs in informal settlements. However, various research has demonstrated that individual titling is not enough for unlocking potential wealth accumulation in informal settlements,[iv,21] as this fails to recognize processes of asset accumulation already taking place in informal settlements, misleadingly labeling them as "dead capital."

As the literature shows, self-builders' investments in informal land and housing "are inextricably linked with household wealth accumulation processes and long-term security."[22] Even more, when not considering existing ways of mobilizing collective and social capital, processes of individual titling can have unintended consequences (particularly for more vulnerable groups such as renters and migrants) by increasing the risk of enclosure and dispossession brought about by formalization processes that open land to unregulated markets.[23] As a result, there has been a growing recognition of the need to promote a continuum of land rights[v,24] and fit-for-purpose approaches in administering tenure rights.

Addditionally, it has been important for this study to question the link between any form of physical improvement and social outcomes. For this exercise, this means being cautious about not falling into physical determinist approaches to housing interventions, but rather recognizing the social processes that enable equity-driven outcomes in such interventions. Section 5.2 on political inclusion elaborates on the centrality of inclusive social processes to achieve more equitable outcomes, particularly in terms of collective returns.

[iv] An influential voice in this debate has been Hernando de Soto's work on *The Mystery of Capital*, as well as the increasingly critical view of his work's assumptions.

[v] The notion of the continuum of land rights has been used to recognise, record, administer a variety of appropriate land tenure forms, caring for a full spectrum of formal, informal and customary rights within land and information systems.



Risk 2: Treating issues of informal settlements as if they are the causes of citywide problems.

This study seeks to contest the stigmatization of informal settlements and their residents within cities as the origin of urban problems. This stigmatization has been sustained by the myth about the role that poor sanitary conditions in informal settlements have in the spread of health risks for city dwellers more widely or by the idea that the lack of resilience in informal settlements has a causal role for wider environmental risks in cities. Researching the societal return of improving housing conditions in informal settlements has the risk of reproducing such myths. To mitigate this risk, it has been crucial to engage with literature that looks at urban health and risk in informal settlements while understanding wider processes of "urban penalty" experienced by their residents, acknowledging the uneven exposure to harshness and burdens carried by residents of informal settlements.[25] The research also draws on literature that engages with the complex interlinkages between disaster risk and wider urban development patterns and systems.[26] The harsh living conditions in informal settlements are more often the manifestation rather than the cause of wider urban development challenges. Section 5.1 on environmental systems elaborates on these complex relationships.

Risk 3: Fostering the framing of informal settlements as an economic opportunity for profit-oriented, large-scale investment.

This study seeks to contest the myth about cities as an ever-expanding field for profit creation, but rather to investigate the social returns of housing interventions. Acknowledging the economic returns of investing in informal settlements might reinforce calls for any form of profit-oriented investments in housing and services, assuming that they will always have a so-called "trickle-down" effect on local residents. Research has shown that it is only by approaching wider city systems and market chains that affordable materials have an effect in unlocking affordable housing.[27] To mitigate the risk of reinforcing this myth, it was key for this study to engage with a wide notion of human development beyond economic growth, as well as with the structural dynamics behind the current housing exclusions. This includes, for instance, considering for the analysis and recommendations the wider implications of mobilizing global financial actors when responding to housing challanges, as hyper-financialization of housing and land have actually been a key driver of the current housing crisis.[28]

4. Direct impacts: Adequate housing is an enabler for human development in informal settlements

For decades, research has sustained that housing is an asset with economic and productivity implications;[29] that poor housing can expose people to several health risks;[30] that housing is a crucial platform to improve educational outcomes for children;[31] and, more widely, that housing is interconnected with environmental impacts,[32] political processes[33] and gender dynamics.[34] **But what does the existing evidence say about the potential concrete impacts of improving access to adequate housing in informal settlements?**

This section explores the ways and the extent to which adequate housing can enhance human development for informal settlement dwellers, looking at dimensions as defined by HDI (around income, health and education) and the implications of these advances to countries' level of human development.

The rationale and elements of the analysis presented herein are:

- The first step of the analysis looked at what the literature says about the connections between adequate housing in informal settlements and each of the three HDI dimensions. A rich body of research and evaluation sheds light on potential and actual impacts.[vi,35] Section 4.1 provides a synopsis of the evidence emerging from this literature review, summarizing the connections between different elements of adequate housing and each HDI dimension, both through quantitative and qualitative research. Table 1 at the end of the section summarizes these interlinkages.
- While the findings from the literature review are significant, they provide a partial picture because they assess the impact in each dimension separately, usually focusing only on some aspects of them (e.g., the impact of housing improvements on one particular illness). In addition, the evidence often looks only at intervention in a small geographical area or community, missing the potential of scaling up such interventions. Therefore, the following sections go a step further by providing an integrated approach that measures the overall societal returns in multiple dimensions simultaneously. The analysis does this by modeling what would happen if housing improvements in informal settlements take place at a massive scale across the whole country and, indeed, globally.
- Section 4.2 summarizes the methodological approach used to conduct this analysis. A statistical model was produced to measure the joint potential effect that adequate housing in informal settlements would have in each dimension of the HDI, and then jointly on the overall human development level of a country. Taking the evidence from the literature review as a starting point, the model assumes that the interventions take place across all informal settlements in the country. Three scenarios are obtained as an outcome: optimistic, moderate and cautious. To overcome data constraints and avoid overstretching the assumptions, the model was applied to four theoretical types of countries that were designed specifically for this illustrative purpose. Considering the levels of development (as measured by HDI) and the percentage of urban population living in informal settlements (from UN-HABITAT data), four theoretical types were constructed:
    1. High HDI with low percentage of slum dwellers.
    2. High HDI with high percentage of slum dwellers.
    3. Medium HDI with high percentage of slum dwellers.
    4. Low HDI with high percentage of slum dwellers.

  Results of the modeling were then provided for each type rather than for specific countries. Each scenario measures the overall societal return each type of country would see in terms of each HDI dimension and in the human development level as a whole measured with the HDI.
- The actual results of modeling are presented in Section 4.3. This section presents estimations of the impacts of providing access to adequate housing in informal settlements for each of the four country types and considering

[vi] An important starting point for this exercise was the work prepared by Habitat for Humanity International for *The Transformational Impact of Housing*, which reviews available literature about the impact of housing across scales, dimensions and a series of concrete elements across them.

each of the three scenarios. These are direct impacts — namely, they look only at the estimated impact for those living in informal settlements. The analysis shows what would be the effects in terms of GNI per capita, life expectancy and education for different country types and using existing data about different indicators. It estimates the returns in quantitative terms at the national level for each HDI dimension and also provides global level estimations of the total number of people benefiting if this is to take place across middle- and low-income countries.

- Finally, Section 4.4 provides an overall synthetic assessment by aggregating all three dimensions and measuring joint changes in the human development level as measured by the HDI. In practice, it measures the income, health and education impacts together by focusing on changes in the overall HDI value and country ranking for each of the four country types and in each of the three scenarios.
- The findings of this section are then complemented in Section 5 by a qualitative discussion of the spillover effects of ensuring equitable access to adequate housing in informal settlements in terms of climate justice, political inclusion and gender equality, impacting wider societal systems, which, in turn, sustain human development progress.

4.1. What the literature says

4.1.1. Income and other economic outcomes

Housing and economic productivity are closely interlinked. Several studies discuss the impacts of housing industry in the economy, looking at the contribution from the housing sector to economic outputs and employment,[36] and more specifically discussing the impact of community-led, low-income housing delivery in job creation and livelihoods.[37] For instance, the United Nations Economic Commission for Latin America and the Caribbean, or ECLAC, has estimated that a 1% increase in construction sector growth in that region leads to as much as a 0.07% expansion in the growth rate of GDP, making housing a key engine for economic reactivation.[38] For sub-Saharan Africa, a World Bank study estimates that housing investments represent 6% of the GDP, with five jobs created per house built.[39] Meanwhile, in high-income economies like the USA, the National Association of Home Builders has estimated that building 100 new low-income housing units can lead to the creation of more than 120 jobs during the construction and support roughly 30 jobs after the construction.[vii] Overall, while in most developing countries the construction sector contributes between 3 and 8% to GDP,[40] a recent report shows that, in emerging market countries, the combination of housing investments and housing services represents between 6.9% and 18.5% of the GDP, averaging 13.1% in the countries with information about both kinds of investments.[41]

Research looking at the impacts of housing improvements on economic living standards in informal settlement has focused on several themes. Poverty and employment are two critical features, with studies showing the impacts of improvements and poverty reduction,[42] and more specifically of shelter assistance and multidimensional poverty.[43] Studies have shown the different effects of informal settlement housing improvements on employment and self-employment[44] and their impact on improving income[45] and, more generally, on financial empowerment.[46]

Some studies have focused on specific dimensions of adequate housing. **Security of tenure** has been a central issue when looking at the economic implications of adequate housing. Research has investigated, for instance, the relationship between land titling and poverty reduction,[47] as well as the effects of land tenure on residential investment.[48] A study in three settlements in Eldoret, Kenya, found that those with security of tenure had higher incomes than those without, determined by different likelihood ratio statistics.[viii,49] **Affordability** also has key implications for improving living standards. This is partly due to what is called “poverty penalty,” in which poor people tend to pay high costs — above market value — for low-quality services. The 2018 High-Level Political Forum report on Sustainable Development Goal 11 shows that in sub-Saharan Africa, more than 55% of households spend more than 30% of their income on housing costs.[50] Likewise, recent research looking at the effects of rising costs of construction materials in African cities has demonstrated that residents of informal settlements spend between 15 and 30% of their monthly budget on materials for repairs and improvements.[51] Providing access to adequate housing that ensures habitability and affordability can increase the disposable income of households in informal settlements.

[vii] For more information, see multihousingnews.com/the-role-of-affordable-housing-in-stimulating-the-economy-2/.

[viii] The study finds a likelihood ratio statistic of 0.021 < 0.05 in Huruma, of 0.016 < 0.05 in Kamkunji, and of 0.740 > 0.05 for Munyaka.

In terms of **availability of services, materials, facilities and infrastructure,** studies have focused on issues such as the impacts of improving housing infrastructure on quality of life[52] or on the relationship between access to basic services (such as electrification) and households' income, expenditure[53] and employment.[54] A study in rural Bangladesh, for example, found that the gain in total income due to electrification can be as much as 30%.[55] In rural Nicaragua, a study found that electricity increased the propensity of women to work outside the home by about 23%.[56] Extensive research has looked at how infrastructure disruption (related to electricity, water and transport) affects household economic welfare through increased costs and missed work.[57] Another important area of research has been around the impacts of increasing access to water, which translates into saving time and, in turn, increasing possibilities for higher income. For example, evidence from an informal settlement in Manila, Philippines, found that 72.1% of households used the time saved through the improvement of water supply to start working for more income and that the proportion of households under the poverty threshold was reduced from 55.6% to 29.9%.[58] These dynamics reduce the time burden of water collection for women and girls. A study looking at the impacts of improvement programs in 12 informal settlements in India found that, on average, 68% of households reported saving time as a result of the provision of improved water, with 56% reporting a decline in the burden of collection for women.[59] Evidence also suggests that the time saved is partly used for income-generating activities.[60]

The benefits of in-situ housing improvements in central land, ensuring the adequate **location** of housing, have also been highlighted by existing literature. Evidence shows that housing projects that involve relocation to areas far from livelihood opportunities can reduce employability[61] and demonstrates that relocation to peripheries has negative impacts on income and on transport expenditures.[62] A study from the Inter-American Development Bank shows that, when comparing households in the periphery of cities with those in central areas, the average household's expenditure in items such as transport and other services can increase as much as 45% in Brazil, 42% in Mexico, and 27% in Colombia.[63] In terms of **accessibility,** studies have discussed the connections between paving streets and labor outcomes,[64] along with the effects that large infrastructure investment has on disposable income, including increased private investment in housing.[65] Likewise, research has focused on how physical improvements have affected the use of public space with implications for household economic activity.[66]

All in all, the literature shows that access to adequate housing for informal settlements has implications for productivity, income and living standards by enhancing the construction sector, reducing expenditure, and increasing disposable income; saving time and allowing more income generation, with particular implications for women; enabling access to livelihoods; and promoting housing investment, security and asset accumulation.

4.1.2. Health outcomes

Health has been a key focus of housing research, in line with the recognition by the World Health Organization, or WHO, that the "quality of housing has major implications for people's health."[67] Looking specifically at informal settlement improvements, the literature has systematically shown how housing interventions can enhance the quality of life by reducing communicable diseases[68] and, more specifically, improving children's health.[69] Beyond communicable diseases, research on chronic poverty and ill health has shown that residents of informal settlements must deal with the "double burden" of communicable and non-communicable diseases, some of which are associated with the impacts of climate change.[70] More recently, the focus on health and inadequate housing conditions has been a critical feature in the context of responses to epidemics (such as Ebola) and the COVID-19 pandemic, with critical takes for those living in informal settlements.[71]

Looking more specifically at the impacts of improving the **availability of services, materials, facilities and infrastructure**, effective access to water has been a key issue. Studies have found that "for every dollar invested in water and sanitation, there is a $4.30 return in the form of reduced health care costs for individuals and society around the world."[72] Research has demonstrated that the improvement of water and sanitation systems translates into a decline in waterborne illness incidence. A systematic literature review on evaluations of informal settlement improvements found a consistent body of evidence suggesting that improvements may reduce the incidence of diarrhea and water-related expenditure.[ix,73] An evaluation of infrastructure upgrading in an informal settlement in India, for example, which included improvements in household water and sanitation systems, found statistically significant positive effects on health

[ix] The literature review searched for published and unpublished studies in 28 bibliographic databases.

outcomes.[x,74] Research also has shown the impact of contaminated water on diarrhea[75] and of piped water on diarrhea among children younger than 5. For example, a propensity score matching analysis with data from rural India found that the prevalence of diarrhea among children under 5 was 21% higher among those without access to piped water, and illness duration was 29% higher.[xi,76] Interestingly, the study found that health gains due to access to piped water largely bypass children in the poorest 40% of families, particularly when women in the household were poorly educated,[xii] pointing to the importance of combining infrastructure investments with other effective public action. Generally, infrastructure disruptions linked to electricity, water and transport have a negative impact on health.[77]

Improving the **habitability** and **cultural adequacy** of housing also has an important impact on health outcomes. Studies have found that housing materials are predictors of mortality among children under 5; a study using data from Nigeria found that, compared with children living in good housing materials, the hazard ratio of mortality for children under 5 was 1.46 higher among children who lived in houses built with inadequate materials, and 1.23 for those with moderate housing materials.[78] Moreover, evidence highlights the magnitude of the impact of domestic injuries on population deaths,[79] which becomes critical when looking at the causes of death in informal settlements and their connections with injuries conditioned by environmental and infrastructure conditions.[80] Data has shown the interconnections between housing conditions and "respiratory infections, asthma, lead poisoning, injuries and mental health."[81] Several studies demonstrate connections between poor-quality housing and psychological distress[82] — and mental health more generally.[83]

A key feature in terms of habitability and health relates to overcrowding. Overcrowding has impacts on influenza among young children[84] on lower respiratory disease in young children,[85] on death caused by tuberculosis,[86] and on acute respiratory infection among children under 5. A community-based cross-sectional study in urban and rural areas of Puducherry in India, for example, found that the presence of overcrowding (adjusted odds ratio [AOR]=1.492), urban residence (AOR=2.329), and second birth order (AOR=0.371) were significant predictors of acute respiratory infection.[87] Inadequate housing also has an impact on household air pollution, impacting the mortality of children under 5.[88]

Extensive literature shows the contributions of house improvements to malaria control. A study analysis of survey data from 21 sub-Saharan African countries found that improvements in housing conditions may lead to malaria control and eradication.[89] Based on conditional logistic regression, this study found that improved housing was associated with a 9% to 14% reduction in the odds of malaria infection after controlling for other factors, including the use of insecticide-treated nets.[xiii] A control trial study in Korogwe District in Tanzania found that children residing in high-quality housing had one-third lower malaria incidence rates compared with those residing in the lowest quality housing, after controlling by wealth and rural residence using multivariate regressions.[xiv,90] Sometimes the impacts of malaria are linked to improving specific components of housing habitability. An impact evaluation of a large-scale program of the Mexican government to replace dirt floors with concrete floors found evidence of a 78% reduction in parasitic infestations, a 49% reduction in diarrhea, an 81% reduction in anemia, and a 36 to 96% improvement in cognitive development.[91] Other studies show links to specific improvements such as house screening,[92] and the potential of targeting housing for malaria interventions "even in highly endemic areas".[93] A systematic review and meta-analysis of a range of qualitative and quantitative research links housing improvement with a lower risk of negative epidemiological outcomes.[xv,94] Housing conditions also have been proved to be one determinant of adult tuberculosis[95] linked to environmental factors such as adult overcrowding[96] and habitability conditions.[97]

[x] The study evaluates slum upgrading in Ahmedabad, India.

[xi] The duration of illness is reduced significantly if households have a drinking water source within the premises.

[xii] The authors argue that education acts here as a proxy for knowledge about how to ensure the water is safe to drink and how best to treat illness. Note: No income effect was found for the matched control group.

[xiii] Improved housing consists of houses built using finished wall, roof and floor materials. The conditional logistic regression measures the association between housing quality and prevalence of malaria infection in children ages 0-5 years (infection was tested using microscopy or rapid diagnostic test), adjusting for age, gender, insecticide-treated net use, indoor residual spraying, household wealth and geographic cluster. The reported odd ratios correspond to the combined individual survey results using a random effects meta-analysis.

[xiv] The study enrolled 435 children in a large trial of intermittent prevention treatment for malaria, with the intention to identify risk factors for malaria incidence among young children and household and environmental factors associated with mosquito vector numbers collected in the child's sleeping area.

[xv] This systematic review and meta-analysis searched six electronic databases and screened 15,526 studies that identified intervention and observational studies published from Jan. 1, 1900, to Dec. 13, 2013. Of the studies that reported epidemiological outcomes, 74% identified trends toward lower risk of epidemiological outcomes associated with improved housing conditions.

Studies have also looked for links between **security of tenure** and health. Research on the connections between land tenure security and health outcomes, for example, suggests influence "via four pathways — infrastructure access, environmental justice, psycho-ontological security, and social cohesion."[98] Broadly, research in different countries has shown links between housing tenure and psychological distress[99] and, in general, between homeownership and health.[100] Specifically, research shows the nexus between land titling and children's nutrition, teenage pregnancy rates,[101] and even the association between tuberculosis and renting houses.[102]

Improving **accessibility** is also linked to health outcomes, such as the effects of transport and comprehensive interventions on safety.[103] Another aspect that has been considered is the impact of accessibility infrastructure improvements on crime, homicides and mortality, evidencing the linkages between improving street lighting, urban revitalization and a decrease in crime.[104]

In terms of the benefits of in-situ housing improvements that favors well-served **location**, research has shown that there is an impact of the proximity to health services in child survival.[105] Studies have also explored how housing conditions and health outcomes vary in different parts of the city depending on their geographical location,[106] along with the adverse health outcomes affected by residential proximity to environmental hazards.[107]

In summary, there is a strong interconnection between housing conditions and health outcomes, which is dramatically illustrated by its impact on child mortality, but also on exposure to fatal injuries and on a series of specific communicable and noncommunicable diseases, such as malaria, tuberculosis, and waterborne and respiratory diseases.

4.1.3. Education and learning outcomes

The interlinkages between housing conditions and education outcomes are extremely complex. There is, however, research that has shown the impact of housing on educational and behavioral outcomes,[108] highlighting the role of housing as a platform to improve educational outcomes for low-income children.[109] In terms of informal settlements, studies have shown that the main impediments to learning include "poverty, flooding, expensive water and electricity bills, limited sewage disposal system, unfair relocations, poor sanitation, unemployment and high crime rate."[110]

Improving the **availability of services, materials, facilities and infrastructure** is one key determinant for education. Infrastructure disruptions have an important impact on missed education opportunities.[111] More specifically, research has shown the effects of electrification on children's home studying capacity,[112] and the impact of sustainable infrastructure such as solar panels on children's study time.[113] Access to water has particular implications for saving time for women and girls. Not having to collect water can impact school attendance for young girls, and absenteeism among girls during their monthly periods can be caused by lack of toilets in schools.[114]

In terms of improving **habitability**, studies have showcased that the chances of high school enrollment for teens is affected by housing crowdedness and correlated with an increase in floor space.[115] Housing overcrowding has been linked to impacts on academic failure, higher dropout rates and reduced school attendance.[116] The size of the house, whether teens have their own room, and whether the house is new also increase the chances of enrollment. The effect of overcrowded housing in school performance is also widely documented.[xvi],[117]

Studies also indicate a relationship between housing conditions and literacy achievement, as demonstrated by research on a high-density suburb in South Africa, which found that children from overcrowded and poorly constructed houses perform worst in literacy tests.[118] The study shows that home duties such as gathering water interfere with children's studies, also resulting in lower scores in literacy tests. More generally, research has shown connections between informal settlement housing conditions and "learners' challenges" linked to issues such as noise, extra chores and lack of proper infrastructure.[119]

Security of tenure is also key for education outcomes. The literature suggests that residential stability implies a more constant school environment, especially reducing the effort necessary for children to adapt to the new social network. Evidence indicates a correlation between residential stability on the one hand and school enrollment and attendance on the other. For example, a multivariate analysis using census data from Taiwan was able to control the neighborhood effect and unobserved family heterogeneities by comparing a child with their peers of the same age

[xvi] A study with data from France found that children in large families perform much worse than children in smaller families, which is mostly the result of living in overcrowded homes.

cohort in the same neighborhood.[120] The study found that a series of housing variables are positively associated with the chance of high school enrollment for teens aged 16 and 17 and of college enrollment for young adults aged 19 and 20, with residential stability and homeownership being the variables generating the largest positive effects on the child's schooling.[xvii] Forced resettlements and evictions have a disruptive effect, with direct implications on access to education.[121]



In terms of **location** and access to public services linked to education, the literature highlights the importance of responding to housing needs in well-served areas, such as through in-situ interventions that consolidate informal settlement dwellers' access to existing services rather than providing housing solutions through peripheral underserved new developments. Research has shown that the distance to a school has an impact on participation in post-compulsory education,[122] demonstrating that the distance to a school is associated with access gaps.[123] Reducing the costs of going to school increases educational attainment,[124] while living in "education deserts" has implications for school and higher education decisions and enrollment.[125] Several studies have investigated the benefits of buildings schools near residents, particularly for girls and women.[126] For example, a randomized evaluation of the effect of village-based schools in northwestern Afghanistan found that enrollment increased by 42 percentage points among all children, and gender disparity in enrollment was reduced by 21 percentage points.[127]

Improving **accessibility** also has an impact. For instance, "cycle to school" programs have translated into increasing secondary school enrollment, particularly for girls.[128]

Overall, although the links between education outcomes and adequate housing are not simple, these exist and are given by the habitability and infrastructure conditions that enable educational achievement; impacts of the location and accessibility of housing in school attendance and enrollment; the importance of tenure security to avoid disruptions in education progress; and the implications of adequate housing and infrastructure conditions in saving time, with particular effects in the possibility of girls engaging with their education.

[xvii] The chances of enrollment in high school and college increase by 14.3% and 11.5%, respectively, as a result of the compound effect of larger housing size, more secure tenure, more residential stability, lower housing crowing (room distribution), and newer houses after controlling for a series of other factors.

Table 1: Intersections between HDI dimensions and elements of adequate housing — findings from the literature

Elements of adequate housing	HDI dimensions		
	Income and other economic outcomes	**Health outcomes**	**Education and learning outcomes**
Security of tenure	• Increase in household asset base. • Residential stability enhances employability and livelihood security.	• Improvement in mental health. • Improvement in children's nutrition.	• Residential stability implies a more constant school environment, improving school enrollment and attendance.
Availability of services, materials, facilities and infrastructure	• Increase in disposable income due to reduction in the costs of services. • Reduction of time poverty, especially among women and girls.	• Access to water and sanitation leads to decline in waterborne illness and reduces health care costs.	• Access to electricity enhances the home learning capacity of children. • Adequate access to water reduces time poverty and enhances school attendance.
Affordability	• Reduction of the "poverty penalty." • Increase in disposable income allows for investment in income-generating activities.	• Increase in disposable income allows households to respond to health expenses.	• Increase in disposable income allows households to cover learning expenses.
Location	• Increase in access to livelihoods. • Reduction of transportation expenditures.	• Proximity to health services leads to reductions in child mortality. • Less exposure to environmental hazards.	• Proximity to schools increases school enrollment and participation in post-compulsory education, particularly among girls and women.
Habitability	• Increase in disposable income from money saved on repairs and improvements.	• Reduction of the impact of domestic injuries leading to death. • Reduction of respiratory infections. • Improvement on mental health. • Reduction of overcrowding, leading to fewer incidents of tuberculosis, influenza and respiratory diseases, especially among young children. • Reduction of malaria infections.	• Reduction of overcrowding improves home learning capacity of children, enhances literacy achievements and school performance, and reduces school dropouts.
Accessibility	• Increase in disposable income, reflected in more private investments in housing. • Access to space for income-generating activities.	• Improvement in safety and reduction of traffic-related deaths. • Reduction of crime and homicides.	• Better access to transport infrastructure enhances school enrollment, particularly for girls.
Cultural adequacy	• Housing typologies responding to diverse livelihood opportunities.	• Culturally adequate housing options enhance sense of belonging, improving mental health and capacity to live a healthy life.	• Culturally adequacy favors social and environmental conditions that support learning.

4.2. Modeling returns in HDI dimensions: Methodology

As the previous section shows, a rich body of evidence demonstrates the benefits that housing improvements in informal settlements may have on key dimensions of human development: income, health and education. However, as explained in the introduction of Section 4, this evidence provides only a partial picture. The next few sections will go a step further by providing an integrated approach that measures the overall societal returns in multiple dimensions simultaneously by modeling what would happen if access to adequate housing in informal settlement took place at a massive scale across a whole country. Before describing the findings related to the modeling for each HDI dimension, this section explains two key methodological considerations for estimating what this evidence means for returns more widely. One relates to the use of a **typology of countries** for the estimations, and the other is about how findings from the literature were translated into a series of **assumptions** regarding the data projected into different scenarios.

4.2.1. The typology used for the statistical modeling

The statistical modeling in this report was estimated over a typology of countries instead of individual countries. Existing data gaps across key indicators, countries and periods represent important methodological constraints when running the statistical modeling at the individual country level. The advisory group raised concerns that international data on informal settlements often do not correspond with the most up-to-date data available within countries or cities, further compromising the accuracy of overall estimates at the country level. It is also well known how national account systems used to produce economic aggregates often underreport informal and subsistence activities that are widespread in informal settlements. For these reasons, the analysis constructs four theoretical country types that are then used to illustrate the potential impact of improving housing in informal settlements at a large scale. The typology, nonetheless, is not a completely abstract construct. Its design was undertaken using available data from 102 middle- and low-income countries. The methodology generates four distinct theoretical countries according to their human development level and the percentage of urban population living in informal settlements or “slums” using UN-HABITAT and UNDP data for 2018.[xviii] For methodological details on how the typology was constructed, see Annex 2, and for a description of the typology, see Figure 3 and Table 2.

The four country types are:

Type 1: High HDI and low percentage of slum dwellers.

With an HDI of 0.798, this country type has a very high human development level and would be ranked between the 68th and 69th positions out of more than 190 countries in the world. It is also characterized by having a large percentage of the population living in urban areas (61%) but a relatively low proportion of the urban population living in slums (11%). Overall, only 7% of the national population in this fictional country lives in slums. This country type is particularly common across Europe and Central Asia, such as Turkey and Albania.

Type 2: High HDI and high percentage of slum dwellers.

With an HDI of 0.748, this country type also has a high human development level and would be ranked between the 94th and 95th positions. As with Type 1, it is characterized by having a large percentage of the population living in urban areas (68%) but is different in that it concentrates a larger proportion of the urban population living in slums (24%). Overall, 16% of the national population lives in slums. This type is similar to many relatively prosperous countries across the globe, such as Thailand, Panama, Colombia and South Africa.

[xviii] These 102 countries are the only middle- and low-income countries with available UN-HABITAT data on informal settlements. The 2018 UN-HABITAT data is the most recent internationally comparable data. It also corresponds to the official data used to monitor SDG indicators on housing. The methodology used HDI data from the same year for comparability. UN-HABITAT is in the process of updating its data as part of a report to be published in 2023. The calculations in this report could be updated when the UN-HABITAT data becomes available. An advantage of using 2018 data for HDI indicators is that it corresponds to pre-COVID health and education data. The COVID crisis led to a decrease in life expectancy and school enrollment, which is expected to be partially a temporary phenomenon. The 2018 data are not affected by this phenomenon.

Type 3: Medium HDI and high percentage of slum dwellers.

With an HDI of 0.643, this country type has a medium to low human development level, ranked between the 129th and 130th positions. It is characterized by being a more rural country, with only 38% of the population living in urban areas. A large proportion of the population in urban areas lives in slums (38%). Overall, 14% of the national population lives in slums. This type of country is more common in sub-Saharan Africa or among less affluent countries in other regions. Countries similar to this country type include Gabon, Namibia, Zimbabwe, Mongolia, Bolivia, the Philippines, Nepal, India and Bangladesh.

Type 4: Low HDI and high percentage of slum dwellers.

With an HDI of 0.520, this country type has a low human development level, ranked between the 168th and 169th positions. It is also characterized by being a predominantly rural country, with only 36% of the population living in urban areas. A key feature of this type is that more than half of its urban population lives in slums (58%). Overall, 21% of the national population lives in slums. This type of country is nearly exclusive to sub-Saharan Africa, apart from exceptionally poor countries in other regions, such as Haiti. Countries similar to this type include Malawi, Ethiopia, Chad and Sudan.



It is important to highlight a few elements of the typology:

- **This is a typology, not a taxonomy**. Countries are not classified into types in a taxonomy fashion. Instead, four theoretical country types were constructed using weighted average data from real countries. While a taxonomy puts countries into groups, the typology produces a set of theoretical country types, which can then be compared with a particular country. It is important to keep in mind that the statistical modeling uses a range of indicators, including mortality rate, prevalence of certain tropical illnesses, enrollment rate, etc. Overall, there are significant data gaps across countries when it comes to these sets of indicators. The typology solves the data gaps by producing weighted averages among countries with available data. As a result, a given individual country could be very close to one of the country types in the typology but it may not be uncommon to find that a real country does not perfectly fit any country type or is similar in some respect to more than one type. The typology should be taken only as illustrative examples of the potential impact, rather than a prediction of what would happen to any particular country.
- **The typology doesn't suggest a perfect correlation between HDI level and informal settlement**. While it uses the level of human development and concentration of population in slums, the typology doesn't establish a correlation. Instead, it groups countries in a way that allows more nuanced estimations of the returns. Even if the territorial dynamics and processes within countries (e.g., small or large cities) are very diverse and will condition the impact of the investment on adequate housing, these categories provide a broader picture that facilitates the analysis.

A more detailed explanation of the design and criteria for the typologies is available in Annex 2. The typology is as follows (see Figure 3 and Table 2):

Figure 3: Typology composition, human development level and urban population living in informal settlements

***Note**: The size of the bubble corresponds to the total number of urban populations living in informal settlements.*

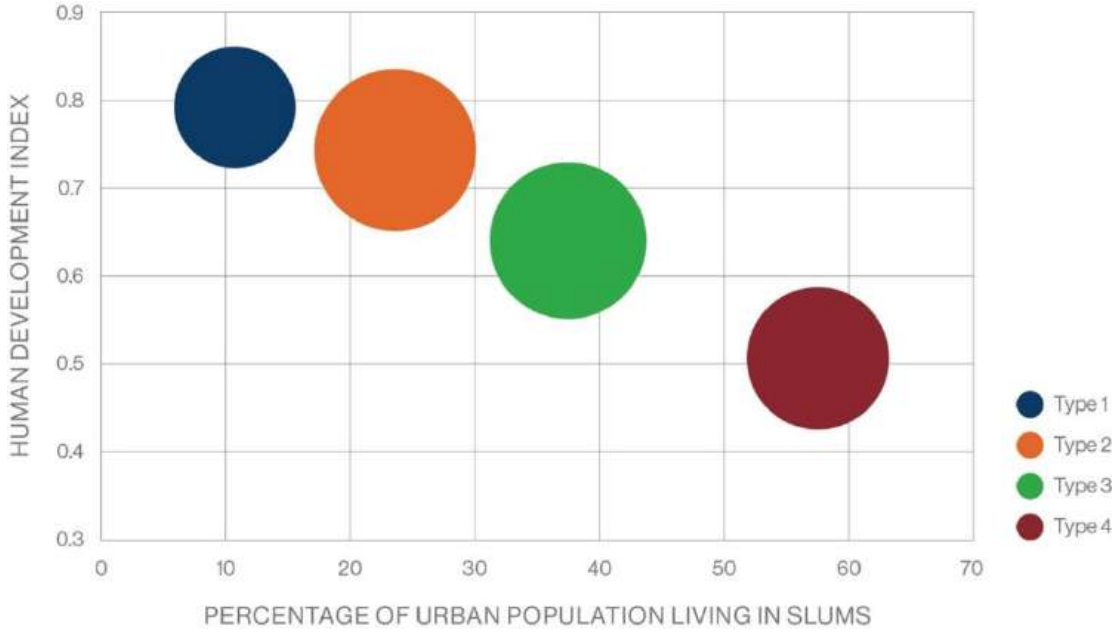


Table 2: Typology description according to level of human development, urbanization and concentration of people living in informal settlements.

	Type 1 High HDI with low percentage of slum dwellers	**Type 2** High HDI with high percentage of slum dwellers	**Type 3** Medium HDI with high percentage of slum dwellers	**Type 4** Low HDI with high percentage of slum dwellers
Human development indicators				
Human development level	High	High	Medium	Low
Human Development Index	0.798	0.748	0.643	0.520
Country ranking	69	95	130	169
HDI dimensions				
Living standards (GNI per capita)	18,903	12,856	6,314	3,149
Life expectancy	75.6	73.2	70.0	61.5
Expected years of schooling	15.7	14.3	11.9	9.3
Mean year of schooling	9.5	9.0	6.7	5.0
Percentage of population that is urban	61%	68%	38%	36%
Percentage of urban population living in slums	11%	24%	38%	58%
Percentage of national population living in slums	7%	16%	14%	21%

***Note**: All data corresponds to 2019, which is the year for the most recent UN-HABITAT estimations on informal settlements.*



4.2.2. Data and assumptions underlying the statistical modeling

To model and assess the impact of access to adequate housing in informal settlements in terms of HDI dimensions, the findings from the literature review are used to set up a series of assumptions. These are informed relations based on existing evidence (as that summarised in Section 4.1) that give a quantitative measure of the impact in terms of income, life expectancy and years of education for those living in informal settlements. The statistical modeling generates three scenarios depending on the assumptions underpinning the calculations.

The optimistic scenario is the one generating the greater effect.
The cautious scenario is based on a more conservative set of assumptions.
The moderate scenario is somewhere in between.

In a nutshell, the basic assumptions underpinning the three scenarios are as follows:

- **GNI:** Based on the data available about how access to adequate housing impacts income for informal settlement dwellers (linked to changes such as an increased asset base, improved conditions for livelihoods, fewer income disruptions linked to housing insecurity, economic savings due to fewer housing repairs, etc.), the analysis assumes a 25-30% income gain in the moderate scenario and only 10% in the cautious scenario, both very conservative estimates. The optimistic scenario assumes a greater return of 50%, which aims to capture not only the multiple effects in direct income gain but also business generations and employment, among other elements summarized in the previous section.
- **Health**: Evidence indicates that after improving their housing conditions, people living in informal settlements will enjoy a healthier and longer life. Based on the evidence, the model assumes a reduction in mortality among children younger than 5 (with chances to surviving varying from 1.35 in the cautious scenario to 2 in the optimistic scenario). It also assumes a reduction in various causes of death, including those due to malaria infection and waterborne illnesses, those caused by domestic injuries or household air pollution, and those linked to tuberculosis and other illnesses associated with overcrowding, with estimations that go from 12.5% to 50%. The model estimates the reduction in mortality using WHO mortality tables and estimating the impact on life expectancy.

- **Education**: Evidence also indicates that a series of education indicators would improve because of housing improvements in informal settlements, given factors such as residential stability and habitability and accessibility conditions that enable education tasks for girls and boys, such as less overcrowding, less use of time in accessing basic services, and better indoor environmental conditions. The model uses the findings of existing research to assume a considerable increase in primary enrollment (from 1.25 in the cautious scenario to 2 in the optimistic one) and an increase in enrollment in and progression to secondary and tertiary education.

Table 3 presents the full list of assumptions built from the literature used for modeling the effect of access to adequate housing in informal settlements. As the table shows, these assumptions vary among the cautious, moderate and optimistic scenarios.

Table 3: Assumptions built from the literature for modeling the effect of access to adequate housing in informal settlements

Cautious scenario	Moderate scenario	Optimistic scenario
Direct impact on higher living standards		
• **10% income gain** due to multisector housing improvements in informal settlements. • **9% income gain** due to electrification.	• **25% income gain** due to multisector housing improvements in informal settlements. • **30% income gain** due to electrification, and 23% increase in the propensity of women to work outside the home.	• **50% income gain** due to multisector housing improvements in informal settlements. • **50% income gain** due to electrification, and 23% increase in the propensity of women to work outside the home.
Direct impact on longer and healthier life		
• **1.35 more chances** of surviving past age 5. • **12.5% reduction** in the odds of malaria infection. • **12.5% reduction** in the odds of waterborne illness (excluding mosquito-related illnesses). • **12.5% reduction** in death caused by domestic injuries. • **30% reduction** in tuberculosis caused by overcrowding. • **30% reduction** in causes of death due to household air pollution.	• **1.46 more chances** of surviving past age 5. • **25% reduction** in the odds of malaria infection. • **25% reduction** in the odds of waterborne illness (excluding mosquito-related illnesses). • **25% reduction** in death caused by domestic injuries. • **50% reduction** in tuberculosis caused by overcrowding. • **50% reduction** in causes of death due to household air pollution.	• **2 more chances** of surviving past age 5. • **50% reduction** in the odds of malaria infection. • **50% reduction** in the odds of waterborne illness (excluding mosquito-related illnesses). • **50% reduction** in death caused by domestic injuries. • **Eradication** of tuberculosis caused by overcrowding. • **Eradication** of causes of death due to household air pollution.
Direct impact on better learning outcomes		
• **1.25 times higher chance** of enrollment in primary school. • Increased chances of enrollment in high school and college by **10.7% and 8.6%**, respectively.	• **1.5 times higher chance** of enrollment in primary school. • Increased chances of enrollment in high school and college by **14.3% and 11.5%**, respectively.	• **More than double the chance** of enrollment in primary school. • Increased chances of enrollment in high school and college by **42.9% and 34.5%**. respectively.

Box 4: What do these assumptions mean for informal settlement households?

These assumptions, emerged from the literature, are basically saying that for a family living in an informal settlement, accessing adequate housing has significant impacts in key aspects of their well-being. These assumptions are at the base of the modeling that follows about the scale of these direct impacts for countries and their economic, health and education systems.

For example, let's consider a household who lives in the informal settlement in Makuru, Kenya, with an average income in 2017 of 1,200 Kenya shillings a month (roughly US$120 or £100).[129] These assumptions say that if that household had access to adequate housing, effectively fulfilling all housing dimensions, their income could increase to 1,320 Kenya shillings (US$132 or £110) a month in the most conservative scenario, and all the way to 1,800 Kenya shillings (US$180 or £150) in the most optimistic one. For the same households, children younger than 5 would have up to two more chances of surviving because of the housing improvements, which is dramatic when considering that Kenya has an under-5 mortality rate of 37.2 per 1,000 live births, according to UNICEF. Likewise, it would reduce between 12.5% and 50% the odds of malaria infection, waterborne illness and death caused by domestic injuries for household members. The children of this household could more than double their chances of enrollment in primary school and significantly increase their chances of enrollment in high school and college.

4.3. Results: Modeling returns on HDI dimensions

This section outlines the results of the calculations built to assess the impact of equitable access to adequate housing in informal settlements. Using the assumptions and data explained above as the basis for the calculations, the results of the statistical modeling for HDI are presented separately: income per capita, life expectancy and expected years of schooling. The full impact of access to adequate housing in informal settlements at a massive scale across the whole country is presented in Table 6, including all three scenarios across all four types of countries.

4.3.1. A decent standard of living: Gross national income per capita

The statistical modeling indicates that **as much as 10.5% of economic growth may be attributed to the direct impact of improving housing in informal settlements**, measured either as GNI or GDP per capita.[xix] This is based on the optimistic scenario for Type 4 countries, the grouping with the lowest level of human development in our typology. The relative return would decrease with the level of development by 7.2% and 8% for types 3 and 2, respectively, and by 3.3% for Type 1 with the highest human development in our grouping. The decrease in the return of moderate scenario ranges from 2% to 6.3%, while that of the cautious scenario ranges from 1% to 3.1% (see Figure 4).

As a way of comparison, 10% growth is equivalent to the fast economic growth experienced by China's economy between 2005 and 2010. In contrast, countries with high human development experienced 4.5% average economic growth during the same period. Such large economic growth is an outstanding outcome compared with other less extreme stories of economic success. For example, India experienced an average of 6.6% growth during the period of strong economic performance between 2000 and 2018, and Brazil showed 4% average growth during a strong economic period between 2003 and 2010. Countries with low human development levels have much lower incomes but can experience similar levels of economic growth. For example, Ethiopia experienced 10% average growth between 2004 and 2008, while Uganda had 8% average growth between 2006 and 2011.

The modeling suggests that a substantial increase in the size of the economy — and indeed in average living standards — would be expected as a direct effect of adequate housing in informal settlements at a national scale.

It is worth noting that this increase in national income will likely be greater than the cost of improving informal settlements. In comparison, the World Bank has estimated that to close the service gaps in water and sanitation and

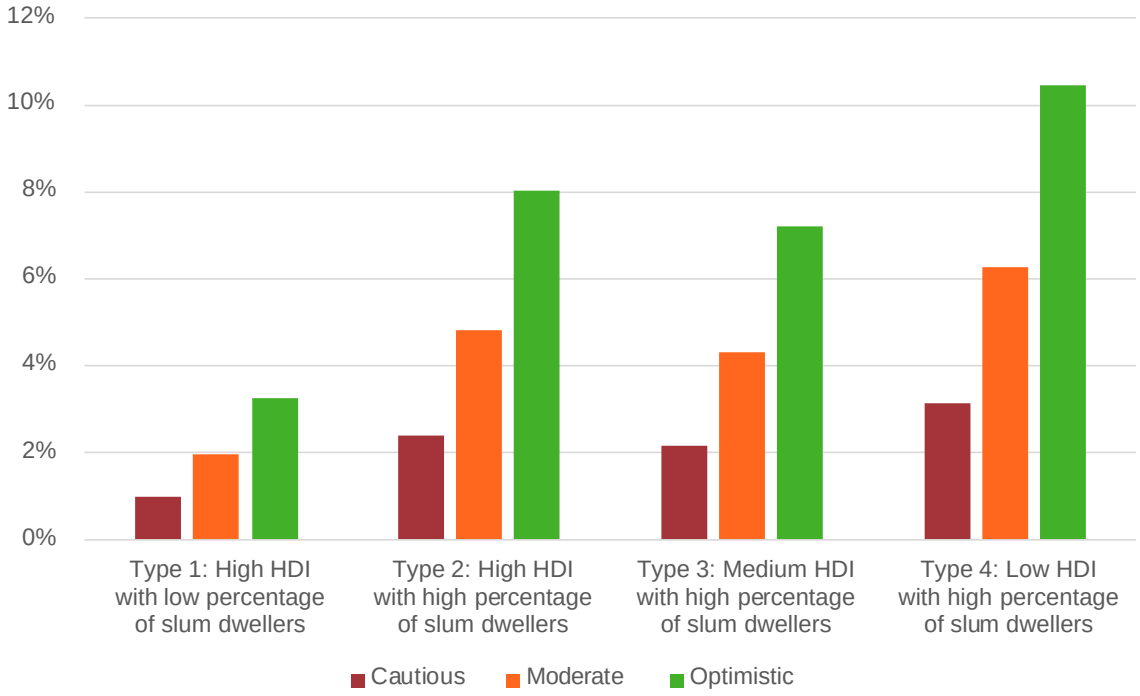
[xix] The economic growth was first measured using GNI per capita, and then GDP per capita as a robustness check. Both metrics drop similar results, as expected. The difference between using GDP or GNI in the HDI construction has implications for the final ranking but less sensitive implications when measuring economic growth. It would show significant differences only for countries where GDP and GNI differ significantly. This is not the case in the typology.

other key infrastructure, low- and middle-income countries would need to spend up to 8% of their GDP,[130] suggesting that the gain of up to a 10.5% growth would be a significant return.

The estimations of these calculations suggest that the direct effect on residents of informal settlements will be higher than the cost in many cases.

It is worth noting that the compound effect over time and the indirect effect would mean the return on the investment would be considerably high.

Figure 4: Modeling — Potential percentage of economic growth gain as a result of access to adequate housing in informal settlements across four country types, for cautious, moderate and optimistic scenarios



4.3.2. Long and healthy lives: Life expectancy

The statistical modeling indicates that countries will see considerable improvements in health outcomes. **Life expectancy could see a growth of up to 4% or an increase of 2.4 years of life on average only because of the direct effect of improving housing in informal settlements.**[xx]

Globally, as many as 738,565 preventable deaths would be avoided annually given the optimisitc scenario (or about 204,000 and 363,000 in a cautious or moderate scenario, respectively — see Table 4 for the full range of scenarios). This figure alone is higher than the total global number of deaths attributed to malaria (409,000 for 2019). The figures show that countries will considerably reduce morbidity and mortality as a result of a progressive policy in housing (see Figure 5).

The range of scenarios shows that the highest effect will be observed among Type 4, the grouping with the lowest development level, which starts from a very low level of 61.5 years of life expectancy. This type of country will see the highest effect in health outcomes partly because it starts at a very low level, but also partly because the morbidity and mortality caused by poor housing are higher than in better-off countries. **It is worth noting, however, that every**

[xx] Note that 2.4 additional years in life expectancy is indeed a significant increase that requires considerable reduction in mortality across each age group.



type of country observes significant progress in all three scenarios. Even Type 1, the grouping with the highest human development level, with an already high life expectancy of 75.6 years, shows an increase of up to 1% in the optimistic scenario (0.5% or 0.3% in the moderate or cautious scenario, respectively). While it is difficult to increase life expectancy higher than 75.6 years, an increase of the magnitude overserved by a Type 1 country moves it even closer to the level of countries with very high human development.

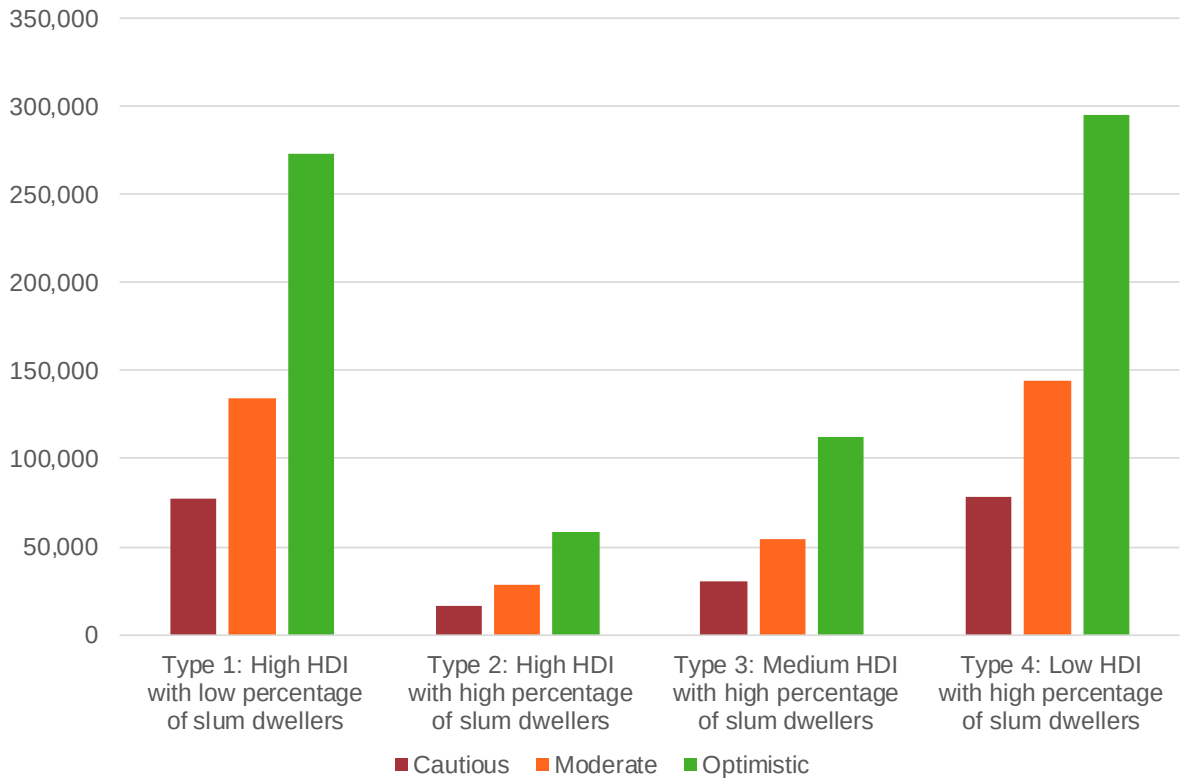
Given the progress in technology and demographic change, a similar level of progress would take some time for average countries. Across the globe, low human development countries have seen on average an annual 1% increase in their life expectancy between 2000 and 2018. The modeling shows that the increase in equivalent country Type 4 would be four times higher in the optimistic scenario and 20% higher in the cautious scenario. The modeling shows that all four country types would experience important progress in life expectancy.

This remarkable progress in health hides the fact that the increase in life expectancy is even higher for residents of informal settlements. The national life expectancy is an average, but residents in informal settlements will live considerably healthier and longer lives as a result of reducing the burden that poor housing causes on health. It is also worth noting that the estimates are measuring only the direct impact of housing improvements in informal settlements, and it is expected there would be a considerable spillover effect in health across the society as a result of reducing the pressure in the health system.

Table 4: Total preventable deaths avoided as a result of securing adequate housing in informal settlements

	Cautious	Moderate	Optimistic
Type 1: High HDI with low percentage of slum dwellers	77,770	134,739	272,814
Type 2: High HDI with high percentage of slum dwellers	16,564	28,714	58,109
Type 3: Medium HDI with high percentage of slum dwellers	30,987	54,958	112,218
Type 4: Low HDI with high percentage of slum dwellers	78,586	144,286	295,424
Total preventable deaths globally (excluding high-income countries and countries affected by high-intensity conflicts)	**203,907**	**362,697**	**738,565**

Figure 5: Modeling — Global preventable deaths avoided as a result of access to adequate housing in informal settlements across four country types, for cautious, moderate and optimistic scenarios



4.3.3. Access to education: Expected years of schooling

The statistical modeling indicates that **the expected years of schooling may increase as much as 28%** (ranging from 5.6 to 28% depending on the scenario and type of country). Evidence indicates that the number of out-of-school children and young people would drop considerably because of housing improvements in informal settlements. According to our calculations for the optimistic scenario, **as many as 41.6 million children and young people across the globe who otherwise would be missing education could be enrolled in primary and secondary education** (see Table 5 for the full range of scenarios). **This is equivalent to 16.1% of the total number of children and young people currently missing education globally.**

The largest relative increase in expected years of education is observed in countries with medium and low human development levels (types 3 and 4), where enrollment rates are particularly low. Given that evidence indicates primary enrollment and school progression will increase, these are the countries that would see the largest relative increase. For Type 4 countries (those with lower human development level), the increase may range from 11.3 to 28.1%. For Type 3 countries (those with medium human development level), the increase may range from 8.9 to 15.5%. In practice, Type 4 countries may see an increase of the expected years of schooling from 9.3 to up to 11.9, on average (see Figure 6). In comparison, it took Ghana 12 years to see an equivalent level of progress.

Table 5: Total out-of-school children and young people that can be avoided as a result of securing adquate housing in informal settlements

	Cautious	Moderate	Optimistic
Type 1: High HDI with low percentage of slum dwellers	1,339,923	1,539,607	2,501,758
Type 2: High HDI with high percentage of slum dwellers	774,102	896,910	1,748,654
Type 3: Medium HDI with high percentage of slum dwellers	12,595,968	13,620,812	21,819,561
Type 4: Low HDI with high percentage of slum dwellers	6,260,889	12,216,207	15,593,676
Total out-of-school children and young people avoided globally (excluding high-income countries and countries affected by high-intensity conflicts)	**20,970,882**	**28,273,536**	**41,663,649**

Figure 6: Modeling — Number of out-of-school children and young people averted as a result of access to adequate housing in informal settlements across four country types, for cautious, moderate and optimistic scenarios

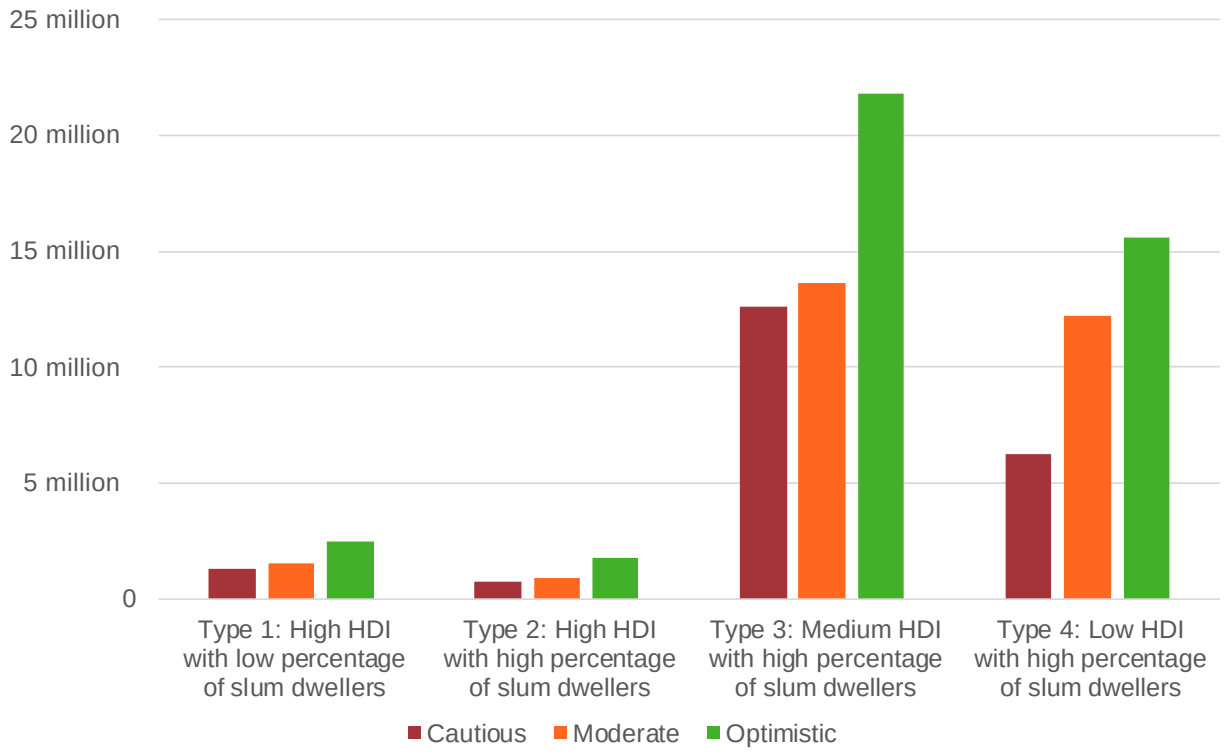


Table 6: Variation in human development dimensions according to scenarios (only direct impact)

Country type	GNI per capita			Life expectancy			Expected years of schooling		
	Original	Model	Percent variation	Original	Model	Percent variation	Original	Model	Percent variation
Optimistic									
Type 1	18,903	19,520	3.3%	75.6	76.4	1.0%	15.7	17.6	12.1%
Type 2	12,856	13,887	8.0%	73.2	74.1	1.2%	14.3	16.2	13.1%
Type 3	6,314	6,770	7.2%	70.0	71.2	1.7%	11.9	13.7	15.5%
Type 4	3,149	3,479	10.5%	61.5	63.9	3.9%	9.3	11.9	28.1%
Moderate									
Type 1	18,903	19,273	2.0%	75.6	76.0	0.5%	15.7	16.9	7.6%
Type 2	12,856	13,474	4.8%	73.2	73.6	0.6%	14.3	15.3	6.6%
Type 3	6,314	6,588	4.3%	70.0	70.6	0.9%	11.9	13.0	9.6%
Type 4	3,149	3,347	6.3%	61.5	62.7	2.0%	9.3	11.3	22.2%
Cautious									
Type 1	18,903	19,088	1.0%	75.6	75.8	0.3%	15.7	16.7	6.5%
Type 2	12,856	13,165	2.4%	73.2	73.5	0.4%	14.3	15.1	5.6%
Type 3	6,314	6,451	2.2%	70.0	70.4	0.5%	11.9	12.9	8.9%
Type 4	3,149	3,248	3.1%	61.5	62.2	1.2%	9.3	10.3	11.3%

4.4. Modeling results on HDI ranking

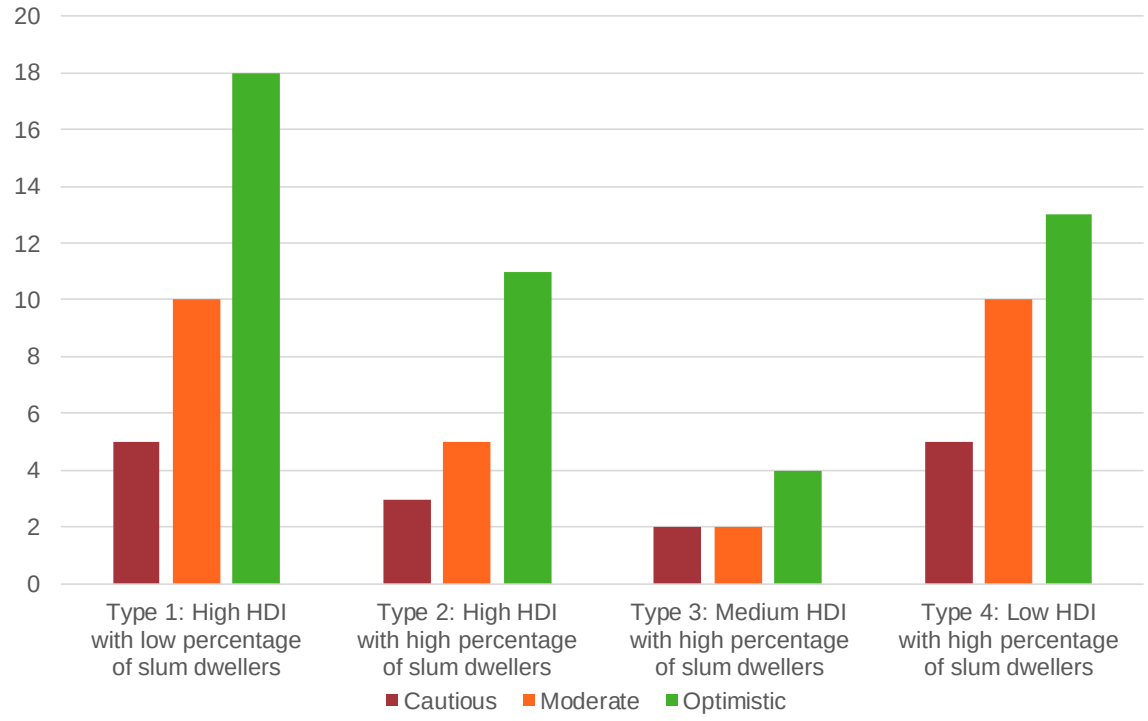
The Human Development Index provides a metric that combines dimensions and indicators in relation to income, health and education, which this report has discussed and modelled so far. Based on the presented estimations, this section looks at the joint effect of the three human development dimensions to model how they impact HDI scores (see Box 2 for details about HDI measurement). This allows us to ascertain the overall effect on human development level by combining changes in all three areas. Table 7 presents the results, and Figure 7 shows graphically the expected changes in countries' ranking of human development.

The statistical modeling shows that **providing access to adequate housing in informal settlements could lead to a jump of up to 18 places in the HDI country ranking and a change in the human development level from low to medium or from high to very high.** The highest percentage variation in the HDI score is observed among Type 4, with up to 8.4% variation in the optimistic scenario (3.2% and 5.9% in the cautious and moderate scenarios, respectively). This type of country may see a change of 5 to 13 in its country ranking, moving from low to medium human development level. In contrast, Type 1 will see up to 2.9% variation in the optimistic scenario (1.4% and 1.8% in the cautious and moderate scenarios, respectively). Despite a much lower increase in the HDI score, a Type 1 country may see a change between 5 and 18 in its country ranking. This variation is partly explained by the distribution of countries in the world ranking, and partly by the diverse effect that securing adequate housing in informal settlement has in different country profiles.

Table 7: Variation in human development according to scenarios (only direct impact)

Country type	HDI			HDI level		HDI ranking		
	Original	Model	Percent variation	Original	Model	Original	Model	Variation
Optimistic								
Type 1	0.798	0.822	2.9%	High HD	Very High HD	69	51	18
Type 2	0.748	0.774	3.6%	High HD	High HD	95	84	11
Type 3	0.643	0.672	4.4%	Medium HD	Medium HD	130	126	4
Type 4	0.520	0.564	8.4%	Low HD	Medium HD	169	156	13
Moderate								
Type 1	0.798	0.813	1.8%	High HD	Very High HD	69	59	10
Type 2	0.748	0.762	1.9%	High HD	High HD	95	90	5
Type 3	0.643	0.660	2.6%	Medium HD	Medium HD	130	128	2
Type 4	0.520	0.551	5.9%	Low HD	Medium HD	169	159	10
Cautious								
Type 1	0.798	0.810	1.4%	High HD	Very High HD	69	63	6
Type 2	0.748	0.758	1.4%	High HD	High HD	95	92	3
Type 3	0.643	0.657	2.2%	Medium HD	Medium HD	130	128	2
Type 4	0.520	0.537	3.2%	Low HD	Low HD	169	164	5

Figure 7: Positions jumped in the HDI country ranking as a result of access to adequate housing in informal settlements across four country types, for cautious, moderate and optimistic scenarios



5. HDI and beyond: When informal settlement dwellers do better, everyone does better

Certainly, the effects of securing access to adequate housing for those living in informal settlements would be higher than those computed in the modeling as direct impacts. Improving the lives of those living in informal settlements has implications that go beyond individuals' well-being and affect the entire society. The direct impacts on income, health and education that this report identifies have several spillover effects, such as reducing the stress in care and health systems, improving environmental conditions and urban resilience, mobilizing small businesses and their implication for the wider economy, and activating livelihoods and the housing industry, among others. In other words, **when residents of informal settlements do better, everyone does better.**

The quantitative scope of these spillover effects, however, is difficult to estimate, partly because of the lack of adequate data for such complex causalities. But there is enough evidence to support that the indirect impacts are significant. Research has shown, for example, that between 0.1 and 0.2% of GDP could be lost each year just because of unreliable infrastructure linked to electricity, water and transportation.[131] Moreover, the lack of access to adequate housing in both rural and urban areas has implications for the generation of poverty traps that affect wider social systems.[132] These considerations are in line with what research by The Equality Trust says about the negative impacts of inequality on rich societies, demonstrating that "more equal societies almost always do better." The study shows that, among high-income countries, more unequal nations tend to have worse health outcomes, life expectancy and social problems, with inequality eroding trust and child well-being; increasing anxiety, homicide and imprisonment rates; and affecting other well-being indicators for the entire population.[133]

Improving housing in informal settlements is not only a way of accelerating SDGs progression, but also a precondition for meeting SDG targets. Based on the reviewed evidence, and beyond the modeling of HDI dimensions, three particularly significant systems are impacted by ensuring equitable access to adequate housing in informal settlements. These systems showcase areas not necessarily fully captured by the three HDI dimensions and, at the same time, constitute key systems that support larger spillover effects in terms of human development progress from an equity and justice perspective, as demonstrated by global human development reports. When considering the equity principles discussed in Section 3, advancing access to adequate housing in informal settlements can have implications in terms of **climate justice**, with wider effects in environmental systems; in terms of **political inclusion**, with broader implications in governance systems; and in terms of **gender equality**, with wider implications for care systems. In the following sections, we briefly review some key aspects for each of these topics.

5.1. Climate justice and environmental systems

There is significant evidence about the role that providing access to adequate housing in informal settlements has for advancing **climate justice**. This has translated into an increased emphasis on resilience, as well as adaptation and mitigation, in many informal settlement improvement programs, although the direct links with housing are not always explicit. The emphasis on resilience partly responds to an acknowledgment of the disproportionate impact of climate-related incidents for residents of informal settlements. This is sometimes due to the location of informal settlements in more "dangerous sites" and to the fact that they concentrate at-risk populations.[134] More broadly, the World Bank shows that over 80% of the life years lost in disasters in the past 30 years came from low- and middle-income countries, with evidence showing that the impact of disasters on GDP is 20 times higher in these countries than in higher-income ones.[135] Consequently, research has also focused on understanding how natural disasters affect people's well-being, particularly related to the overall effects of natural disaster risk and losses in poor people.[136] Research shows the importance of adaptation measures and funds to target improvements of housing conditions in informal settlements as a strategy to make responding to climate change more effective and equitable.

Evidence from Sri Lanka, for example, shows that residents of informal settlements bear the cost of damage and short-term coping measures from recurring floods, either using their limited resources or borrowing from informal

sources, which is more costly if "compared with the nonpoor, who have more savings in financial form and greater access to formal sources of credit."[137] In Guatemala, research shows the negative effects on household welfare of a strong tropical storm, particularly on urban households, which partly explains the increase in poverty observed in urban Guatemala between 2006 and 2011.[138] Research on Lima, Peru, has identified the effects of everyday risks and small-scale disasters that perpetuate risk accumulation cycles for those living in informal settlements.[139] A study in a range of Southeast Asian countries looking at how households adapt to extreme climate events such as floods, droughts and storms shows that the housing type and household size are key factors that influence to what extent households are proactive on adaptation measures.[140] This evidence calls for attention to the environmental dimension and implications of any intervention in informal settlements.[141]

Even if most housing improvement programs are not designed from a climate justice perspective, researchers have identified that there are both "community- and city-government-led measures to upgrade settlements [that] can enhance resilience to climate-change risks and serve vulnerable groups" through transformative upgrades and housing improvements that pay attention to the carbon footprint and include strong community involvement and partnership across government levels.[142] An evaluation of resilience-related projects in informal settlements in Kenya, for example, has identified "an improvement in asset base, capacities and external resources for the community post intervention."[143]

Importantly, advancing climate justice for those living in informal settlements has implications for wider **environmental systems** that sustain human development progress for the whole society. A 2016 World Bank publication shows that policies that make people more resilient can save as much as US$100 billion a year.[144] Likewise, the IDB suggests that for every dollar invested in adaptation, US$3.50 of material losses can be avoided, without even considering other non-monetized social and environmental benefits.[145]

It is important to acknowledge that countries with higher human development levels tend to also have larger carbon footprints, and therefore it is key to look at how human development is improved. Considering the direct impacts discussed in this report, advancing access to adequate housing in informal settlements with a focus on climate justice can translate into human development progress that benefits environmental systems. For example, housing and neighborhood improvements that consider a climate perspective can positively impact overall consumption and emissions. In a low-income settlement in Cape Town, South Africa, research has shown that implementing a series of healthy, low-cost energy upgrades has reduced electricity consumption and CO2 emissions. This research estimates that between 2008 and 2011, 6.5 tons of carbon reductions per year were achieved, which translated into an annual saving of US$110,000 for the project and communities.[146] Likewise, housing relocation tends to have worse sustainability outcomes than in-situ improvements, highlighting the complex interplay between questions of justice, equity and environmental sustainability.[147] In-situ improvements can bypass and create alternatives to carbon-intensive urban development pathways. These studies demonstrate that it is possible to promote mitigation measures through decarbonization pathways without driving up the cost of housing and compromising access to affordable housing.

Furthermore, improving access to housing in informal settlements can play an important role in building a connection between adaptation and mitigation measures. Housing interventions can enhance the capacity of vulnerable communities to adapt to climate change, while also opening up alternative and less carbon-intensive pathways of urban development.[148] They can do so by securing the tenure of informal settlement dwellers in well-located areas of the city, improving their access to services and infrastructure, while promoting housing improvements through a circular economy model to the construction industry.[149] In this sense, adequate access to housing in informal settlement is a "nexus" of mitigation and adaptation solutions for families and communities.

Impacting environmental systems has, in turn, an important impact on everyone's human development. In 2007, the UNDP human development report announced that failing to respond to climate change "will stall and then reverse international efforts to reduce poverty."[150] In 2011, it highlighted that the global challenges of sustainability and equity must be addressed together.[151] And by 2014, the report showed that reducing vulnerabilities and building resilience are necessary for sustaining human progress.[152] The complexity and extent of these challenges have only increased, as the latest version of the report on the Anthropocene[153] and uncertain times[154] highlights, centering the importance of looking from an equity perspective at the environmental and climate impacts of urban and housing interventions.

5.2. Political inclusion and governance systems

Organized civil society and academics have widely acknowledged the community empowerment implications of housing production in informal settlements. When recognizing local knowledge and collective mobilization, access to housing in informal settlements can directly impact processes of **political inclusion**. Those who have studied and documented processes of social production of habitat,[155] community-led housing,[156] housing by people[xxi] and other housing approaches have all highlighted the potential of housing processes to increase political inclusion of informal settlement residents. Importantly, they all highlight that the way these processes take place matters, looking particularly at housing production that is driven by collectives and has translated into concrete gains in terms of access to land, tenure security and the recognition of rights for the systemically marginalized. They have advocated for prioritizing mechanisms that put emphasis on residents' agency and territorial governance (e.g., promotion of community access to finance, forms of collective land management and diverse tenure mechanisms, assisted self-building, etc.) as they enable more transformative outcomes in terms of social and political inclusion.[xxii]

Research has shown that, to advance political inclusion through housing improvements in informal settlements, formal participation is not enough. A study in Jordan shows that the lack of comprehensive plans and organization between stakeholders in the improvement of the physical environment of informal settlements affects the extent to which the interventions empower communities socially and financially.[157] Research in Durban, South Africa, shows how the kind of community participation determines the success of informal settlement improvement programs, illustrating the importance of ensuring continuity of the power and influence of local community organizations during and after the interventions.[158] A study about an upgrade program in Namibia shows that co-production processes with broad coalitions of partners achieve more efficient use of resources and decentralization of power in urban development. The same study highlights, however, that challenges remain for disrupting more structural power asymmetries.[159]

Residents of informal settlements can influence wider **governance systems** in ways that tackle inequalities in voice and political power by actively participating in political processes and being recognized as valid actors in spaces that usually render informal settlement dwellers invisible.[160] This can translate into contesting narratives of criminalization,[161] accessing land, fighting eviction and condemning violations of rights through legal avenues.[162] Beyond the local level, there are important experiences of scaling up collective housing mobilizations with wider political implications. Nationwide housing social movements and federations (as those organized through the local branches of Slum Dwellers International, or national movements with strong political leverage such as UMM in Brazil and FUCVAM in Uruguay) are a testament to the scope that community mobilization around housing can have.

Increasing political inclusion of those living in informal settlements has implications for wider governance systems and, in turn, for well-being dimensions and human development progress. Already in 1993, the UNDP had recognized the importance of political inclusion for human development, dedicating its global report to the theme of "People's Participation" and highlighting that "the implications of widespread participation are profound — embracing every aspect of development."[163] For its human development report of 2002, UNDP highlighted "how political power and institutions — formal and informal, national and international — shape human progress," demonstrating that people's capabilities "to be free to determine their destinies, express their views and participate in the decisions that shape their lives" are as important as being able to read or enjoy good health.[164]

Impacting governance systems through processes of political inclusion that make them more democratic is critical for multiplying the spillover effects of equitable access to adequate housing. As the latest Global State of Democracy Report showcases, democracy "offers the best chance of preserving what is needed for (and valuable in) human life."[165]

[xxi] For a full collection of the Asian Coalition for Housing Rights' approach to "housing by people," see http://www.achr.net/library.php.

[xxii] See, for example, the *Decalogue for Participatory Slum Upgrading*, prepared by a coalition of a dozen organizations, available at https://www.right2city.org/decalogue-for-participatory-slum-upgrading-programs-in-pandemic-times/.

5.3. Gender equality and care systems

Equitable access to adequate housing in informal settlements has direct implications for **gender equality**. The evidence that this report has discussed already highlights the enormous impact that adequate housing, when considering all its dimensions, has on the well-being of women, girls and those at the intersection of several discriminations because of their race, age or ability. Evidence demonstrates the impact of access to adequate housing on tackling gender disparities in school enrollment[166] and on providing the habitability conditions that allow women to work outside the home,[167] impacting not only women's income opportunities, but also quality of life more generally. Research on electrification in Nicaragua, for example, quotes a woman who says having electric light extends her day, reflecting that "it's easier to live this way."[168] Likewise, this report has shown that improved water supply translates into saved time, with UNICEF estimating that women and girls spend 200 million hours every day collecting water.[169] According to ECLAC, in Latin America and the Caribbean, "women living in households with limited access to drinking water spend between five and 12 more hours per week on unpaid domestic and care work than women living in households without such privations."[170] As the 2004 Charter for Women's Right to the City acknowledges, "the incompatibility of locations of housing, employment and urban activities, and the resulting repercussions on the 'time resource,' constitute some of women's greatest obstacles to their autonomy and active citizenship."[xxiii,171]

The relationship between adequate housing and gender equality is framed by wider trends regarding women's access to land rights. According to the United Nations Human Rights Special Procedures, insecure land rights for women threaten progress on gender equality and sustainable development. Women are disproportionately more vulnerable to land rights violations than men. Guaranteeing women's security of tenure is a mechanism for addressing discrimination against women in political and public life, in the area of health and safety, and in family and cultural life.[172]

Another key trend framing the relationship between adequate housing and gender equality is the disparities caused by the uneven distribution of household-related care responsibilities. The historical role that women have played in providing unpaid work linked to motherhood has led to the disproportionate burden in the exercise of nonmonetized care labor. This is directly related to housing conditions, given the historical role that housing and the private sphere have in such tasks.[173] According to pre-COVID data from ILO, women perform 76.2% of the total hours of unpaid domestic and care work — more than 2.5 times as much as men[174] — a reality that has only deepened since the pandemic. In 2019, women accounted for 39.4% of total employment, but they made up nearly 45% of global employment losses in 2020.[175] Improving the living standard, health and education conditions of informal settlement dwellers, then, has a particularly significant impact on those who have historically carried the burden of care work — women.

The evidence that this report shows about the effects of adequate housing in informal settlements has an impact in social protection and health care systems for all of society, particularly affecting **care systems**, which is especially significant for people with disabilities, for carers and for those at the margins of social protection because of their age, race or migration status. As an illustrative example, the emergency experienced during the COVID-19 pandemic made it clear that strains on the health care system can have an impact on health outcomes for the entire society. In other words, when social protection and health systems are under stress, they can reach tipping points that preclude everyone from using them in their full capacity. Research in the USA looking at in-hospital mortality through 2020 concluded that "health care system strain has undoubtedly played a critical role in the outcomes of hospitalized patients,"[176] a similar conclusion to those from research looking at India's health care system during COVID's second wave, which was "overburdened, causing a dearth of medical oxygen, hospital beds, and other essentialities for the COVID-19 patients."[177] The evidence from the pandemic is an extreme version of something that happens with all care systems when under stress, and access to adequate housing has a key role in relieving those systems by improving the living conditions of the most marginalized sections of the population.

Alongside improving income, health and education outcomes, advancing equitable, adequate housing for those living in informal settlements is key to answering the call from UN-Women about recognizing, redistributing and reducing women's care labor;[178] to creating the conditions for historically marginalized groups to live autonomous lives; and to creating healthier and more equitable care systems that can support and sustain human development. As recognized by the UNDP in 1995, "Human development, if not engendered, is endangered."[179]

[xxiii] The charter was produced at the 2004 World Women's Forum held in Barcelona, and was associated with the World Urban Forum.



6. Recommendations

The extensive amount of evidence presented in this report demands that actors at the local, national and international levels reframe access to adequate housing in informal settlements as an urgent priority as they seek to reduce inequities, improve human developmental outcomes, generate economic growth, care for the environment and fulfill human rights. Governments, in particular, must prioritize housing as a vehicle for improving human development outcomes rather than viewing housing as too complex or the responsibility of the private sector alone.

Adequate housing in informal settlements is key for guaranteeing the well-being of residents, as it provides the essential conditions to enable, sustain and enhance living standards in cities. When communities and countries advance adequate housing in inclusive and comprehensive ways, the direct impacts on income, health and education identified in this report have several spillover effects for entire societies. These are partly due to housing's implications for reducing the stress in care and health systems, improving environmental conditions and urban resilience, mobilizing small businesses, improving gender equality, and making governance more inclusive. As the U.N.'s annual human development reports reveal, environmental, governance and care systems are crucial to sustaining human development progress for everyone over time.

In other words, when residents of informal settlements do better, everyone does better.

So why does housing in informal settlements remain unprioritized, under-resourced and misunderstood? Given the urgent housing needs and the evidence about the benefits of addressing them, not improving housing conditions in informal settlements is a political choice. At the same time, securing equitable access to adequate housing in informal settlements is not only a way of accelerating progress on the U.N.'s Sustainable Development Goal but also a precondition for meeting SDG targets.

Considering the rapid urbanization taking place in thousands of locations worldwide, ensuring that residents of informal settlements are able to secure adequate housing is fundamental for structuring the future direction of urban development. Without adequate housing, cities can get locked into unequal and unsustainable development pathways, where the social, economic and environmental burdens are devolved to systematically excluded groups, such as those living in informal settlements.

This report demonstrates that, beyond what the existing literature says, there is much to uncover about the potential impact of increasing equitable access to adequate housing for people in informal settlements. The statistical modeling developed for this study shows the potential impacts of improving housing across different types of countries,

demonstrating that improving adequate housing for people living in informal settlements is an overlooked means of establishing immense gains across human development priorities at a national scale.

The time is now to address housing as a human development imperative and as an essential infrastructure for equity and well-being.

Integrating all components of the right to adequate housing can have transformational impacts for informal settlement dwellers and countries as a whole. It is imperative that all actors integrate housing as a vehicle for drastically improving the quality of life of billions of people around the world in ways that recognize diverse needs and aspirations. This study calls on national and local governments in emerging economies and the least-developed countries — in addition to actors working on international development and humanitarian assistance — to prioritize adequate housing for people living in informal settlements and to meaningfully integrate the below recommendations into local, regional and international priorities and programming that seek to support and sustain human development.

Recommendation 1: Prioritize home as infrastructure for equitable human development.

In order to effectively prioritize housing as an infrastructure of equitable human development, **national and local governments, in addition to international development stakeholders**, must sustain and enhance initiatives that allow them to:

- **Prioritize improved homes for people in informal settlements.** Housing policies and frameworks must prioritize informal settlements and be adequately resourced by national development budgets, in ways that enable local governments, communities and other stakeholders to co-produce localized, participatory and responsive approaches to upgrading.
- **Integrate housing into education, economic and health priorities to ensure mutual benefits.** Housing policies and frameworks for informal settlements must be implemented in coordination with other infrastructure and service development initiatives, such as health, education and transportation, to ensure equitable human development returns. Importantly, these initiatives should integrate gender, environmental and participatory principles in ways that ensure the sustainable inclusion of systematically excluded groups.
- **Enhance incrementalism and recognize ongoing local housing and upgrading efforts.** Much of the world's housing is self-built, and therefore it is crucial to recognize such processes and to ensure equitable access to adequate materials, tools and methodologies for improving housing adequacy. Housing policies and frameworks should recognize the role of collectives as a key component of well-being infrastructure, not just as receptors or beneficiaries. This includes supporting self-managed and community-led housing efforts, strengthening their opportunities to scale up sustainable housing solutions.
- **Reform and apply spatial planning instruments to promote equitable responses and protect those living in informal settlements from the potential negative impacts of regularization and upgrading.** Local governments and other authorities should mobilize planning frameworks to protect residents of informal settlements against displacement and evictions while also ensuring integrated delivery of basic services and infrastructure, as essential housing components. Such interventions should prioritize the right to stay and prevent unintended negative impacts of upgrading through inclusive planning approaches such as special zoning instruments, diversified land and housing tenure arrangements, collective tenure and ownership models, and housing improvement affordability schemes that consider the diversity of residents' economic capacities, among others.

Recommendation 2: Housing solutions must be integrated and comprehensive to generate human development returns.

This report concludes that significant progress in human development can be incurred by improving housing in informal settlements. However, for housing initiatives to generate human development returns, interventions must be

comprehensive and participatory, recognizing the importance of the complex dimensions of housing and its components. In informal settlements, inadequate housing can present multiple levels of deprivation, with challenges linked to tenure security, effective access to basic services, habitability conditions, affordability, location and accessibility, proximity to hazards, cultural adequacy, and the disempowerment of residents in decision-making. Importantly, approaching housing as the combination of all its dimensions implies integrating housing and informal settlement upgrading into urban plans, which play an important role in protecting residents of informal settlements against evictions and ensuring integrated delivery of basic services and infrastructure. It also implies promoting the commitment and coordination of relevant departments to plan and execute interventions.

In order for housing to generate equitable human development returns, national and local governments, in addition to international development stakeholders, must sustain and enhance initiatives that allow them to:

- **Ensure that residents of informal settlements are at the center of housing decision-making processes through meaningful and empowered participation.** Housing policies and frameworks for informal settlements should use integrated approaches, drawing on diverse sets of expertise, lines of investment and fields of work, in conjunction with the empowered participation of the residents of informal settlements in housing-related decision-making at the national and community levels, to ensure that housing responds to the diverse needs and aspirations of local residents.
- **Prioritize tenure security, along a continuum of land rights, to realize the right to adequate housing.** Tenure security is central to achieving sustainable and equitable access to adequate housing, and land tenure laws and regulations should be reviewed, reformed and/or implemented in the process of designing adequate housing programming at the settlement level. Authorities should find mechanisms to protect land from speculation, such as collective or public or semi-public tenure modalities.
- **Integrate reliable, affordable and sustainable basic services into the development of improved housing services and habitability.** The inclusion of sustainable and widely available water, energy and other basic services in housing improvement is essential and must be prioritized by all relevant stakeholders. At the same time, governments should promote and enforce regulations that ensure access to affordable, safe and culturally adequate building materials and improved habitability conditions for all. This is particularly relevant for tenants, who are more at risk of unsuitable housing conditions.
- **Leverage adequate housing as a tool for achieving climate and environmental justice and resilience.** Communities in informal settlements are bearing the brunt of the world's climate emergency and will struggle with the greatest human and financial costs of rising seas, increasing heat, climate-related events and expanding drought. Adequate housing in informal settlements is an important "nexus" of mitigation and adaptation solutions for communities. Ensuring incremental and locally informed approaches to adequate housing is essential for building the capacity of communities to respond to climate change while also opening up opportunities for wider mitigation strategies that promote the sustainability of environmental systems.

Recommendation 3: Elevate the upgrading of informal settlements as a lever for international development and transformation.

As international actors have historically provided overseas development assistance through technical and financial support, they have usually determined priorities based on their own development prerogatives, trends or clear needs. With the aim of ensuring no one is left behind, overseas development assistance has focused on areas like health, education, economic growth, and now climate change mitigation and adaptation. There has been, however, minimal focus on adequate housing and upgrading, especially for people living in informal settlements. As demonstrated in this report, without adequate housing, essential opportunities for enhancing development programming for vulnerable populations globally are being lost.

In order for housing to be leveraged for equitable human development, the international community must enhance initiatives that allow them to:

- **Prioritize knowledge about housing and informal settlements as a development imperative across international agencies.** The complexities of housing and urbanization issues, beyond challenges of the

demand/supply gap, are not currently well-integrated into international programming. The findings of this report call for international actors to work across existing silos in ways that elevate knowledge that is able to respond to those living in informal settlements.

- **Assess engagement and investment in informal settlements and housing across development priorities.** This includes conducting a review, by all international development actors and their local partners, to identify, analyze and understand previous informal settlement upgrading programs and the barriers for engaging in housing programs to date.
- **Mainstream housing and its components for greater human development impact.** The international community must commit to integrating equitable access to adequate housing into programs focused on education, health, well-being and economic growth, especially when addressing the needs of the most vulnerable, including those living in informal settlements.
- **Coordinate actions and consolidate networks with groups actively engaged with local upgrading and housing improvement efforts.** Cultivate solidarity spaces with civil society coalitions and their national and international allies, finding synergies with agendas that put at the center the needs and aspirations of groups struggling for the right to adequate housing.

Recommendation 4: Prioritize knowledge and data on housing and its impacts by, about and for informal settlement communities.

The injustices associated with the lack of access to adequate housing in informal settlements are also present in the systematic lack of data within the academic and policymaking communities about living conditions in informal settlements and their role in wider urban, social, economic, ecological and political systems. Within the existing international research knowledge landscape, there are major gaps in data that compromise the development of informed policy commitments and decision-making processes. This has implications at the national level and globally, as limited data also infringes on tracking progress toward the SDGs. At the same time, grassroots groups of informal settlement residents and their support networks have been collecting data and generating knowledge, demonstrating the importance that locally produced knowledge plays in improving housing in informal settlements.

In order for housing knowledge to be leveraged for development, national and local governments, research institutions, and multilateral agencies should sustain and enhance initiatives that allow them to:

- **Support community efforts to produce local housing knowledge.** Public and research institutions should prioritize the recognition and strengthening of data collection processes that empower local communities. Importantly, this means valuing, systematizing and using data that is generated by and with residents through situated and community-led methodologies of knowledge co-production. Importantly, locally based academic institutions are crucial for supporting and enabling these knowledge co-production efforts in informal settlements. Likewise, international institutions should use and support local data for local solutions.
- **Diversify housing knowledge to explore the different realities and experiences of informal settlement residents over time**. The research and policymaking community should deepen housing knowledge that explores socially diverse realities and experiences, unpacking in more detail the relationship between diverse housing conditions in informal settlements and the different dimensions of well-being, human development, gender equality and resilience. Such actionable knowledge can provide useful tools for informal settlement communities to meet their needs and aspirations. Additionally, knowledge about housing in informal settlements should go beyond monitoring and evaluation of particular interventions, to instead engage with longitudinal studies that give an account of demographic and other social changes taking place over time.
- **Expand housing knowledge that explores the role that informal settlements play in wider economic, care, political and ecological systems.** Knowledge about informal settlements should acknowledge them as a fundamental part of the city, tracing the connections with urban systems. This approach to knowledge production is crucial to avoid the stigmatization and criminalization of informal settlements, recognizing the agency of local residents and collectives, as well as the drivers of wider inequities in cities.

Annex 1: List of participants in collective workshops

Table A1: Participants of the advisory group who participated in collective workshops

Participant	Affiliation
Adriana Allen	Habitat International Coalition (HIC)
Ivahanna Larrosa	Habitat International Coalition (HIC)
Yolande Hendler	Habitat International Coalition (HIC)
Lorena Zarate	Global Platform for the Right to the City
Sophia Torres	Global Platform for the Right to the City
Pierre Arnold	CoHabitat Network
Beth Chitekwe-Biti	Slum Dwellers International (SDI)
Ariana Karamalis	Slum Dwellers International (SDI)
Anacláudia Rossbach	Lincoln Institute of Land Policy
Enrique Silva	Lincoln Institute of Land Policy
Diana Mitlin	University of Manchester
Alice Sverdlik	University of Manchester
Colin Marx	The Bartlett Development Planning Unit (DPU)
Alexandra Panman	The Bartlett Development Planning Unit (DPU)
David Dodman	Institute for Housing and Urban Development Studies (IHS)
Alonso Aleman	Institute for Housing and Urban Development Studies (IHS)
Ore Fika	Institute for Housing and Urban Development Studies (IHS)
Gautam Bhan	Indian Institute for Human Settlements (IIHS)
Rodrigo Faria Iacovini	Instituto Pólis
Ainara Fernández Tortosa	United Cities and Local Governments (UCLG) Research Team
Cecile Roth	United Cities and Local Governments (UCLG) Research Team
Yiorgos Papamanousakis	World Habitat
Kai Klause	Misereor
Bernie Aryeetey	PATH
James Sale	United for Global Mental Health
Jacqueline C.A. Dugard	Columbia University
Marcelle Mardon	International Institute for Environment and Development (IIED)
Kombe Wilbard	Ardhi University

Participant	Affiliation
Habitat for Humanity International team	
Amanda Entrikin	Habitat for Humanity International
Brian Feagans	Habitat for Humanity International
Rebecca Ochong	Habitat for Humanity International
Anne Myers	Habitat for Humanity International
Chris Vincent	Habitat for Humanity International
Research and coordination team	
Alexandre Apsan Frediani	International Institute for Environment and Development (IIED)
Camila Cociña	International Institute for Environment and Development (IIED)
José Manuel Roche	Independent Researcher
Morgan Jennings	International Institute for Environment and Development (IIED)

Annex 2: Methodological details

This annex provides methodological details on the data and calculations that make up part of the modeling included in this report. The rationale and elements of the methodology are explained at the beginning of Section 4 of the body of the report. In summary, these elements are:

- **The analysis looked at more than 130 reports and research documents** to identify connections between adequate housing in informal settlements and each of the three HDI dimensions. The findings of this review were translated into a series of assumptions for statistical modeling.
- **A statistical model was produced** to measure the joint potential effect that adequate housing in informal settlements would have in each dimension of the HDI and then jointly on the overall human development level of a country.
- **The model was applied to four theoretical types of countries** that were designed specifically for this illustrative purpose, considering the levels of development (as measured by HDI) and the percentage of urban population living in informal settlements (from UN-HABITAT data). Three scenarios are obtained as an outcome: optimistic, moderate and cautious.
- **The analysis shows then what would be the direct impacts of securing adequate housing in informal settlements at a national scale.** "Direct impacts" look only at the estimated impact for those living in informal settlements to then estimate how those changes would affect GNI per capita, life expectancy, education and overall HDI at a national level. When possible, global estimations were also computed based on the projection of these results (see the last section of this annex).
- **The findings were then complemented by a qualitative discussion of the "spillover effects"** of ensuring equitable access to adequate housing in informal settlements in terms of climate justice, political inclusion and gender equality, impacting wider societal systems that, in turn, sustain human development progress.

The sections below summarize the main methodological considerations around the reference period, countries included in the calculation, the indicators and data sources, the definitions of the typology of countries, the distinction between typology and taxonomy, the modeling of scenarios, HDI ranking, and the rationale for the global stats calculations.

Reference period

Figures in this report correspond to 2018, matching the most recent data from UN-HABITAT on informal settlements available to download at the time this research started. The methodology used HDI data from the same year for comparability.

UN-HABITAT provides the official data used to monitor SDG indicators on housing. By the time data for this research was downloaded, the most recent available was 2018, published on UN-HABITAT's Urban Indicators Database website.[xxiv]

More recently, UN-HABITAT has made new estimates available online,[xxv] including corrections to 2018 data and new estimates for 2020. Unfortunately, these figures arrived too late to be included in the modeling calculations. However, the country figures in Table A3.1 and Table A3.2 at the end of the report provide all figures for comparability, so the reader can make use of the most recent data if needed.

It is understood that UN-HABITAT is updating its data as part of a report to be published in 2023. The calculations in this report could be updated when new UN-HABITAT data becomes available.

An advantage of using 2018 data for HDI indicators is that it corresponds to pre-COVID-19 health and education data. The COVID-19 crisis led to a decrease in life expectancy and school enrollment, which is expected to be partially a temporary phenomenon. The 2018 data are not affected by it.

[xxiv] https://data.unhabitat.org/documents/GUO-UN-Habitat::proportion-of-urban-population-living-in-slum-households-by-country-or-area-1990-2018-percent-1

[xxv] https://data.unhabitat.org/pages/housing-slums-and-informal-settlements

Countries included in the calculations

The model is based on available data from 102 middle- or low-income countries. There are considerable data gaps across countries. A prerequisite to include a country in the calculation was to count with UN-HABITAT data on informal settlements.

Since UN-HABITAT does not have data for most high-income countries, the model excludes the only nine high-income countries for which data is available. High-income countries represent 15% of the global population but a very smaller percentage of the population living in informal settlements. The only high-income countries with data are Austria, Greece, Hungary, Ireland, Italy, Portugal, Slovenia, Spain and Trinidad and Tobago.

The model also excludes five countries experiencing high-intensity conflict as per the World Bank classification: Afghanistan, Armenia, Somalia, Syria and Yemen. These countries experience a very different dynamic than more stable countries which in turn affects their human development levels, causing "noise" in the estimations. Informal settlement policies in these countries would be significantly different, hence they have been excluded from the model. Income level and conflict-affected states were defined using the 2022 World Bank classification.[xxvi] High-intensity countries represent 1.3% of the global population.

Indicators and data sources

A dataset with 462 indicators was constructed for this study, compiling a large set of potential indicators to include in the calculations.

Official international data was downloaded from UN-HABITAT; the United Nations Development Program, or UNDP; the World Bank, or WB; the World Health Organization, or WHO; UNESCO; the United Nations Population Division; Oxford Poverty and Human Development Initiative; and Demographic Health Survey.

Key indicators and data sources are listed below:

- Population, people, WB
- Percentage of national population living in urban areas, UN-HABITAT, 2000-2050
- Urban population at midyear, UN-HABITAT, 2000-2050
- Urban population, people, WB
- Number of population living in slums, UN-HABITAT, 2018
- Percentage of population living in slums, UN-HABITAT, 2018
- Proportion of people with secure tenure rights to land out of total adult population, U.N.
- Proportion of people with legally recognized documentation of their rights to land out of total adult population, U.N.
- Proportion of people who perceive their rights to land as secure out of total adult population, U.N.
- Human Development Index, UNDP, 1990-2021
- Human Development Groups Category, UNDP,1990-2021
- Gross national income per capita, 2017 PPP$, UNDP, 1990-2021
- GDP per capita, PPP (constant 2017 international $), WB, 1990-2021
- Employment to population ratio, ages 15+, (%) (modeled ILO estimate), WB
- Employment to population ratio, ages 15-24, (%) (modeled ILO estimate),WB
- Labor force participation rate (percentage of population ages 15+) (modeled ILO estimate), WB
- Unemployment, total (percentage of total labor force) (modeled ILO estimate), WB
- Expected years of schooling, UNDP, 1990-2021
- Mean years of schooling, UNDP, 1990-2021
- School life expectancy, primary to tertiary, WB
- UIS: Mean years of schooling (ISCED 1 or higher), population 25+ years, WB
- School enrollment, primary (% net), WB

[xxvi] Income levels classification: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups. Conflict affected and fragile states classification: https://thedocs.worldbank.org/en/doc/9b8fbdb62f7183cef819729cc9073671-0090082022/original/FCSList-FY06toFY22.pdf

- School enrollment, secondary (% net), WB
- School enrollment, tertiary (% gross), WB
- Life expectancy at birth, UNDP, 1990-2021
- Death rate, crude (per 1,000 people), WB
- Under-5 mortality rate per 1,000 live births, WB
- Mortality rate, WB
- Mortality rate, under-5, WB
- Mortality rate tables, WHO
- Percentage of people using at least basic sanitation services, WB
- Percentage of urban population using at least basic sanitation services, WB
- Percentage of urban population with access to electricity, WB
- Percentage of people using improved sanitation facilities, WB
- Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene, WB
- Malaria cases (reported cases), WB
- Reported clinical malaria cases (total cases), WB
- Deaths among children under 5 years of age due to malaria (%), WB
- Reported malaria deaths (total deaths), WB
- Incidence of malaria (per 1,000 people at risk), WB
- Suicide mortality rate, WB
- Population-weighted exposure to ambient PM2.5 pollution, WB
- Mortality rate attributed to household and ambient air pollution, age-standardized,WB

Typology of countries

The statistical modeling presented in this report was estimated over a typology of countries instead of individual levels. The decision to use this typology was motivated by the following factors:

- Existing data gaps across key indicators, countries and periods of time represent important methodological constraints when running the statistical modeling at the individual country level. In addition, by constructing theoretical country types from real data, the methodology overcomes problems with data gaps.
- The advisory group raised concerns that international data on informal settlements often do not correspond with the most up-to-date data available within countries or cities, further compromising the accuracy of overall estimates at the country level. Using the country type avoids creating controversy around the accuracy of UN-HABITAT data. The model can of course be adjusted with more accurate country-level data.
- It is also well-known how national accounts systems used to produce economic aggregates often underreport informal and subsistence activities that are widespread in informal settlements. This generates a further impression at country-level data which the model can overcome by using the typology of countries.

For these reasons, instead of individual countries, the analysis constructs four theoretical country types that are then used to illustrate the potential impact of improving housing in informal settlements at a large scale.

The typology, nonetheless, is not a completely abstract construct. Its design was undertaken using available data from the 102 middle- and low-income countries for which data on informal settlements are available. The methodology generates four distinct theoretical countries according to their human development level and the percentage of urban population living in informal settlements, or “slums,” using UN-HABITAT and UNDP data for 2018. Table A2.1 presents the criteria used to aggregate the countries into the four country types.

Table A2.1: Criteria to classify countries according to the typology

		Human development level			
		Very high	High	Medium	Low
Percentage of urban population living in informal settlements	Lower than 10%	3	6	3	0
	10 to 30%	6	14	6	2
	30 to 70%	2	8	22	18
	More than 70%	0	1	2	9

		Human development level			
		Very high	High	Medium	Low
Percentage of urban population living in informal settlements	Lower than 10%	Type 1		Type 3	
	10 to 30%				
	30 to 70%	Type 2			Type 4
	More than 70%				

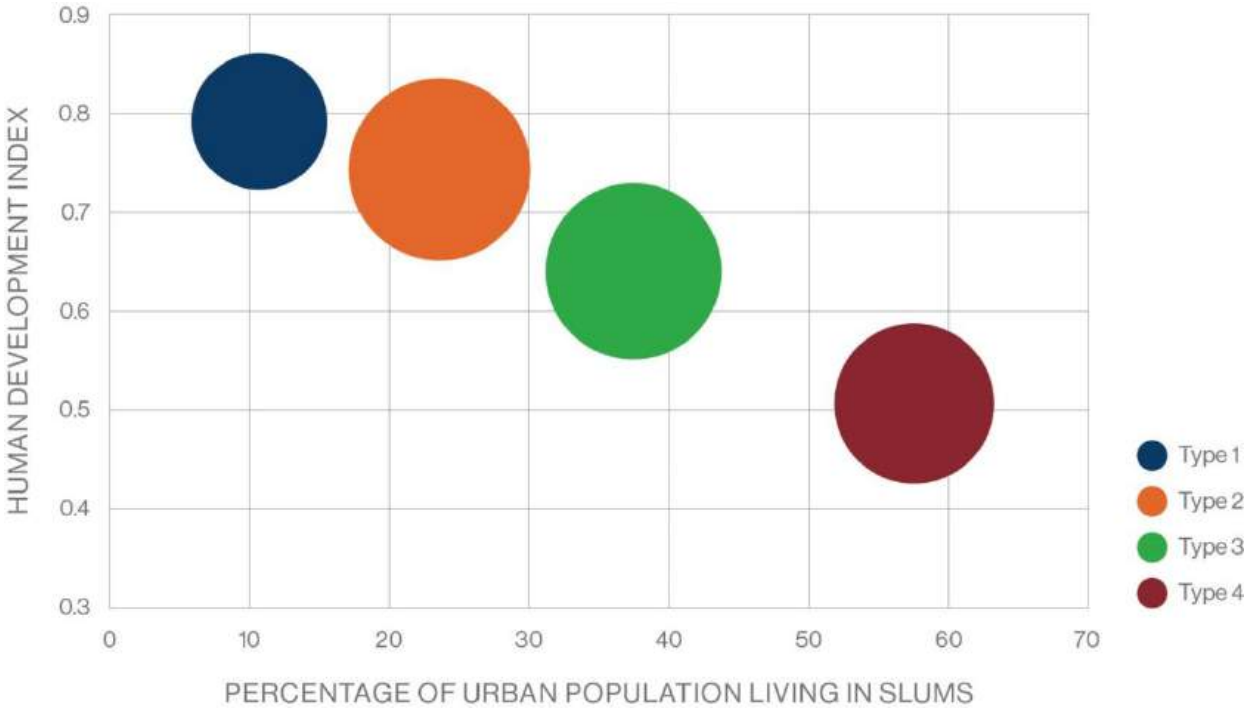
As a result, four country types were constructed:

- **Type 1: High HDI with a low percentage of slum dwellers.** These countries have on average the highest human development with a lower percentage of their urban population living in informal settlements.
- **Type 2: High HDI with a high percentage of slum dwellers.** These countries still have on average high or very high human development but a lower percentage of their urban population living in informal settlements as compared with Type 1.
- **Type 3: Medium HDI with a high percentage of slum dwellers.** These countries have on average medium or low human development and a low or medium percentage of their urban population living in informal settlements.
- **Type 4: Low HDI with a high percentage of slum dwellers.** These are the poorest set of countries in the sample, with mostly low human development and a very high percentage of their urban population living in informal settlements.

Figure A2.1 presents the distribution of the countries by type and the location of the final country type in the axis classifying countries according to human development level and percentage of urban population in informal settlements.

Indicator values for the country type were computed as a weighted average of the available data for countries contributing to each type. The weighted average values are presented in Table 2 in the body of the report.

Figure A2.1: Typology composition, human development level and urban population living in slums



***Note**: The size of the bubble corresponds to the total number of urban populations living in informal settlements*

Table A2.2: List of countries contributing data for each typology

Type 1	Type 2	Type 3	Type 4
• Argentina • Bosnia and Herzegovina • Costa Rica • Cuba • Egypt • Kazakhstan • Montenegro • North Macedonia • Panama • Romania • Serbia • Suriname • Thailand • Tunisia • Turkey	• Albania • Belarus • Brazil • Colombia • Dominican Republic • Ecuador • Fiji • Gabon • Georgia • Guyana • Indonesia • Iran (Islamic Republic of) • Jamaica • Jordan • Maldives • Mexico • Moldova (Republic of) • Mongolia • Occupied Palestinian Territories • Peru • St. Lucia • South Africa • Ukraine • Uzbekistan • Vietnam	• Angola • Bangladesh • Belize • Bolivia • Cambodia • Cameroon • Comoros • Congo • Cote d'Ivoire • El Salvador • Equatorial Guinea • Eswatini • Gambia • Ghana • Guatemala • Honduras • India • Iraq • Kenya • Kyrgyzstan • Lao People's Democratic Republic • Morocco • Myanmar • Namibia • Nepal • Nicaragua • Philippines • Senegal • Tajikistan • Timor-Leste • Venezuela • Zambia • Zimbabwe	• Benin • Burkina Faso • Burundi • Central African Republic • Chad • Democratic Republic of the Congo • Djibouti • Ethiopia • Guinea • Guinea-Bissau • Haiti • Lesotho • Liberia • Madagascar • Malawi • Mali • Mauritania • Mozambique • Niger • Nigeria • Pakistan • Rwanda • Sao Tome and Principe • Sierra Leone • South Sudan • Sudan • Tanzania (United Republic of) • Togo • Uganda

Note: *Please keep in mind that we have produced a typology, not a taxonomy. Countries are not classified in types, but four theoretical types were constructed using weighted average data from countries. The typology should be taken as illustrative examples of the potential impact rather than a prediction of what would happen to any particular country.*

A typology, not a taxonomy

It is important to keep in mind that countries are not classified into types in a taxonomical fashion. The result of the methodology produces four theoretical country types using weighted average data from countries. While a taxonomy puts countries into groups, the typology produces a set of theoretical country types, which can then be used to compare with a particular country. It is important to remember that the statistical modeling uses a range of indicators, including mortality rate, prevalence of certain tropical illnesses, school enrollment rate, etc. Overall, there are significant data gaps across countries regarding these indicators. The typology solves the data gaps by producing

weighted averages among countries with available data. As a result, a given individual country could be very close to one of the country types in the typology, but it may not be uncommon to find that a real country does not perfectly fit any country type or is similar in some respect to more than one type. The typology should be taken only as illustrative examples of the potential impact, rather than a prediction of what would happen to any particular given country.

Modeling and scenarios

The statistical analysis models the impact that improving access to adequate housing in informal settlements would have in terms of HDI dimensions. Three scenarios were produced depending on the assumptions underpinning the calculations:

- **The optimistic scenario** is generates a greater effect based on more optimistic assumptions.
- **The cautious scenario** is based on a more conservative set of assumptions.
- **The moderate scenario** is somewhere in between.

The detailed assumptions are presented in Table 3 in the body of the report. These assumptions were built on existing evidence emerging from more than 130 research and evaluations reviewed as part of the extensive literature review in Section 4.1. See in particular Table 1.

While the modeling took place at the country level, any additional needed indicator was produced as the weighted average of countries contributing to each category. In each human development dimension, the methodology was:

- **GNI and GDP:** Indicators were generated as a weighted average of the indicators among countries contributing to each type, including total population, percentage of urban population, and percentage of urban population living in informal settlements. Using overall GNI and GDP figures, the model estimates the increase, as per the assumptions, to the amount of income in informal settlements in urban areas. The national per capita values are then generated by aggregating the figures. Note that the increase in per capita income considers only the contribution of the increase in income in informal settlements. The model also assumes the total increase is a result of an increase of income, not a result of redistribution.
- **Life expectancy:** Theoretical mortality tables were produced for each country type using the individual WHO mortality tables for each country contributing to the typology. Other indicators needed to produce the calculations followed the same methodology, including incidence of malaria, death attributed to malaria, death attributed to waterborne illnesses, death attributed to domestic injuries or household air pollution, death attributed to tuberculosis and other illnesses associated with overcrowding. The impact on each age group and gender mortality rate was estimated first, then used to compute life expectancy. In order to keep life expectancy at the HDI level, the original weighted average life expectancy was adjusted as a proportion of the reduction expected from the adjusted mortality tables. The model considers only the reduction in mortality rate within urban informal settlements.
- **Education:** Changes in expected years of schooling were calculated following a similar methodology as that used to compute life expectancy. A table with enrollment rate across age and gender groups for the country type was computed as a weighted average of data from countries contributing to each typology. The increase in enrollment rate for each age and gender group was then modelled in the enrollment table, then used to compute the new expected years of schooling. The model considers only the increase in enrollment rates within urban informal settlements.

Global statistics calculations

The report generated global estimations of:

- Global preventable deaths avoided (Figure 5 in the body of the report).
- Global number of out-of-school children and young people averted (Figure 6 in the body of the report).

Using the results from the modeling about the impact of access to adequate housing in informal settlements for the four type countries, the report calculated what the impact of those figures would be around the world. These figures were generated using data from all middle- and low-income countries, not only those 102 countries included in the

analysis. The reduction in child mortality and the increase in school enrollment were projected to the total population in middle- and low-income countries.

The methodology follows these steps:

- The total population of countries contributing to each type was computed. We assumed then that the total population in middle- and low-income countries is distributed as per this aggregation:
  - Type 1 — 28%
  - Type 2 — 18%
  - Type 3 — 31%
  - Type 4 — 22%
- The total number of preventable deaths saved and the number of children who would additionally enroll in education were computed using the results from the modeling for each scenario and the population size. In the case of life expectancy, the estimation was produced directly based on the number of deaths prevented in each age and gender group in the mortality tables for each scenario. The same applies to education, but looking at the additional number of children enrolled in each age and gender group for each scenario.
- In order to calculate the figures to all middle- and low-income countries, the figure was projected to the global number of deaths and the total number of children missing education in all medium- and low- income countries. The assumption is that the same ratio would take place in countries with missing data on informal settlements.

Annex 3: List of countries' parameters

Table A3.1: List of countries' parameters (Part 1)

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
1	Norway	0.962	Very High HD	68,999	82.76	18.12	12.98	Excluded: High-income country
2	Iceland	0.959	Very High HD	56,492	82.77	19.18	13.59	Excluded: High-income country
3	Switzerland	0.959	Very High HD	67,772	83.56	16.41	13.80	Excluded: High-income country
4	Hong Kong, China (SAR)	0.949	Very High HD	63,908	85.25	16.93	12.20	Excluded: High-income country
5	Germany	0.945	Very High HD	54,981	81.17	16.93	14.08	Excluded: High-income country
6	Sweden	0.942	Very High HD	53,051	82.53	19.69	12.55	Excluded: High-income country
7	Denmark	0.942	Very High HD	57,549	80.99	18.79	12.86	Excluded: High-income country
8	Australia	0.941	Very High HD	47,488	83.39	20.51	12.55	Excluded: High-income country
9	Singapore	0.940	Very High HD	86,502	83.46	16.52	11.74	Excluded: High-income country
10	Netherlands	0.939	Very High HD	56,614	81.77	18.56	12.32	Excluded: High-income country
11	Ireland	0.937	Very High HD	64,099	82.09	19.76	11.51	Excluded: High-income country
12	New Zealand	0.936	Very High HD	41,382	82.38	18.88	13.14	Excluded: High-income country
13	Finland	0.936	Very High HD	48,370	81.63	19.48	12.81	Excluded: High-income country
14	Belgium	0.933	Very High HD	51,249	81.48	19.56	12.31	Excluded: High-income country
15	Canada	0.933	Very High HD	48,156	82.05	16.22	13.80	Excluded: High-income country
16	United Kingdom	0.929	Very High HD	46,226	81.13	17.25	13.24	Excluded: High-income country
17	Liechtenstein	0.928	Very High HD	144,934	83.15	14.62	12.47	Excluded: High-income country
18	United States	0.927	Very High HD	62,626	78.99	16.28	13.50	Excluded: High-income country
19	Japan	0.923	Very High HD	43,087	84.30	15.19	13.35	Excluded: High-income country
20	Luxembourg	0.922	Very High HD	81,399	81.80	14.32	12.83	Excluded: High-income country
21	Israel	0.919	Very High HD	39,620	82.82	16.13	13.25	Excluded: High-income country
22	Korea (Republic of)	0.919	Very High HD	42,115	83.34	16.49	12.41	Excluded: High-income country
23	Austria	0.917	Very High HD	54,588	81.69	16.07	12.21	Excluded: High-income country
24	Slovenia	0.917	Very High HD	37,411	81.36	17.60	12.75	Excluded: High-income country
25	Malta	0.910	Very High HD	40,070	83.34	16.58	11.84	Excluded: High-income country
26	United Arab Emirates	0.909	Very High HD	67,195	79.63	15.02	12.48	Excluded: High-income country
27	Spain	0.901	Very High HD	40,235	83.14	17.76	10.14	Excluded: High-income country
28	France	0.901	Very High HD	46,163	82.59	15.74	11.51	Excluded: High-income country
29	Czech Republic	0.894	Very High HD	37,668	79.00	16.24	12.83	Excluded: High-income country
30	Italy	0.893	Very High HD	42,451	83.18	16.18	10.57	Excluded: High-income country
31	Cyprus	0.892	Very High HD	38,544	81.38	15.36	12.28	Excluded: High-income country
32	Estonia	0.891	Very High HD	34,552	78.14	15.91	13.66	Excluded: High-income country
33	Greece	0.886	Very High HD	28,566	81.39	19.50	10.83	Excluded: High-income country

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
34	Lithuania	0.880	Very High HD	33,963	75.68	16.57	13.29	Excluded: High-income country
35	Bahrain	0.879	Very High HD	43,819	79.86	16.25	10.55	Excluded: High-income country
36	Poland	0.877	Very High HD	30,370	77.63	16.03	13.08	Excluded: High-income country
37	Andorra	0.872	Very High HD	53,483	82.99	13.30	10.56	Excluded: High-income country
38	Latvia	0.866	Very High HD	29,895	75.00	16.23	13.18	Excluded: High-income country
39	Saudi Arabia	0.865	Very High HD	48,124	77.21	15.68	10.58	Excluded: High-income country
40	Portugal	0.860	Very High HD	33,134	81.39	16.72	9.14	Excluded: High-income country
41	San Marino	0.860	Very High HD	54,128	82.95	11.89	10.80	Excluded: High-income country
42	Slovakia	0.859	Very High HD	30,557	77.26	14.48	12.87	Excluded: High-income country
43	Chile	0.856	Very High HD	23,909	80.13	16.59	10.76	Excluded: High-income country
44	Croatia	0.856	Very High HD	27,784	78.34	15.18	12.05	Excluded: High-income country
45	Qatar	0.853	Very High HD	89,089	80.90	12.02	9.86	Excluded: High-income country
46	Argentina	0.850	Very High HD	21,925	77.00	17.66	11.10	Type 1
47	Hungary	0.849	Very High HD	29,638	76.20	15.13	12.07	Excluded: High-income country
48	Russian Federation	0.841	Very High HD	25,978	73.53	15.71	12.72	Excluded: Missing data
49	Turkey	0.839	Very High HD	28,149	77.56	18.16	8.45	Type 1
50	Kuwait	0.836	Very High HD	58,031	79.72	15.16	7.22	Excluded: High-income country
51	Oman	0.834	Very High HD	30,632	77.97	14.12	10.81	Excluded: High-income country
52	Montenegro	0.834	Very High HD	20,925	77.16	15.00	12.06	Type 2
53	Brunei Darussalam	0.830	Very High HD	60,976	74.71	14.31	9.14	Excluded: High-income country
54	Bahamas	0.827	Very High HD	34,104	73.81	12.82	12.55	Excluded: High-income country
55	Romania	0.827	Very High HD	27,979	76.15	14.28	11.21	Type 1
56	Uruguay	0.819	Very High HD	21,731	77.61	16.73	8.91	Excluded: High-income country
57	Belarus	0.818	Very High HD	18,282	74.57	15.40	12.05	Undetermined
58	Trinidad and Tobago	0.815	Very High HD	25,316	73.80	14.40	11.48	Excluded: High-income country
59	Panama	0.814	Very High HD	28,869	77.86	13.01	10.40	Type 2
60	Kazakhstan	0.814	Very High HD	22,172	71.47	15.44	12.21	Type 1
61	Costa Rica	0.811	Very High HD	19,562	79.48	15.87	8.72	Type 1
62	Mauritius	0.811	Very High HD	24,768	74.92	15.11	10.17	Excluded: Missing data
63	Bulgaria	0.809	Very High HD	21,585	74.90	14.20	11.30	Excluded: Missing data
64	Serbia	0.808	Very High HD	16,566	76.51	14.74	11.27	Type 1
65	Malaysia	0.807	Very High HD	26,721	75.64	13.55	10.55	Excluded: Missing data
66	Albania	0.806	Very High HD	13,303	79.18	14.70	11.10	Type 1
67	Georgia	0.804	Very High HD	13,697	73.34	15.28	12.85	Between Type 2 and Type 3
68	Seychelles	0.800	Very High HD	25,789	73.95	14.15	10.29	Excluded: High-income country
	Type 1	**0.798**	**High HD**	**18,903**	**75.62**	**15.68**	**9.47**	**Type 1**

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
69	Antigua and Barbuda	0.798	High HD	19,857	78.51	14.28	9.29	Excluded: High-income country
70	Grenada	0.797	High HD	14,976	74.81	18.63	8.80	Excluded: Missing data
71	Barbados	0.797	High HD	14,963	77.07	15.66	9.81	Excluded: High-income country
72	Thailand	0.795	High HD	17,219	78.66	15.73	8.37	Type 2
73	Iran (Islamic Republic of)	0.787	High HD	13,537	76.20	14.75	10.53	Type 2
74	Ukraine	0.783	High HD	12,456	74.41	14.94	11.14	Type 2
75	Cuba	0.783	High HD	8,574	77.50	14.28	12.35	Type 1
76	North Macedonia	0.779	High HD	15,457	77.31	13.51	9.88	Type 1
77	Saint Kitts and Nevis	0.779	High HD	26,372	71.47	15.34	8.50	Excluded: High-income country
78	Palau	0.778	High HD	19,878	64.39	16.01	12.49	Excluded: High-income country
79	Mexico	0.777	High HD	19,386	74.01	14.87	8.93	Between Type 1 and Type 2
80	Peru	0.776	High HD	12,143	76.01	15.19	9.76	Between Type 2 and Type 3
81	Sri Lanka	0.776	High HD	12,510	75.75	14.11	10.64	Excluded: Missing data
82	Bosnia and Herzegovina	0.776	High HD	14,303	77.09	13.79	9.81	Type 1
83	St. Vincent and the Grenadines	0.775	High HD	12,619	74.13	14.58	10.83	Excluded: Missing data
84	Armenia	0.771	High HD	12,934	75.06	13.07	11.24	Type 1
85	Moldova (Republic of)	0.768	High HD	12,953	70.49	14.39	11.85	Undetermined
86	Dominican Republic	0.764	High HD	16,958	73.23	14.34	9.11	Between Type 1 and Type 2
87	Brazil	0.764	High HD	14,258	75.11	15.70	7.98	Between Type 1 and Type 2
88	Colombia	0.763	High HD	13,941	76.75	14.40	8.50	Type 2
89	Ecuador	0.762	High HD	11,242	77.09	14.83	8.78	Between Type 1 and Type 2
90	Azerbaijan	0.757	High HD	13,503	72.76	13.31	10.54	Excluded: Missing data
91	China	0.755	High HD	15,068	77.74	14.03	7.50	Excluded: Missing data
92	Suriname	0.755	High HD	17,181	72.55	13.00	9.67	Type 1
93	Lebanon	0.750	High HD	15,586	79.73	11.29	8.66	Excluded: Missing data
94	Maldives	0.750	High HD	17,147	80.01	12.61	7.15	Type 2
	Type 2	**0.748**	**High HD**	**12,856**	**73.18**	**14.31**	**8.98**	**Type 2**
95	Turkmenistan	0.746	High HD	14,805	68.80	12.85	11.23	Type 1
96	St. Lucia	0.746	High HD	14,453	73.36	14.00	8.51	Excluded: Missing data
97	Algeria	0.745	High HD	11,344	76.07	14.58	8.00	Excluded: Missing data
98	Fiji	0.745	High HD	12,917	67.81	14.63	10.77	Type 1
99	Tunisia	0.743	High HD	11,027	75.95	15.32	7.35	Type 1
100	Mongolia	0.743	High HD	10,960	71.20	14.94	9.55	Type 3
101	Tonga	0.742	High HD	6,790	70.78	15.87	11.36	Excluded: Missing data
102	Venezuela	0.738	High HD	10,431	71.98	12.82	10.84	Type 3
103	Egypt	0.729	High HD	11,079	71.37	13.61	9.31	Type 1

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
104	Paraguay	0.727	High HD	12,402	73.57	12.75	8.59	Excluded: Missing data
105	Dominica	0.726	High HD	12,211	73.59	13.29	8.10	Excluded: Missing data
106	South Africa	0.726	High HD	13,491	65.67	13.54	10.76	Type 2
107	Occupied Palestinian Territories	0.723	High HD	7,389	74.79	13.41	9.52	Type 2
108	Jordan	0.723	High HD	9,967	75.77	10.42	10.35	Type 2
109	Libya	0.722	High HD	15,526	72.79	12.79	7.56	Excluded: Missing data
110	Uzbekistan	0.720	High HD	7,303	71.15	12.25	11.77	Undetermined
111	Jamaica	0.716	High HD	9,366	71.79	13.33	9.06	Undetermined
112	Samoa	0.716	High HD	6,281	72.64	12.38	11.47	Excluded: Missing data
113	Botswana	0.716	High HD	16,286	65.42	12.28	10.26	Excluded: Missing data
114	Bolivia	0.714	High HD	8,444	67.75	15.02	9.63	Type 3
115	Indonesia	0.710	High HD	11,030	70.34	13.61	8.16	Type 2
116	Philippines	0.710	High HD	9,414	71.69	13.19	8.71	Type 3
117	Belize	0.706	High HD	6,699	73.70	13.15	9.18	Type 1
118	Gabon	0.706	High HD	13,360	66.31	12.90	9.32	Type 3
119	Guyana	0.701	High HD	12,575	68.90	12.34	8.51	Type 3
120	Kyrgyzstan	0.698	Medium HD	4,979	70.73	12.97	11.37	Undetermined
121	Vietnam	0.697	Medium HD	7,098	73.98	12.90	8.29	Undetermined
122	Iraq	0.692	Medium HD	10,465	71.51	11.95	7.88	Type 3
123	El Salvador	0.680	Medium HD	8,136	72.55	12.71	6.97	Undetermined
124	Morocco	0.676	Medium HD	7,302	73.99	13.72	5.78	Undetermined
125	Cape Verde	0.673	Medium HD	6,702	75.73	12.70	6.18	Excluded: Missing data
126	Tajikistan	0.671	Medium HD	3,953	70.35	11.61	11.38	Type 2
127	Nicaragua	0.662	Medium HD	5,452	73.85	12.43	7.03	Type 3
128	Bhutan	0.658	Medium HD	10,330	71.13	13.10	4.58	Excluded: Missing data
129	India	0.645	Medium HD	6,449	70.71	11.81	6.55	Type 3
	Type 3	**0.643**	**Medium HD**	**6,314**	**70.01**	**11.87**	**6.69**	**Type 3**
130	Tuvalu	0.642	Medium HD	6,463	64.21	9.79	10.34	Excluded: Missing data
131	Guatemala	0.640	Medium HD	8,289	72.73	10.61	5.71	Between Type 2 and Type 3
132	Marshall Islands	0.639	Medium HD	4,853	64.50	10.35	10.88	Excluded: Missing data
133	Namibia	0.636	Medium HD	9,704	62.59	11.90	7.14	Type 3
134	Bangladesh	0.635	Medium HD	4,643	72.57	12.04	6.39	Type 3
135	Micronesia (Federated States of)	0.633	Medium HD	3,932	71.32	11.55	7.72	Excluded: Missing data
136	Kiribati	0.622	Medium HD	4,252	66.85	11.80	7.87	Excluded: Missing data
137	Ghana	0.620	Medium HD	5,072	64.12	11.48	8.19	Between Type 2 and Type 3
138	Honduras	0.617	Medium HD	5,249	72.81	9.84	6.29	Type 3

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
139	Sao Tome and Principe	0.617	Medium HD	3,994	68.35	13.12	6.07	Undetermined
140	Lao PDR	0.607	Medium HD	7,239	67.63	10.63	5.29	Undetermined
141	Eswatini	0.607	Medium HD	7,914	59.41	13.58	5.46	Type 3
142	Timor-Leste	0.605	Medium HD	4,393	68.02	12.40	5.44	Type 3
143	Vanuatu	0.603	Medium HD	3,201	69.79	11.47	6.84	Excluded: Missing data
144	Zimbabwe	0.602	Medium HD	3,864	61.41	11.98	8.59	Type 3
145	Equatorial Guinea	0.601	Medium HD	15,188	61.19	9.60	5.55	Undetermined
146	Nepal	0.601	Medium HD	3,798	68.98	12.95	4.97	Type 3
147	Angola	0.595	Medium HD	6,382	62.14	12.17	5.42	Type 3
148	Cambodia	0.591	Medium HD	3,864	70.56	11.34	4.97	Type 3
149	Myanmar	0.590	Medium HD	4,336	66.46	10.67	6.24	Type 4
150	Syrian Arab Republic	0.580	Medium HD	5,136	70.15	9.16	5.10	Undetermined
151	Congo	0.578	Medium HD	3,264	64.05	12.09	6.15	Between Type 3 and Type 4
152	Kenya	0.577	Medium HD	4,273	62.68	10.65	6.56	Between Type 3 and Type 4
153	Cameroon	0.577	Medium HD	3,643	61.18	12.76	6.10	Undetermined
154	Zambia	0.572	Medium HD	3,418	62.34	10.93	7.06	Type 4
155	Solomon Islands	0.566	Medium HD	2,663	70.17	10.37	5.54	Excluded: Missing data
156	Comoros	0.557	Medium HD	3,062	63.91	11.79	4.99	Type 4
157	Mauritania	0.556	Medium HD	5,167	65.31	9.11	4.80	Type 4
158	Papua New Guinea	0.554	Medium HD	4,083	65.18	10.10	4.70	Excluded: Missing data
159	Pakistan	0.545	Low HD	4,658	66.48	8.28	4.83	Type 3
160	Côte d'Ivoire	0.542	Low HD	4,840	58.85	10.22	5.11	Type 4
161	Haiti	0.541	Low HD	3,175	64.02	9.50	5.48	Type 4
162	Tanzania (United Republic of)	0.538	Low HD	2,555	66.53	8.48	6.23	Type 3
163	Nigeria	0.531	Low HD	4,929	52.55	9.94	6.96	Type 4
164	Benin	0.530	Low HD	3,129	60.14	11.69	4.16	Type 4
165	Rwanda	0.528	Low HD	2,014	66.25	11.19	4.33	Between Type 3 and Type 4
166	Togo	0.528	Low HD	2,067	60.24	12.83	4.89	Type 4
167	Lesotho	0.522	Low HD	2,997	53.73	12.09	5.92	Type 4
168	Uganda	0.522	Low HD	2,064	62.71	10.28	5.68	Between Type 3 and Type 4
	Type 4	**0.520**	**Low HD**	**3,149**	**61.48**	**9.25**	**4.99**	**Type 4**
169	Sudan	0.514	Low HD	4,110	65.68	7.86	3.77	Type 4
170	Senegal	0.512	Low HD	3,225	68.10	8.95	2.88	Undetermined
171	Malawi	0.510	Low HD	1,464	63.28	12.44	4.40	Type 4
172	Madagascar	0.507	Low HD	1,548	65.27	10.17	5.07	Type 4
173	Djibouti	0.506	Low HD	4,982	63.04	7.14	4.00	Type 4

HDI rank[1]	Country	HDI value[2]	HDI level[2]	GNI per capita[2]	Life expectancy[2]	Expected years of schooling[2]	Mean years of schooling[2]	What type is most like this country?
174	Gambia	0.495	Low HD	2,120	63.04	9.11	4.33	Undetermined
175	Eritrea	0.493	Low HD	1,698	67.07	8.06	4.89	Excluded: Missing data
176	Ethiopia	0.489	Low HD	2,094	65.41	9.46	3.03	Type 4
177	Afghanistan	0.483	Low HD	2,055	63.08	10.20	2.66	Type 4
178	Liberia	0.483	Low HD	1,406	60.85	10.27	4.94	Type 4
179	Guinea-Bissau	0.482	Low HD	1,831	60.50	10.50	3.53	Type 4
180	DRC	0.480	Low HD	1,057	59.94	9.78	7.02	Type 4
181	Sierra Leone	0.470	Low HD	1,529	59.80	9.51	4.46	Type 4
182	Guinea	0.462	Low HD	2,410	59.35	9.64	2.13	Type 4
183	Yemen	0.459	Low HD	1,342	64.58	9.10	3.20	Type 4
184	Mozambique	0.451	Low HD	1,266	60.53	10.10	3.13	Type 4
185	Burkina Faso	0.449	Low HD	2,051	60.05	9.27	1.92	Type 4
186	Mali	0.430	Low HD	2,218	59.39	7.44	2.20	Type 4
187	Burundi	0.428	Low HD	763	61.69	10.78	2.96	Type 4
188	Central African Republic	0.405	Low HD	1,002	54.37	7.86	4.31	Type 4
189	Niger	0.399	Low HD	1,257	62.45	6.68	2.04	Type 4
190	Chad	0.398	Low HD	1,553	52.83	7.86	2.48	Type 4
191	South Sudan	0.395	Low HD	845	55.95	5.54	5.73	Type 4

Sources:

1. This ranking is according to 2018 HDI data.
2. 2018 Human Development Indicators downloaded from the Human Development Report Office at UNDP: https://hdr.undp.org/data-center/documentation-and-downloads.

Table A3.2: List of countries' parameters (Part 2)

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
1	Norway	82.2	83.0									
2	Iceland	93.8	93.9									
3	Switzerland	73.8	73.9									
4	Hong Kong, China (SAR)	100.0	100.0									
5	Germany	77.3	77.5									
6	Sweden	87.4	88.0									
7	Denmark	87.9	88.1									
8	Australia	86.0	86.2									
9	Singapore	100.0	100.0									
10	Netherlands	91.5	92.2									
11	Ireland	63.2	63.7	1.1	8.5	8.5	0.7	5.4	5.4	33	258	264
12	New Zealand	86.5	86.7									
13	Finland	85.4	85.5									
14	Belgium	98.0	98.1									
15	Canada	81.4	81.6									
16	United Kingdom	83.4	83.9									
17	Liechtenstein	14.3	14.4									
18	United States	82.3	82.7									
19	Japan	91.6	91.8									
20	Luxembourg	91.0	91.5									
21	Israel	92.4	92.6									
22	Korea (Republic of)	81.5	81.4									
23	Austria	58.3	58.7	6.1			3.6			311		
24	Slovenia	54.5	55.1	3.7			2.0			42		
25	Malta	94.6	94.7									
26	United Arab Emirates	86.5	87.0									
27	Spain	80.3	80.8	7.8			6.3			2,907		
28	France	80.4	81.0									
29	Czech Republic	73.8	74.1									
30	Italy	70.4	71.0	7.2			5.1			3,007		
31	Cyprus	66.8	66.8									
32	Estonia	68.9	69.2									
33	Greece	79.1	79.7	3.0			2.4			264		

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
34	Lithuania	67.7	68.0									
35	Bahrain	89.3	89.5									
36	Poland	60.1	60.0									
37	Andorra	88.1	87.9									
38	Latvia	68.1	68.3									
39	Saudi Arabia	83.8	84.3									
40	Portugal	65.2	66.3	3.6			2.3			242		
41	San Marino	97.2	97.5									
42	Slovakia	53.7	53.8									
43	Chile	87.6	87.7									
44	Croatia	56.9	57.6									
45	Qatar	99.1	99.2									
46	Argentina	91.9	92.1	14.7			13.5			6,022		
47	Hungary	71.4	71.9	13.6			9.7			940		
48	Russian Federation	74.4	74.8									
49	Turkey	75.1	76.1	7.0	14.1		5.3	10.6		4,320	8,695	
50	Kuwait	100.0	100.0									
51	Oman	84.5	86.3									
52	Montenegro	66.8	67.5	27.1	10.0	8.8	18.1	6.7	5.9	114	42	37
53	Brunei Darussalam	77.6	78.3									
54	Bahamas	83.0	83.2									
55	Romania	54.0	54.2	14.4			7.8			1,523		
56	Uruguay	95.3	95.5									
57	Belarus	78.6	79.5	45.2	3.8	2.3	35.5	3.0	1.8	3,358	283	170
58	Trinidad and Tobago	53.2	53.2	1.9			1.0			14		
59	Panama	67.7	68.4	21.3	16.3		14.4	11.0		601	459	
60	Kazakhstan	57.4	57.7	10.5	0.8	0.8	6.0	0.5	0.5	1,112	84	86
61	Costa Rica	79.3	80.8	3.6	4.5	3.5	2.9	3.5	2.9	141	175	144
62	Mauritius	40.8	40.8									
63	Bulgaria	75.0	75.7									
64	Serbia	56.1	56.4	3.6			2.0			177		
65	Malaysia	76.0	77.2									
66	Albania	60.3	62.1	13.2	5.3	2.8	8.0	3.2	1.7	234	94	51
67	Georgia	58.6	59.5	34.1	7.8	7.1	20.0	4.6	4.2	781	180	164

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
68	Seychelles	56.7	57.5									
	Type 1	**60.9**	**.**	**10.7**	**.**	**.**	**6.5**	**.**	**.**		**.**	**.**
69	Antigua and Barbuda	24.6	24.4									
70	Grenada	36.3	36.5									
71	Barbados	31.1	31.2									
72	Thailand	49.9	51.4	24.5	7.8	6.8	12.2	3.9	3.5	8,471	2,706	2,426
73	Iran (Islamic Republic of)	74.9	75.9	23.9			17.9			14,681		
74	Ukraine	69.4	69.6	18.0	1.1		12.5	0.8		5,497	336	
75	Cuba	77.0	77.2	6.6	9.5	10.5	5.1	7.3	8.1	584	840	935
76	North Macedonia	58.0	58.5	6.4			3.7			77		
77	St. Kitts and Nevis	30.8	30.8									
78	Palau	79.9	81.0									
79	Mexico	80.2	80.7	15.1	17.6	17.6	12.1	14.1	14.2	15,803	18,447	19,021
80	Peru	77.9	78.3	33.1			25.8			8,396		
81	Sri Lanka	18.5	18.7									
82	Bosnia and Herzegovina	48.2	49.0	8.3	4.0		4.0	1.9		140	68	
83	St. Vincent and the Grenadines	52.2	53.0									
84	Armenia	63.1	63.3	8.2	8.4	8.4	5.2	5.3	5.3	152	156	156
85	Moldova (Republic of)	42.6	42.8	70.4			30.0			1,213		
86	Dominican Republic	81.1	82.5	14.3	11.2	11.2	11.6	9.1	9.3	1,260	993	1,031
87	Brazil	86.6	87.1	15.2			13.2			27,826		
88	Colombia	80.8	81.4	28.5	9.7	9.7	23.0	7.8	7.9	11,383	3,876	3,967
89	Ecuador	63.8	64.2	17.1			10.9			1,839		
90	Azerbaijan	55.7	56.4									
91	China	59.2	61.4									
92	Suriname	66.1	66.1	5.5	15.0	15.8	3.6	9.9	10.5	21	56	60
93	Lebanon	88.6	88.9									
94	Maldives	39.8	40.7	32.1	35.4	34.8	12.8	14.1	14.2	57	63	65
	Type 2	**68.2**	**.**	**23.5**	**.**	**.**	**16.0**	**.**	**.**		**.**	**.**
95	Turkmenistan	51.6	52.5		8.8	8.5		4.5	4.5		264	269
96	St. Lucia	18.7	18.8	11.9			2.2			4		
97	Algeria	72.6	73.7		17.2	13.3		12.5	9.8		5,239	4,238
98	Fiji	56.2	57.2	10.8	9.4	9.4	6.1	5.3	5.4	55	48	50
99	Tunisia	68.9	69.6	8.0	8.1	7.6	5.5	5.6	5.3	643	655	633

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
100	Mongolia	68.4	68.7	37.1	21.9	17.9	25.4	15.0	12.3	792	467	394
101	Tonga	23.1	23.1									
102	Venezuela	88.2	88.3	35.8			31.6			10,218		
103	Egypt	42.7	42.8	3.1	0.9		1.3	0.4		1,296	382	
104	Paraguay	61.6	62.2		15.1	15.1		9.3	9.4		639	663
105	Dominica	70.5	71.1									
106	South Africa	66.4	67.4	26.4	24.2	24.2	17.5	16.0	16.3	10,059	9,210	9,571
107	Occupied Palestinian Territories	76.2	76.7	20.5			15.6			787		
108	Jordan	91.0	91.4	20.7	19.1	16.7	18.8	17.3	15.3	1,862	1,717	1,561
109	Libya	80.1	80.7									
110	Uzbekistan	50.5	50.4	58.5			29.5			9,556		
111	Jamaica	55.7	56.3	59.6			33.2			962		
112	Samoa	18.2	17.9									
113	Botswana	69.4	70.9		39.6	39.6		27.5	28.1		641	678
114	Bolivia	69.4	70.1	49.9			34.6			3,882		
115	Indonesia	55.3	56.6	30.4	20.2	19.4	16.8	11.2	11.0	44,859	29,872	29,929
116	Philippines	46.9	47.4	44.3	37.3	36.6	20.8	17.5	17.4	22,144	18,645	19,043
117	Belize	45.7	46.0	3.5	15.7	15.7	1.6	7.2	7.2	6	28	29
118	Gabon	89.4	90.1	36.5	44.3		32.6	39.6		674	819	
119	Guyana	26.6	26.8	32.5	13.8	12.1	8.6	3.7	3.3	68	29	26
120	Kyrgyzstan	36.4	36.9	8.5	6.9	2.4	3.1	2.5	0.9	189	154	57
121	Vietnam	35.9	37.3	13.5	5.8	5.8	4.8	2.1	2.2	4,670	1,998	2,118
122	Iraq	70.5	70.9	46.4	47.8	49.3	32.7	33.7	35.0	12,865	13,250	14,517
123	El Salvador	72.0	73.4	19.8	16.5	16.5	14.3	11.9	12.1	915	762	785
124	Morocco	62.5	63.5	9.0	10.9	10.9	5.6	6.8	6.9	2,042	2,453	2,556
125	Cape Verde	65.7	66.7									
126	Tajikistan	27.1	27.5	23.6	19.3	17.1	6.4	5.2	4.7	583	478	445
127	Nicaragua	58.5	59.0	41.8			24.5			1,537		
128	Bhutan	40.9	42.3									
129	India	34.0	34.9	34.8	49.0	49.0	11.8	16.7	17.1	160,330	225,832	236,771
	Type 3	**38.4**	**.**	**37.5**	**.**	**.**	**14.4**	**.**	**.**		**.**	**.**
130	Tuvalu	62.4	64.0									
131	Guatemala	51.1	51.8	31.0	37.6	37.6	15.8	19.2	19.5	2,729	3,310	3,491
132	Marshall Islands	77.0	77.8									

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
133	Namibia	50.0	52.0	42.8	41.4		21.4	20.7		554	536	
134	Bangladesh	36.6	38.2	47.6	52.5	51.9	17.4	19.2	19.8	29,025	32,004	33,619
135	Micronesia (Federated States of)	22.7	22.9									
136	Kiribati	54.1	55.6									
137	Ghana	56.1	57.3	29.2	33.5	33.5	16.4	18.8	19.2	4,826	5,531	5,902
138	Honduras	57.1	58.4	40.5	31.5		23.1	18.0		2,179	1,694	
139	Sao Tome and Principe	72.8	74.4	86.6	52.6	52.6	63.0	38.3	39.1	132	80	85
140	Lao PDR	35.0	36.3	18.5	23.6	21.8	6.5	8.3	7.9	451	575	567
141	Eswatini	23.8	24.2	32.7	10.8	10.8	7.8	2.6	2.6	108	36	38
142	Timor-Leste	30.6	31.3	30.1	33.9	33.9	9.2	10.4	10.6	122	137	147
143	Vanuatu	25.3	25.5									
144	Zimbabwe	32.2	32.2	29.0	22.2	21.6	9.3	7.1	7.0	1,579	1,207	1,229
145	Equatorial Guinea	72.1	73.1	66.1			47.7			626		
146	Nepal	19.7	20.6	49.3	40.3	40.3	9.7	8.0	8.3	2,882	2,356	2,508
147	Angola	65.5	66.8	47.0	62.6	62.6	30.8	41.0	41.8	9,476	12,617	13,733
148	Cambodia	23.4	24.2	45.6	39.7	39.7	10.7	9.3	9.6	1,733	1,508	1,608
149	Myanmar	30.6	31.1	57.1	58.3	58.3	17.5	17.8	18.1	9,404	9,598	9,947
150	Syrian Arab Republic	54.2	55.5	13.8			7.5			1,369		
151	Congo	66.9	67.8	47.3	44.2	44.2	31.7	29.6	30.0	1,708	1,597	1,704
152	Kenya	27.0	28.0	46.1	50.8	50.8	12.5	13.7	14.2	6,354	6,998	7,609
153	Cameroon	56.4	57.6	24.6	35.9	32.7	13.9	20.3	18.8	3,422	5,000	4,882
154	Zambia	43.5	44.6	63.3	49.8	48.3	27.5	21.7	21.5	4,853	3,817	4,023
155	Solomon Islands	23.7	24.7									
156	Comoros	29.0	29.4	69.6	68.6		20.2	19.9		168	165	
157	Mauritania	53.7	55.3	79.5	56.0	56.0	42.7	30.1	31.0	1,936	1,365	1,482
158	Papua New Guinea	13.2	13.3									
159	Pakistan	36.7	37.2	38.0	57.5	56.0	13.9	21.1	20.8	27,954	42,336	43,345
160	Côte d'Ivoire	50.8	51.7	61.1	53.2	53.2	31.0	27.0	27.5	7,733	6,729	7,201
161	Haiti	55.3	57.1	77.8	49.5	48.9	43.0	27.4	27.9	4,777	3,043	3,174
162	Tanzania (United Republic of)	33.8	35.2	40.2	43.0	40.9	13.6	14.5	14.4	8,021	8,584	9,040
163	Nigeria	50.3	52.0	53.3	51.5	49.0	26.8	25.9	25.5	52,605	50,779	52,466
164	Benin	47.3	48.4	59.2	68.3	67.9	28.0	32.3	32.9	3,216	3,713	3,987
165	Rwanda	17.2	17.4	44.1	40.1	38.3	7.6	6.9	6.7	949	863	875
166	Togo	41.7	42.8	53.3	40.1	38.5	22.2	16.7	16.5	1,776	1,336	1,382

HDI rank	Country	Percentage of population that is urban[1]		Percentage of urban population living in slums			Percentage of national population living in slums[4]			Total population living in slums (in thousands)		
		2018 old	2020	2018 old[2]	2018 new[3]	2020[3]	2018 old	2018 new	2020	2018 old[2]	2018 new[3]	2020[3]
167	Lesotho	28.2	29.0	61.9	29.7	25.6	17.4	8.4	7.4	394	189	172
168	Uganda	23.8	25.0	46.0	56.7	54.0	10.9	13.5	13.5	4,838	5,968	6,360
	Type 4	**36.4**	**.**	**57.6**	**.**	**.**	**20.9**	**.**	**.**		**.**	**.**
169	Sudan	34.6	35.3	93.7	73.7	73.7	32.5	25.5	26.0	13,470	10,598	11,313
170	Senegal	47.2	48.1	28.4	35.2	31.6	13.4	16.6	15.2	2,185	2,704	2,616
171	Malawi	16.9	17.4	66.9	49.8	49.8	11.3	8.4	8.7	2,172	1,616	1,760
172	Madagascar	37.2	38.5	73.3	69.8	67.4	27.3	26.0	26.0	7,164	6,820	7,194
173	Djibouti	77.8	78.1	65.6			51.0			496		
174	Gambia	61.3	62.6	24.3	40.7	38.9	14.9	24.9	24.3	322	540	558
175	Eritrea	40.1	41.3									
176	Ethiopia	20.8	21.7	66.2	64.3	64.3	13.7	13.4	14.0	14,775	14,360	15,733
177	Afghanistan	25.5	26.0	73.5	73.3	73.3	18.7	18.7	19.1	6,813	6,797	7,260
178	Liberia	51.2	52.1	66.6	63.9	63.9	34.1	32.7	33.3	1,654	1,586	1,698
179	Guinea-Bissau	43.4	44.2	78.2	64.4	60.8	33.9	27.9	26.9	647	533	538
180	DRC	44.5	45.6	80.4	77.9	78.4	35.7	34.6	35.8	30,018	29,095	32,010
181	Sierra Leone	42.1	42.9	59.6	53.4	50.6	25.1	22.5	21.7	1,936	1,733	1,749
182	Guinea	36.1	36.9	50.7	48.2	49.0	18.3	17.4	18.1	2,392	2,272	2,485
183	Yemen	36.6	37.9	56.0	44.2		20.5	16.2		5,937	4,683	
184	Mozambique	36.0	37.1	76.9	58.5	55.0	27.7	21.0	20.4	8,444	6,424	6,583
185	Burkina Faso	29.4	30.6	56.6	32.1	26.6	16.6	9.4	8.1	3,283	1,862	1,699
196	Mali	42.4	43.9	46.0	46.1	41.9	19.5	19.5	18.4	3,720	3,733	3,734
187	Burundi	13.0	13.7	50.5	39.5	36.8	6.6	5.1	5.0	738	577	602
188	Central African Republic	41.4	42.2	98.5			40.7			1,930		
189	Niger	16.4	16.6	61.1	70.4		10.0	11.6		2,238	2,582	
190	Chad	23.1	23.5	86.6	82.0	82.0	20.0	18.9	19.3	3,065	2,903	3,141
191	South Sudan	19.6	20.2	97.3			19.1			2,467		

Sources:

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2. Estimate updated on Aug. 31, 2021, and published in the UN-HABITAT Urban Indicators Dataset (downloaded December 2022): https://data.unhabitat.org/pages/housing-slums-and-3informal-settlements.
3. More recent estimate published in the UN-HABITAT Urban Indicators Dataset (downloaded March 2023): https://data.unhabitat.org/pages/housing-slums-and-nformal-settlements.
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23-86468/PDF-DOC/GRA/04-2023/ARS