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Housing policies in Rwanda

Riding the urbanisation whirlwind

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1. Executive Summary

Background

Rwanda is the second most densely populated country in Africa, with one of the continent's lowest urbanisation rates; moreover average farm size is not sufficient to sustain a family. As a result, Rwanda's extremely rapid urban growth is not surprising. What is perhaps surprising is that unlike 87 percent of African countries, it does not have policies that attempt to restrict rural-urban migration; in fact, its development strategy takes urbanisation as a fundamental pillar of development. Indeed, this view is taken even though the difficulties of urbanisation are compounded because Rwanda is a low income country with a nascent financial system. But, even with the difficulties posed by urbanisation, the evidence is clear: Rwandan policy points unambiguously in the right direction. Designing urban policies to accommodate the whirlwind of rapid urbanisation is an essential task even though the process may be disruptive. It is essential because urbanisation is almost impossible to stop, and the costs of trying to do so are extreme. But not only is trying to obstruct urban growth futile, urbanisation is necessary to achieve middle-income status. That status can only be achieved if a country becomes significantly urban, *and* if the urbanisation process is well managed. Thus, Rwanda's urban policies are a crucial part of its inclusive growth strategy.

This paper reviews the various instruments of an important component of Rwanda's urban policy – its housing policy – linking it to the country's overall development strategy. It makes eight recommendations about ways this policy could be improved. To set the context for these recommendations, it also discusses the empirical evidence from three perspectives. First, how housing policies affect citizens' ability to migrate to exploit better opportunities and whether people can afford to move to places that are more productive; second, how policies within cities affect the ability to optimise the growth opportunities that greater urban size and density afford; and finally, how does the housing sector interact with poverty alleviation and job creation. This paper contains detailed evidence on each area, but in the summary in the next sub-section we select and amplify some key messages.

A central conclusion of this review is that while the costs of ineffective policy – especially policies that have the result of limiting spatial mobility – may be profound, they are often not immediately obvious. Avoiding costly errors – errors which characterized policy under Habyarimana in the pre-genocide period – is essential. To avoid these errors, before reviewing Rwanda's housing situation, we stress two principles that are important for effective governance

of the housing and urban sector. Whilst Government of Rwanda is increasingly implementing these principles in some respects, systematic and ongoing application will be important.

- First, housing policy and urban policy more broadly, should seek to be as evidence-driven as possible, especially in Rwanda given the scale of the challenge to house a growing urban population. When the best policy is to let people "vote with their feet," policy-makers can help only when trends are clear. Evidence is needed to understand the choices being made by individuals; and
- Second, ongoing consultation is vital. Some mistakes are inevitable, but course correction requires interaction with affected actors. Seemingly innocuous policy can have profound and often unidentified effects so feedback is essential or mistakes will not be corrected. In this context, the Government of Rwanda's working group on housing is one important step.

Housing policy in Rwanda

1. Housing policy across cities: The main reason for rural-urban migration is to move to locations where incomes are higher. Having a suite of policies – including housing regulations and urban spatial planning – that enables individuals to respond to this incentive, is an important mechanism for both shifting resources to higher productivity jobs as well as an effective way to reduce poverty. The international evidence is that policy that impedes such movements generate enormous costs. For instance, in the U.S., restrictive housing regulations have reduced capita income by $15,000; there is also evidence in a similar direction for 600 developing country cities.

Neither the economy-wide implications of local regulations, nor the costs to society of the inability to migrate to more productive opportunities appear on anyone's income statement. As a result, recommendations, such as those that have been made by some to limit the population growth in Kigali, can have significant but not immediately obvious adverse effects on the economy. The reductions in income from policies which would cause people to have to continue to live in much less productive locations, shows up more subtly: in having a less dynamic economy and lower overall welfare. Such a policy is like leaving billions of Rwandan Francs on the street unused, as the rapidly growing labour force is not be able to access more productive employment.

It is therefore important to facilitate migration, including to fast-growing locations in Rwanda, and in particular, Kigali, which – we argue – still has a great deal to contribute to national growth as its population grows. Kigali accounts for between 25 percent and 40 percent of GDP; which makes it by far the most productive location in the country. Its' urban population is about

six times larger than the second largest city, and ten to fifteen times the size of the fourth through seventh largest cities. The city not only has a considerably higher average wage compared to rural areas -- the median household in urban Kigali earns 73 percent more than their rural counterpart – it has a 57 percent higher median wage than that in other urban provinces. In addition, Kigali attracts migrants considerably faster than other cities; and because its' economy is much more complex than other cities, it offers higher agglomeration economies. As a result, Kigali's growth remains the best opportunity for both growth and poverty reduction. Hence, a housing and urban planning policy that, in effect, limits migration to Kigali or any particular secondary city in favor of other locations, would have adverse effects on poverty reduction as well as income growth.

To facilitate migration to the most productive locations, housing supply must be sufficiently responsive, and a key component of this responsiveness is that housing is affordable. However, housing is expensive for Rwandan households. Indeed, according to credible sources, Rwanda had the least affordable formal housing in Africa in relation to local purchasing power, with less than 10 percent of households able to afford the cheapest newly-constructed formal housing unit. The median household in Kigali's unplanned settlements pays more than 30 percent of their income for housing, much more than the amount spent in other African cities. Some of the reasons housing is so expensive are as follows.

First, regulations are restrictive. For example, in Kigali, especially before the recent Master Plan update, high housing costs could be attributed to the effects of building set-backs, lot size restrictions, building height restrictions, road widths and availability, and the provision and regulation of a variety of housing-related services. These planning regulations have caused much higher costs in many locations in the city, and the effects of the recent reforms should be carefully monitored.

Second, the cost of construction is high, partly due to the cost of imported construction materials, such as cement, but also due to the lack of development of the local construction materials industry. In addition, the country's steep topology drives up landscaping and input costs and makes it difficult to develop properties on the cities' steep slopes in wetlands.

Third, housing finance is very expensive. Mortgage interest rates in Rwanda are about 17 percent, one of the highest levels in the 10 East African countries while the inflation rate is around 2 percent. This implies that the inflation-adjusted cost of borrowing to buy a home is on the order of 15 percent (17 minus 2). That is an extraordinarily high borrowing rate, particularly for long-term debt. Such high real rates mean that only about 5 percent of households can afford to borrow, with the result that buying a home is out of the question for almost all families.

If regulations and financial policies were streamlined the private sector could play a much larger role in reducing the cost of housing. If, in addition, the construction materials industry was encouraged, Rwanda's urbanisation process would be much more manageable, and by extension, so too would the economic development process. We identify some of what the international experience suggests are the key policies in our recommendations.

2. Housing policy within cities: Cities are more likely to experience inclusive growth when they allow optimal density, promote connectivity and provide various basic services at a sufficient level to avoid congestion, disease and poverty; housing policy has a role to play in all three of these areas. Density is particularly important as a critical enabler of connectivity to jobs and as a factor that reduces the cost of basic service provision. With few exceptions around the world, the built-up area and population density of cities follows a very intuitive pattern: i.e., at central locations, which have the greatest number of jobs within the shortest distance, land has the most value because the access to all other locations in the city is greatest at this location. When developers respond to price signals the increase in the relative value of land causes them to build taller buildings, with the result that almost all cities follow a pattern of declining density as one moves away from the central city area. This spatial pattern allows for the lowest commuting costs and thereby affords the greatest possibility that the agglomeration economies -- by which densely populated areas are considerably more productive – will be realised. Housing policy and infrastructure provision can affect locational choices within cities in a number of ways that either support or impede existing incentives.

One of the most salient features of Rwanda's urban housing is that compared to a number of other sub-Saharan African countries it does not have the structural density that characterises other cities. Rwanda's cities have a high prevalence of low-density single-family units which implies a high-cost of infrastructure and high environmental footprint per household, reduced agglomeration economies, and urban sprawl. To decrease the cost of infrastructure per household and keep up with demand, it is necessary to increase both the supply and density of housing.

In addition, most Rwandan cities rely upon fragmented, expensive transport systems. These characteristics made the country's cities less productive, particularly as Rwandan urban residents, like those in most low-income countries, commute most frequently by walking. For example, at only 4 kilometers from the city center, connectivity declines sharply, falling from 100 in the central business district to half that level at 4 kilometers. In contrast, in five other African cities, an average density as low as 50 is not achieved until more than 7 kilometers from the city center. At the same time, a recent IGC-Laterite study indicates that the cost of bus transportation also takes up a high

proportion of income. Hence, the lack of density causes longer commutes at higher costs, and because Kigali's poor tend to live on the outskirts of the city, these costs are borne largely by the poor. These patterns suggest that for many of those who would come to the city to pursue the opportunities offered there, the costs of commuting may be so high that fewer people can exploit the job opportunities offered.

Certainly, given its population growth projections, Kigali must plan for urban expansion. But it should also consider how the transport system supports connectivity. Changes in commuting patterns will occur as the city's population increases and the provision of better methods of mobility will play an important role in both housing demand and the ways that demand can be accommodated.

3. Housing, poverty alleviation and job creation: Poor housing conditions can be both a symptom and a cause of poverty. Poverty is far lower in urban areas, especially Kigali; between 2014 and 2017, Kigali was the only province in the country in which poverty decreased; although a more detailed study of the urban wage premium would provide insights, it is clear that the that rural migrants who move to Kigali do so in hopes of increasing their real incomes. Moreover, this labour force will be increasing beyond even the recent high levels. Rwanda's age structure is such that it will grow at a much higher rate than it has in recent years, implying the need for more urban employment to be able to exploit Rwanda's "demographic dividend." It will thus clearly be important for housing policy not to impede this whirlwind so that jobs are created and poverty reduced.

The higher incomes and thus poverty alleviation potential in Kigali, imply that any policy that aims to slow migration to Kigali, whether strict housing regulation, a national spatial plan that calls for very large scale investment in locations that are not currently growing, or an urban planning framework that restricts low cost housing, may have costly and adverse effects on poverty reduction.

Moreover, not only does housing policy have an impact on poverty and job outcomes in the wider economy, the housing sector also has huge potential to generate jobs more directly. Housing is a significant channel by which the public sector can facilitate the private sector because throughout the world, with the exception of the former Soviet Union, the private sector provides almost all housing produced. But, not only is housing, unlike education for example, produced almost solely by the private sector, it is built by the relatively low-skilled labour which characterises much of the Rwandan labour force. Thus, by encouraging housing production the government may be able to create exactly the sort of non-agricultural jobs needed as well as help satisfy an

extraordinary demand for housing. Models and prototypes are needed that expand the market for cheap housing, reduce import spending on materials such as cement, and create jobs.

Rwanda's public expenditure on social housing is laudable but the numbers of units completed are very small compared to the scale of the country's unplanned settlements. However, internationally, large-scale international social housing projects have often been prohibitively costly when done at a scale at sufficient scale. For instance, if the cost per household could hypothetically be reduced to 9 million RWF, providing one housing unit to all of the households in the bottom tenth by income, would cost a quarter of Rwanda's 2018 GDP, which would generate alarming macroeconomic risk in terms of debt sustainability. The logical conclusion is that if the goal is to improve welfare for the poorest households whilst retaining macroeconomic stability, most public expenditures to encourage the supply of affordable housing should focus on plot identification where development will take place and to developing the basic infrastructure, rather than large-scale housing production. Moreover, any expenditure on social housing that does take place, as well as any housing subsidies, should be targeted at helping the greatest number of households at the least cost per household. Some examples of how this has been done in other countries – such as providing subsidies to dirt floors – are given in the text. Experience has shown that there are effective and inexpensive ways to have a significant welfare-improving impact on a surprising large number of families within manageable levels of government assistance.

Recommendations

In light of the reflections above and of the analysis conducted in this paper, we list a number of key recommendations that follow the three dimensions of housing policy discussed above. That is, the effects of policy across cities, or letting people vote with their feet; the effects of policies within cities, or facilitating agglomeration economies, and how might housing policy be designed to help address poverty alleviation and job creation; that is the fiscal and financial policy dimensions of housing policy.

Housing policies that facilitate citizens to vote with their feet

1. While national spatial plans and frameworks should in principle be agnostic about public spatial resource allocation, they should also be data-driven, and reality-grounded in ways that support population movements, local needs and market forces. At present, the evidence indicates that Kigali is the national growth engine and the arguments to reduce its role in the economy are misdirected.

2. The implementation of the 2019 revision of the Kigali Master Plan should be fully supported. The Kigali Master Plan of 2013 contained inflexible, costly, and low-density zoning regulations; the 2019 revision addresses these issues well, which is laudable and an example of best practice that other countries might look to; however, given Kigali's outsized role in the economy, this plan needs to be supported by national-level attention. A key example is the Building Code, which should be amended to recognise household-level incrementalism and self-building as a valid and effective way of creating affordable housing, and make it accessible to low income households. This kind of approach, rather than strict regulation, is the fastest way to the vision of decent housing for all.
3. Policies to develop Rwanda's secondary and satellite cities are also important and developing both the fiscal capacity of these cities and their connectivity to each other are important priorities; efforts to develop these cities will be most successful when they are data-driven.

Housing policies that contribute to agglomeration economies within Rwanda's cities

4. Encourage the densification of the economy's growth engine Kigali. There are a number of ways to do this, but fundamentally, it begins with recognizing that over the next 20 years most of Kigali remains to be built. This recognition, in turn, raises the question of whether the built-up stock will go up in the form of taller buildings or out in rapid expansion of the city's footprint. Of course, the simple answer is that it will do both but, the more complicated question is by how much it will change in each direction. The answer to this question recognises that the situation Rwanda faces in which the built-up area of its largest city will more than double, represents an enormous change in the components of nation's fixed capital stock. And, because it is a change in such a large component of national wealth it is important that the input prices used to guide this shift are able to send appropriate signals about the costs involved. The most important of these input prices is the price of the input that underlies this new fixed capital stock. That is, the price of land. Hence, government policies with respect to urban land, particularly land use in Kigali, have important economy-wide implications. There are a number of housing policies that could contribute to assuring that land use is consistent with the underlying values of a dynamic, rapidly growing city. Among them are:
    - The provision of government land for affordable housing needs to recognize how such policies can carry large implicit subsidies and distort urban land markets. In many cases governments act as though the price of public land is zero. This approach can have long-lasting adverse implications on city development.

Providing land to improve housing affordability is very important, but so too is the information embodied in land prices.

- Public expenditures to encourage the supply of affordable housing should focus on infrastructure rather than housing production. Moreover, planning ahead of population growth with road grids and plot layouts will reduce the cost of neighbourhood infrastructure. Indeed, the provision of basic infrastructure is necessary to harness the positive agglomeration effects that urbanisation can bring;
- One of the chief ways to lower the cost of housing is to build more densely. Affordable housing finance should be targeted at increasing density and by implication, improving housing affordability. For example, making use of the recent World Bank credit for housing finance could be used to finance simple additions of one or two floors in centrally-located neighbourhoods. If feasible, such an approach could substantially increase density in a particularly cost-effective manner;
- Investing in transport connectivity –both within and across cities -- could be as effective as investing in housing to reduce total living costs for all income levels. The Bus Rapid Transit system in Kigali's Master Plan, if appropriately phased, could have an important impact as the city grows;
- The new property tax is an important way to improve local fiscal capacity and should be boldly implemented. At the same time, it is also a policy that underpins efficient urban growth. In the absence of such a tax, vacant, untaxed urban land allows land owners' to realize the gains from a city's development without paying any costs for not putting the land to productive use; and important municipal revenues for urban infrastructure are foregone.

Housing policies that contribute to poverty alleviation and job creation

5. Housing finance initiatives are needed that decrease the currently high interest rates. The recently approved World Bank credit for housing can allow finance to be provided at much lower but still financially sustainable interest rates. The Government might also consider how to replicate the successful Umwalimu SACCO which lends to teachers for low cost housing at a rate of 11 percent.
6. The Rwandan Social Security Board should provide housing finance rather than investing in real estate. The RSSB has served as an investor in real estate development rather than a lender of funds. It could reduce its risk exposure while providing long-term credit that is now lacking as was done in a successful World Bank housing credit in Ghana.

7. Housing subsidies should not be designed to produce complete housing units. Rather, they should be targeted at housing-related causes of poverty such as dirt floors and the lack of sanitation. The World Bank has supported projects that successfully improved dirt floors and provided sanitation at scale and at low cost per household. Such schemes may be relevant for Rwanda. Evidence shows that hard floors confer health and cognitive development on children, and mental health benefits for adults; this provides a compelling reason for government subsidies for housing.
8. There is a need to support the private sector and to develop the kinds of low-cost material inputs to substitute for imported cement. If some of the proto-types now under development are financially viable they represent an important opportunity to both lower housing costs and generate low-skill jobs. Regular communication between the Government and the private sector is important; in this regard, initiatives such as MININFRA's Affordable Housing and Informal Settlement Upgrading Working Group may have a key role to play, as does assistance to mobilise finance, for instance from development finance institutions and development partners.

2. Introduction.

Rwanda is urbanising at one of the world's most rapid rates UN (2016). In some respects, this trend is to be expected; as the most densely populated country in Africa, and one in which the average farm size is not able to sustain a family, rapid migration to cities is inevitable.[1] However, in Rwanda this process is particularly difficult because the country is so poor.[2] The low income level of migrants to cities makes urbanisation more difficult because migrating to a city is expensive; it involves foregone income and time spent in job and housing searches in addition to the cost of moving to more expensive urban housing. It is also costly for the city as infrastructure and services must be provided for new migrants who, again, are often very poor. Rapid rural-to-urban migrations have often been socially disruptive,[3] and undertaking this process with a still nascent financial system compounds the difficulties.[4]

[1] "Are Small Farmers More Productive in Rwanda?" *World Bank Research Digest*, 2014 says that average farm size of .72 hectares in four separate parcels in 2013 was not sufficient to achieve family subsistence. IFAD (2019) indicates that average farm size was considerably smaller than that at .33 hectares.

[2] Rwanda has been one of the most rapidly growing economies in sub-Sahara Africa (SSA) but it is still a low-income country with a per capita income in 2018 that was 57 percent of the average level for SSA. This ratio had been 31 percent in 2000, Source: World Bank on-line data.

[3] Glaeser and Steinberg (2016) provide an interesting historical review of the disruptions, including revolutions, that have accompanied rapid urban growth.

[4] Rwanda's financial system is in an emerging status, having the second smallest banking sector and capital markets in the East African Community, World Bank *Housing Finance Project Appraisal Document,* 2018.

Nevertheless, despite all these problems, the evidence is clear: designing housing policies to accommodate the whirlwind of rapid urbanization in a poor, densely-populated country is an essential task. It is essential for a number of reasons, but perhaps most importantly, because it is almost impossible to stop it and the costs of trying to do so are extreme. For example, in the 1980s and early 1990s Rwanda's government attempted to keep people in the countryside. At that time, Rwanda was the world's least urbanized society, and official policy was for Rwanda to remain that way, see Verwimp (2000). Government policies limited rural-urban migration, and carried out forced removal from cities including imprisoning those who provided accommodations to migrants. Markets were tightly controlled in ways that limited opportunities for people who might wish to leave farms.[5] The result was growing impoverishment, as per capita income was lower in 1993 than it had been in 1980.[6]

But, besides recognising how difficult it is to stop the inevitable process of people voting with their feet to improve their circumstances, there is another more optimistic reason why policy should be supportive of urbanization: it is that the evidence is also clear that without urbanization it is impossible to achieve even lower-middle-income status with the much lower poverty rates that accompany that status, see Annez and Buckley (2009). The Government of Rwanda (GoR) recognizes that in order to create the large number of jobs that will be required by Rwanda's very young population, labour-intensive, low-skill employment opportunities are extremely important, and as a recent IFC report (2019) says, increased housing production affords not only affords such a prospect, it also addresses a looming demand. Thus, in many respects, it is not surprising that while the disruptive short-run costs have resulted in most countries in sub-Sahara Africa, -- indeed, 87 percent of them[7]-- attempting to restrict urban migration. But, ultimately, that approach sacrifices economic growth and job creation for the short-run gains of avoiding the dislocations large urbanization. In short, urbanization needs to be nimbly and efficiently harnessed to help drive growth while cushioning accompanying disruptions.

[5] In its 1993 *Human Rights Country Report on Rwanda*, the US Department of State wrote: "Freedom of movement and residence [in Rwanda] are restricted by laws and regulations which require all residents to hold national identity cards and residence and work permits. Police conduct periodic checks, especially in urban areas, and return all those not registered in the locality to their own commune. Property owners who do not require tenants to show valid documentation are subject to fines and even imprisonment. Undocumented tenants are subject to expulsion." (1994). Cited in Boudreaux (2009).

[6] World Bank, on-line data. Rwanda was also experiencing sharp reductions in the prices of some of its leading exports.

[7] The figure is from the United Nations (2016) for the period between 2010 and 2015.

These realisations are what motivates Rwanda's attention to urban policy. The country aims to achieve upper middle-income status by 2035 and high-income status by 2050,[8] and urbanization is a pillar of the government's efforts to achieve this goal. Urbanization's role as a pillar of growth has been proposed in both the GoR's *Vision 2050* and the *National Strategy for Transformation* (2017). This view was expanded upon in an empirical analysis by the GOR and the World Bank in *Rwanda: Future Drivers of Growth in Rwanda (2018)* which details how this policy perspective will affect the country's inclusive growth trajectory.[9] Moreover, the focus on urbanization appears to be already bearing fruit. Indeed, evidence collected by the National Institute of Statistics Rwanda shows that these dry statistics imply that well over a million people moved out of poverty.

In sum, the population movement away from densely-populated, largely subsistence agriculture has played a fundamental role in reducing poverty, and simultaneously contributed to higher economic growth. But, it must be remembered that urbanization is still in its early days. For inclusive growth to continue it must accommodate the even greater population shifts that are still yet to come. In such a context, effective urban policy is vital; poorly-designed or, just poorly-implemented policies can significantly slow GDP growth and once again increase poverty as did the earlier anti-urban policies. Consequently, by sub-Sahara African standards, Rwanda's urban policies may be unconventional, but they are an unambiguously important part of an inclusive growth strategy.

Perhaps the most important dimension of that policy is how the government supports the housing market in responding to the extraordinary demands that will be placed on it by what we have termed the whirlwind of urbanization. As Bower and Murray (2019) and the IFC (2019) show prospective housing demands will require significant scaling up of housing supply.

To provide some historical context for how large this demand is likely to be it is helpful to make some rough comparisons between Rwanda's situation with that of Europe in the 19th century which at the beginning of that period had a similar per capita income as Rwanda has today.[10] Not only was per capita income in Continental Europe at that time similar to Rwanda's current

[8] MINECOFIN web site accessed 30 8 2019 http://www.minecofin.gov.rw/index.php?id=12&tx_ttnews%5Btt_news%5D=698&cHash=981449aa95a27480f5ba0aebc2a9ba84

[9] Other recent policy directives for the sector drill down on the details of these plans. Documents, such as, the *National Urbanization Policy* (2015), *National Housing Policy* (2015) and *National Informal Urban Settlement Upgrading Strategy* (2017), along with other laws and policies, prime ministerial orders, and guidelines underline the concrete steps being made to implement these policies.

[10] The constant per capita income figures are from Maddison (2007).

situation, its share of urban population, at 23 percent, was also close Rwanda's current level. Over roughly the next century this share increased to 33 percent.[11] In Rwanda, in contrast, a recent GOR-World Bank study (2018) suggests that a similar increase in the share of urban population occurred in 13 years, between 2002 and 2015. By whatever measure used, Rwanda's urbanization rate is many times faster than was the European experience.

Another way to consider what this rapid population shift implies for housing demand is to once again look to the European experience but focus on the capital stock. Piketty's (2014) analysis allows us to do just that. He shows that over roughly the same time period, the average share of the fixed capital stock in residential housing in the three European countries for which he has data -- France, Germany and the U.K. -- increased from being equivalent to amount one year's GDP to about 140 percent of GDP. That is, in these three countries the average housing stock grew more rapidly than per capita income by about 40 percent.[12] Once again, housing investment, even during Europe's much slower urbanization, accounted for an increasing share of GDP. Given that over this period the per capita incomes more than doubled in the European economies, their experience similarly implies a major increase in housing investment in Rwanda. As Bower and Murray (2019) show, under almost any imaginable assumptions, housing demand in Rwanda will be very high for the foreseeable future.

In many respects, these results are not surprising. Virtually everywhere housing accounts for most of the fixed capital stock and its cost, quality, and availability have fundamental effects on virtually every aspect of urbanization. For instance, Quigley (2002) writes:

> *"Housing and urban development is the most basic and durable aspect of national urban policy, and provides the spatial context within which other policies operate. The intra-urban distribution of population, the concentration of the poor, the distribution of work sites, housing quality, and tax bases are all directly affected by the substantial resources devoted to housing and urban development policy. These spatial relationships in turn have a profound effect on the economic health of the urban economy."* p. 54

At the most basic level, effective housing policies need to recognize that at the current historical juncture housing investment in Rwanda's cities will and should be increasing.

[11] The figure on Europe is from Bairoch (1988). The Rwanda figure is from the GoR-World Bank (2018).
[12] The increase in the share of the capital in the three economies is from Chapter 4 of Piketty (2014) where he reviews the experience from Europe. The dates correspond to the 19th century for France and the U.K. The figure for Germany dates from 1870 through the end of the century due to lack of earlier data. The U.K. was both more urbanized and had a higher income level than the continental European countries so the comparisons are of course rough if illustrative.

Consequently, and even more importantly, the policy perspective also needs to recognize that existing barriers at the local level – e.g., such as highly restrictive planning regulations – can have economy-wide implications. If such local regulations make housing less affordable, they can slow the urbanization process as a driver of growth. But if this happens, it is not only the putative migrant family that bears the cost, it is the society.

Unfortunately, such larger costs of what are less than obvious, and, as a result, often overlooked. For instance, the inability to move to a more productive location ultimately results in less income for the aspiring migrant. However, if enough potential migrants are prevented from moving, the costs are also borne by the society in lower economic growth. In a country where not only are 70 percent of the workforce in subsistence agriculture, but the non-farm labor market is only able to absorb half of the growth in the workforce, the costs of immobility could be extraordinary, World Bank (2019), p.10. The income foregone from having to stay put in much less productive locations does not appear on anyone's income statements. It shows up in having a less dynamic society and lower overall welfare. It effectively leaving billions of Rwandan Francs on the street as the rapid growth in the labor force – at a rate more than double that of the 2016-9 period– are not able to access more productive employment.[13] Thus, by assuring the provision of housing that allows the exploitation of opportunities housing policy can result in significant improvements in resource allocation as well as basic shelter conditions of many.

This paper reviews some of the policy initiatives now in process, making use of the empirical insights provided by recent studies, and suggesting other data that would be useful in shaping policy. In the next section we review how housing policies fit into the functioning of the economy. We first emphasize how cities interact with each other in ways that affect both the cities and economic growth, and how housing can affect this interaction. Then we consider how housing policy affects the supply and cost of housing within particular cities. Once again, a major emphasis is on the broader effects that housing policy can have through its effects on the agglomeration economies offered by cities. In section III we discuss ways that housing policy fits into the broader government efforts to improve public governance and to carefully manage the targeting of assistance so that fiscal implications are clear. In a final section, we focus on a number of different policies that have either been proposed or that might complement each other and the policy thrust of the GOR's urbanization platform.

[13] World Bank (2019) shows that the Rwandan labor force is expected to grow by 800,000 per year, p.10 while 2016-19 it grew at 343,000, p.9, derived from Table 2.2.

3. Housing in the Rwandan Economy.

Given that Rwanda has both high economic growth and urban growth, it is clear that investment levels in housing are likely to be high for some time to come.[14] It is thus important to take stock of the contribution of housing to the wider economy. Housing affects the ability of urbanisation to generate benefits from agglomeration economies as follows: i) at the national level, the effects that housing market conditions and regulations have on the ability of individuals and households to move to the cities in which they can be most productive in a process known as "spatial sorting" of labour; and ii) at the city level, the effects that housing conditions have on the ability of cities to offer agglomeration benefits. In this section we first discuss the housing conditions in Rwanda that are most salient to growth and welfare; we then consider how housing affects the ability of across cities, and then examine how it affects welfare and productivity within cities. Through these two effects on the economy, housing inevitably affects job creation and poverty as well, and given the importance of both of these outcomes we also briefly discuss the channel of housing policy on this specific aspect aspects of welfare.

3.1 Housing policy across cities: follow the people, who are following the money

Perhaps the main reason for rural-urban migration is the attempt to move to locations where incomes are higher. Higher real wages have been observed, driven by urban agglomeration economies, in cities in Uganda, Tanzania and Nigeria, in an effect known as the urban wage premium.[15] Enabling individuals to respond to incentives provided by cities is an important mechanism for shifting resources to higher productivity jobs as well as for achieving poverty reduction.[16] As noted earlier, if policy does not impede the decisions people make with respect to where they should live and work, so they can take full advantage of this urban wage premium, the result will be that income and welfare will be maximized, and economic growth enhanced. But, productivity differences are not the only factor affecting the decision and ability to migrate. In addition to considering wage differences potential migrants also need to be able to compare local living costs across locations and these are for the most part driven by differences in housing costs.[17]

[14] From the Centre for Affordable Housing (2019) report on Rwanda, it appears that the share of housing investment in GDP is about 3.8 percent. This measure, rather than one that adds in inputs into housing investment is the usual comparator measure. The difficulty of double counting with the broader measure also used by CAHF is significant.

[15] For example, D'Costa and Overman (2014) and Jones et al, (2017) on urban-rural wage differences

[16] World Bank (2016) indicates that 90 percent of the increase in labour productivity in Rwanda over the 2006 to 2011 period was due to the shift from agricultural to non-agricultural employment; the figure was 47 percent for 2011 to 2014 as a result in a slowdown of the shift from agricultural to non-agricultural work.

[17] Spatial sorting, in which high-ability individuals choose to move to attractive cities, was identified as less important for Africa in the Jones et al. (2017) study.

Housing policies then play a major role in determining the desirability and feasibility of relocation. If urban policies and regulation increase housing costs, this can have a negative impact on economic growth especially in contexts with little unplanned housing. A number of studies have documented these adverse effects. Hsieh and Moretti (2019), for example, show that housing policies that have impeded movement to cities in the U.S., have reduced economic growth since 1964 by one third, amounting to a very significant reduction of per capita income of $15,000.[18] In Rwanda's cities, the existence of unplanned settlements into which most new migrants move, suggests that most migrants are priced out of the formal sector market. It also implies that the effect of strict housing regulations on urban population growth will be dampened. However, it seems likely that if the only housing option available is to live in crowded, low-quality housing that some are discouraged from undertaking the move.

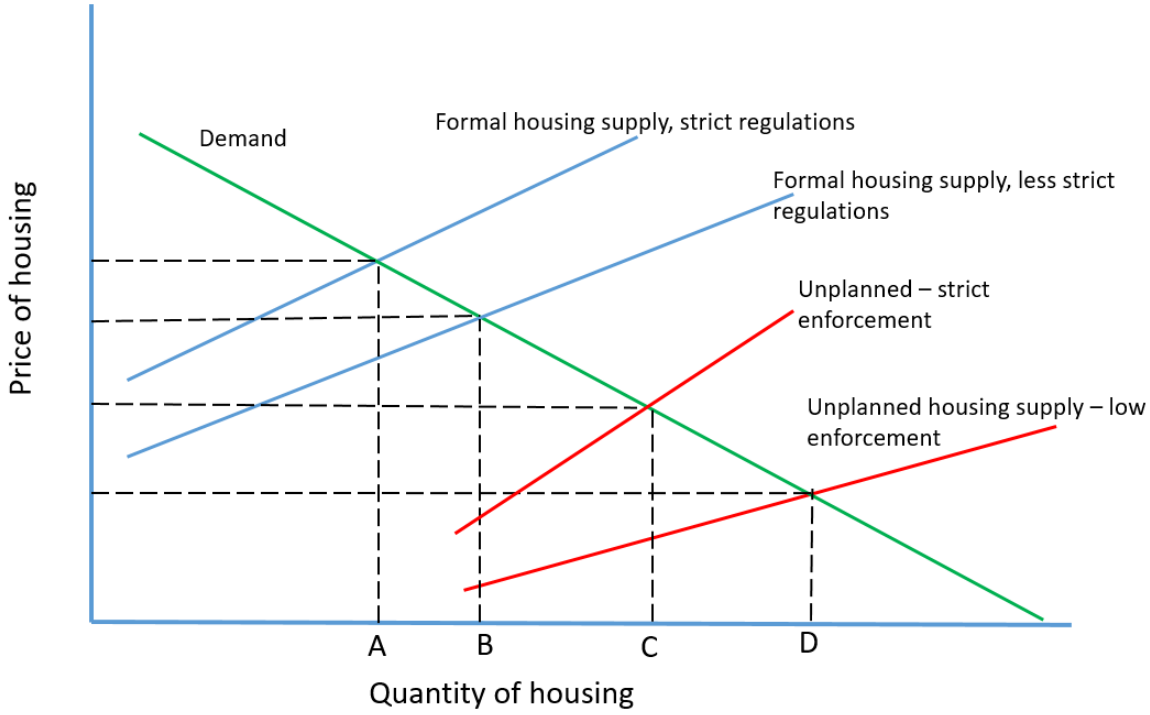
Figure 1 represents the housing market in a developing country city. It shows that strict housing regulations that increase the cost of construction and do not allow incremental approaches, decrease the supply of formal housing from B to A, with the counter-intuitive effect of a smaller formal housing sector and a larger unplanned housing sector, as shown empirically by Oyalowo et al (2018). The lower red line in the Figure represents unplanned housing supply for which there is little enforcement of housing regulations, resulting in a total housing supply of D.

However, in Rwanda, given its stronger government enforcement capacity, the prospect exists that planning regulations and building code standards are strictly enforced for all new buildings, which would render the supply of housing less responsive to demand increases, and would reduce the total housing supply to C – thus reducing urban growth. The risk is that unnecessarily strict standards and strict enforcement not only restricts the size of the formal sector, they also restrict urban growth by restricting the amount of migration that takes place.

The first effect is unambiguously adverse, because it results in a smaller formal sector and fewer well-delivered public goods. It results in reduced growth, reduced agglomeration economies and welfare, through less connectivity, more overcrowding, disease, crime and other "public bads" that are addressed by formality. Moreover, a smaller formal housing sector may hamper the ability of the formal construction sector to take advantage of economies of scale to reduce costs further. Finally, a smaller formal sector will reduce the attractiveness of the location for higher income migrants and investors.

[18] Parkhomenko (2018), similarly, also finds that strict housing regulation in the US contributes to spatial misallocation of labour and lowers productivity. Similarly, Monkkonen and Ronconi (2013) find that for 600 developing country cities, economic development is negatively correlated with restrictive land use regulations.

Figure 1: Housing Market with Formal and Informal Supply



However, reducing urban growth could have two consequences – it can reduce the growth of agglomeration economies in the city, but it could reduce overcrowding, disease and crime, depending on how well unplanned settlements are managed and serviced. But, when combined with the third effect – less overall migration -- more flexible land use and planning regulations on building in the unplanned sector, are clearly desirable. Not only can restrictive housing and land use regulations seriously lower economic growth, in Kigali, at least, services to unplanned settlements are comparatively well-provided, and are of higher quality than the rural alternatives. Ultimately, even with informal urban housing conditions, the quality of life and welfare of poorer migrants improves significantly relative to staying put in a rural location.

An important question for government decisions as to how infrastructure investments in specific cities – the electricity, road, water, and sanitation that service housing -- should be allocated is with respect to which locations deserve priority? That is, where will new infrastructure have the largest beneficial effect. Fortunately, a recent Rajashekar et al study (2019a) by Laterite contributes to a better understanding of this question. In particular, it allows for a comparison of investments in Kigali with those in secondary cities. Some of its main findings are: that Kigali attracts migrants considerably faster than do other cities; and because Kigali's economy is much more complex and diverse than those of secondary city districts, it offers higher agglomeration economies than do

other cities. It also finds that "secondary cities are not equivalent in their size or potential for future growth."

This focus on spatial productivity is important because the Government of Rwanda has received conflicting recommendations about a relative focus of investments on Kigali or in its secondary cities. For instance, a 2016 UN Habitat report argued that:

> "*The current situation [in Rwanda] is dominated by the high proportion of urban residents living in Kigali, which has been the main trend since independence. To reduce the pressure on Kigali and create more opportunities for six secondary cities, there should be a decision to shift the on-going urban population pattern to a new one; this should be characterized by the reduction of the size of a metropolitan city and the second most populated city by 2032 or 2062…Here, [in this study] the aim is to suggest from a provincial perspective the progressive reduction of the urban population in Kigali while ensuring an augmentation of people in four provinces,"*[19]

On the other hand, the more recent (2018) Government of Rwanda-World Bank study, based on careful analyses of more recently developed data finds that:

> *"Some secondary cities have not reached a sufficient size in population or density of firms to create agglomeration economies… [and] none of the [secondary] cities are of a sufficient size to produce a viable market for manufactured goods. [As a result] initially focusing investment on fewer cities with existing competitive advantage may deliver economic growth more efficiently…Areas with higher population density have successfully translated increasing density to poverty reduction*….[On the other hand,] *an increase in density has not been clearly associated with poverty reduction in areas with low- density and bad connectivity, This means except for areas within Greater Kigali, or close to secondary cities, agglomeration effects of poverty reduction are weak."*

In short, the evidence indicates that Kigali's primacy is an opportunity and not the obstacle to development that the Habitat study indicates. Kigali accounts for between 25 percent and 40 percent of GDP;[20] which makes it by far the most productive and rapidly growing location in the country. Certainly, the GoR's support for the construction of one of the most expensive convention centres in Africa, and its construction of an $800 million international airport on the outskirts of Kigali, suggest that government policy aims for the city to play such a role. Hence,

[19] UN Habitat (2016) *National Urbanisation Strategy, Rwanda: Policy Note.* p.18
[20] EICV estimates at MINECOFIN find that Kigali has 25 percent of national GDP, and Bundervoet and Sanghi (2015) estimate the city's GDP and proportion of national GDP using night lights data.

given the non-housing related infrastructure investments already made in the capital city, it is clear that Kigali will play a central role in the nation's employment and economic growth.

An essential condition for this to occur is that despite the fact that more than 50 percent of the city's land area is covered with steep hills, or with water or wetlands,[21] that potentially new employees are able to afford housing in or near the city. If housing costs are too high, they will not be able to do so and thereby choke off the ability to exploit the productivity gains afforded by more population growth. Thus, housing policy in Kigali will play an essential role in determining whether the agglomeration economies associated with the government's recent investments can be exploited.

But, besides the already realized government large-scale investments in Kigali, if the policy objective is to maximize national economic growth, then an important consideration is that people should be encouraged to move to where they can earn the most, as argued, for example in the World Bank's World Development Report of 2009 *Reshaping Economic Geography*. That is, even without an attempt to exploit the gains from the recent investments, the evidence shows that in Rwanda this location is Kigali. Whilst workers' productivity and wages of course also derive from their individual characteristics -- such as education and effort -- they undoubtedly also come from location-specific factors such as proximity to other workers, capital and jobs.

As a recent GoR-World Bank (2018) study shows Kigali not only has a considerable wage premium compared to rural areas -- the median wage earner in urban areas earned 73 percent more than their rural counterpart[22] – Kigali province has a 57 percent higher median wage than that in other provinces. Clearly the average productivity across Rwanda's cities implied by these wage differences is significantly much higher than it is in rural areas. It is also more than twice as large as the gap that has been found for the U.S. and almost two-thirds higher than the Chinese wage gap.[23]

Thus, shifting public resources away from Kigali to secondary cities, as UN Habitat recommends, would significantly decrease productivity and therefore economic growth. As the recent World Bank (2019) study shows, and we discuss below, it would increase poverty. Importantly, the ability to undertake such a move depends, as noted above, on whether the

[21] National Geographic (2017).
[22] see Table 57 in NISR (2017) *Labour Force Survey 2016*
[23] A study by Chauvin et al. (2017), estimates that in the U.S., urban incomes are 30 percent higher than rural incomes, while in China they are 44 percent higher. These are significant differences but not nearly as large as those in India, where the difference is 122 percent, and in Brazil where urban workers earn 176 percent more than do those in rural areas. Rwanda's wage gap is near the midpoint of these estimates.

increase in housing and other costs exceed the increase in wages. That is, the increase in costs, which are predominately housing costs, that potential migrants confront in Kigali, cannot be higher than the increase in pay that their higher productivity jobs afford. If higher costs exceed the increases in productivity people will not move to the city, and the productivity gains from an urban wage premium will be foregone. Collecting and analyzing such relative costs and wage differences would be an important part of an on-going data collection effort.

Another way to think about Rwanda's spatial pattern of population and productivity is to consider the distribution of population in Rwanda's cities in an international context. The broader international evidence is that cities grow and expand in ways that maximize the advantage to their location with respect to each other, and with respect to what the respective cities can most efficiently produce. It indicates that for most developed countries, population movements result in a specific pattern of city sizes known as Zipf's law, a pattern discussed by Nobel Laureate Krugman.[24] This pattern suggests considerable regularity about the way population is allocated across cities. In particular, the pattern suggests that the second largest city will be about half the size of the first largest and the third largest about one-third the size, and so on.

Rwanda does not follow Zipf's law. According to the Census (2012) Kigali's urban population is about six times larger than the second largest city of Rubavu (rather than two times, as it would be under Zipf's law), eight times larger than the third largest city of Musanze (rather than three times under Zip's law) and ten to fifteen times the size of the next four largest cities (rather than four to seven times under Zipf's law). Thus, an important question arises: does the fact that Rwanda does not currently follow Zipf's law have a negative impact on economic growth? We argue that the answer is no, and that Kigali's growth remains the best opportunity for both growth and poverty reduction for a number of reasons:

First, primacy of the capital city is only excessive when congestion and lack of access to basic services outweigh the benefits of the urban wage premium built by agglomeration economies, but if these challenges are well managed, growth in city size can remain the best opportunity for growth. For instance, Castells-Quintana (2017) show that increases in primacy only reduce national GDP in countries in which infrastructure is poor and under 50 percent of urban residents have access to basic services such as sanitation and electricity. Kigali has better roads and shorter commutes than most African capitals as the government has prioritized infrastructure; the Kigali

[24] Krugman noted that "the usual complaint about economic theory is that our models are oversimplified — that they offer excessively neat views of complex, messy reality. [In the case of Zipf's law] the reverse is true: we have complex, messy models, yet reality is startlingly neat and simple."

Master Plan provides for bus lanes and an eventual bus rapid transit route. Seventy-five percent of households in Kigali get their energy source for home lighting from state electricity distributers, and the same proportion get water piped into their house or yard, although as noted, significant progress is necessary on sanitation. The Government has also made significant investments in internet, making Kigali the African city with the fastest speeds in broadband downloading. Given these investments, it is not surprising that the percentage of Kigali households – and all urban households – with access to internet, almost doubled between 2011 and 2017[25].

Second, a high level of primacy is very common for African cities, but controlling for income, and country size and population, these cities are not more excessively primate than is the case in Asian or Latin America, as shown by Henderson & Kriticos (2018). Moreover, Williamson's (1965) well-known hypothesis is that primacy declines after countries move from low-income status, an empirical observation that has been repeatedly supported over time. It suggests that at this point in its development trajectory Rwanda is likely to have a highly primate city.

Third, from a global and continental perspective, Kigali, with an estimated 2018 population of around 1.5 million Bower & Murray (2019), is still not a very large city. If one adds to this the fact that Rwanda is a small country, it is clear that the ability to have multiple large metropolitan areas is limited.

To argue that Kigali's primacy is a major opportunity is not to contradict the goal of developing secondary cities to their full potential, nor to deny that secondary cities can alleviate poverty. However, to be successful, a development strategy that focuses on secondary city development strategy must be calibrated to the economic context of each location. In Rwanda, these locational conditions are quite different from each other as shown by the IGC-Laterite (2019a) study. Additional evidence and updating of on the urban wage premium of each location would be useful, but the already collected data are clear: the evidence indicates that moving to Kigali offers the greatest premium by a significant amount.[26]

The risk of a strategy that aims at macro-level, top-down population redistributions rather than evidence-based development of existing strengths and potentials is that it fails to recognize that economic incentives are important motivations for moving location and ignoring the size of these incentives can be very costly. As is discussed further in Section III, A number of examples of recent policy discussions from Rwanda seem relevant.

[25] Bower and Murray (2019

[26] A recent 20 country study by Gollin et al. (2017) provides indirect support that Kigali may be the most effective poverty alleviation channel. It finds that almost all urban amenities were greater in denser locations such as Kigali.

Rwanda's system of cities exists in a regional context, and its urban and housing policy should reflect this. Growth and productivity of some of these cities is related to their locations near large cities in near-by countries, such as Goma, in the Democratic Republic of the Congo. Indeed, a poverty study of Rwanda found that "controlling for everything else, households in districts bordering another country have higher consumption levels." (GoR-World Bank, 2015, p.15) Similarly, this pattern is almost certainly a contributing factor to the growth of Rubavu as detailed in Rajashekar et al (2019a). The recognition that the country's cities are affected by factors beyond its borders is suggestive of how to think about Kigali's role in the country's system of cities and in the broader region.

In sum, Kigali's primacy is an opportunity. The GoR has already made significant infrastructure investments in Kigali that will complement increased employment and increased productivity there. Efforts to grow secondary cities are laudable but if they are not calibrated to local economic contexts and are done **at the expense of Kigali** -- which would ultimately be at the expense of Rwanda. Instead of attempting to reduce Kigali's future size, and by implication stifle Kigali's full economic potential, as recommended by some international consultants, a growth-enhancing focus would be to maximize benefits from agglomeration economies in Kigali, and focus local economic development policy in each city according to its existing strengths and potential.

Such a focus would i) maximize housing affordability, particularly in Kigali, but in general by implementing affordable and realistic housing regulations, as argued elsewhere in this paper; ii) ensure Kigali can maximize benefits from agglomeration economies at the same time it prepares for the inevitable expansion of the city improving its connectivity of the city's periphery and providing basic services such as electricity and sanitation as indicated by Castells-Quintana (2017); and (iii) improve Rwanda's external connectivity with the secondary and regional cities, as recommended by World Bank (2017), so that greater specialization could occur and more inter-country trade would take place.

3.2 Housing conditions in cities in Rwanda are improving, but much more housing, greater urban density and greater connectivity are needed, as well as attention to sanitation

In this section we look at the extent to which Rwanda's urban housing meets conditions that can maximize the benefits of agglomeration economies *within* its cities. Housing can do this by being optimally dense according to market demand, optimally located in relation to jobs, sufficiently well served by public utilities, and laid out in ways that best facilitate transport

connectivity. Housing conditions can minimise some of the "demons of density", specifically congestion and disease, through sufficient supply, building materials that are conducive to good health outcomes, adequate sanitation and waste management, and by maximizing the size of the formal housing sector. We highlight some of the more salient characteristics of Rwanda's housing conditions, make a limited number of comparisons with those of other countries, and provide some suggestive historical evidence. We draw on analysis in Annex 1, and on trends identified by Bower et al (2019) based on Rwanda's latest household survey, EICV 5.

On density, one of the most important features of the country's urban housing is that it is without the structural density that characterizes most cities around the world: in Kigali and other cities there is a predominance of single unit, single-story housing.[27] The number of people per urban house in Rwanda is rising and overcrowding is at a concerning level[28]. The low density of housing in relation to land may be driven partly by topography, partly by planning regulations, and partly by taste-related factors in relation to building design. Greater density, if done well, can decrease the cost of construction as well as the transport costs and environmental costs of housing. Given the rapid urban expansion and rise in housing investment predicted, the need is not just for more housing; it is for more density in the urban housing supplied. That is, without changes in the density of the existing stock urban expansion could reach unsustainable levels and create pressures for large-scale, badly-targeted housing schemes, as has occurred in many other countries.

Connectivity is especially important, but Rwanda's urban areas have a fragmented transport system that is expensive in relation to incomes. Combined with low density, fragmented connectivity can make cities much less productive, particularly in low-income countries where most people commute by walking. According to the Future Drivers of Growth report, Kigali also scores low compared to other developing countries on the Puga index, which measures the connectedness of people in a city. Lack of density and connectivity cause longer commutes at higher costs, and these costs are borne largely by the poor[29].

Whilst some unplanned settlements may be dense, they are, almost by definition, poorly connected due to a lack of planning for roads. Relative to other African countries for which there

[27] The Mayor of Kigali indicated that the Master Plan revisions would address this in an April 2019 interview "if we continue to build as we are right now, Kigali will only be about to host 1 million. This shows how urgent it is to change the mindset and type of housing that we have from single housing". *New Times,* Interview, 22 April 2019. https://www.newtimes.co.rw/news/rwakazina-outlines-kigali-citys-plans-challenges-and-opportunities

[28] Bower et al, 2019 find that the percentage of households that have more than three adult equivalents per bedroom fell was 9.5% in Rwanda's urban areas in 2017; down from 12.5% in 2011; however the percentage of households with more than two adult equivalents per room (not bedroom) rose from just over 10% to almost 12% in the same period.

[29] Akinyemi and Bigirimana (2012)

is data (UN Habitat 2015), Rwanda's urban housing has a similar share of unplanned settlements, in the 56 to 59 percent range, although the figure for Kigali is 77 percent[30].[31] Quality of building materials is generally low, although in urban areas, it is steadily and visibly improving and of significantly higher quality than in rural areas. Provision of water, sanitation, and waste management services, have profound health and development consequences for urban areas, and are at respectable levels relative to its income per capita, although progress in terms of provision to households stalled between 2014 and 2017 in relation to the previous three year period[32]. In relation to building agglomeration economies, focus is thus warranted on both preventing unplanned settlements - through catalyzing the market to produce cheap formal housing far more than through regulation – as well as upgrading them. Moreover, it will be important to rebuild strong momentum in the improvement of water, sanitation and waste services.

In sum, housing in Rwanda's cities is of low density; insufficiently well connected; expensive relative to purchasing power; of low quality; overcrowded at a concerning level and insufficiently serviced with water, sanitation and waste management. In addition, and perhaps most importantly, as documented in recent analyses of housing demand, by both Bower and Murray (2019) and IFC (2019), housing – especially cheap formal housing - is severely under-supplied. We deal with the argument that housing is over-regulated (IFC, 2019; World Bank, 2019) in the next section. Unattended, these conditions will slow the city's ability to serve as an inclusive engine of economic growth.

However, the scale of housing shortage that is developing, has tended to lead to decisions to develop very ineffective public housing production programs. The international evidence indicates that governments have often engaged in very costly, and often abandoned developments. Events in South Africa and Mexico provide compelling evidence of the scale of this sort of problem. The point of highlighting the problems with large-scale housing expansion programs is not to criticize the need for planning for spatial expansion of the city itself. On this score the evidence is very clear, the expansion of the urban footprint will be even more rapid than that of the extremely high rate of population growth (Angel et al., 2007). To be effective,

[30] Bower et al., 2019

[31] On the share of buildings classed as basic or "rudimentary" in Kigali see Bachofer & Murray (2018), "Remote sensing for measuring housing supply in Kigali," International Growth Centre, London. Accessed 10th October 2018. They found that informality in Kigali fell slightly from 83 percent to 80 percent while the housing stock was increasing by more than 27 percent. On the figures for sub-Sahara Africa see UN Habitat (2015). Again, see Annex 1 and Bower et al (2019) for additional detail.

[32] Bower et al (2019) find that for 2017 three quarters of Rwanda's urban areas have access to "improved" water sources, although just two fifths of urban households have water piped into their yard or dwelling; 93 percent of urban households have access to an "improved" toilet, but less than half of urban households use a publicly managed refuse area or waste collection service.

planning must take such growth into account rather than attempt to block it through regulation. However, if smart efforts are not made to increase the density of Rwanda's cities, the rate of expansion is certain to be increased. In addition to the city-specific elements of urban policy, policy that affects rural-urban and urban-urban migration also affects the extent to which entire countries can take advantage of agglomeration economies, a topic which we now discuss.

3.3 Housing policy in relation to poverty alleviation and jobs

In light of the two effects discussed above that housing conditions and policy have on economic outcomes – in cities themselves and across cities - it is worth considering how these effects have played out in terms of poverty alleviation and job creation, two topics of prime importance to Rwandan policy-makers which were treated recently by the World Bank's *Rwanda Systemic Country Diagnostic* (2019). Three effects appear to be of importance:

- Between 2014 and 2017, Kigali was the only province in the country in which poverty decreased (World Bank, 2019, p.19). This implies that a policy of secondary city development at the expense of Kigali, or a regulatory framework that slows migration to Kigali, may have adverse effects on poverty reduction.
- Nationally, poverty alleviation has slowed: for poverty rate to continue to decline as it did between 2011 and 2017 when it declined from 59 percent to 38 percent according to the national poverty line and from 77 percent to 56 percent according to the international poverty line.
- Job growth has slowed: the strong performance on job creation over the 2001-11 period have slowed, as public investment reached one of the highest levels in the world. As noted earlier, Rwanda's age structure is such that the labour force is forecast to grow at a much higher rate than it has in recent years, implying the need for more urban employment to be able to exploit Rwanda's "demographic dividend." The share of agriculture in job creation remains large and has increased to 60 percent of new jobs between 2017 and 2019; this implies little of the sort of structural transformation needed.

To be able to absorb the coming increase in the labour force, these trends must be reversed.

Not only does housing policy have an impact on poverty and job outcomes in the wider economy, the housing sector also has huge potential to generate jobs more directly. Housing is a significant channel by which the public sector can facilitate the private sector because throughout the world, with the exception of the former Soviet Union, the private sector provides almost all

housing produced.[33] But, not only is housing, unlike education for example, produced almost solely by the private sector, it is built by the relatively low-skilled labour such characterizes much of the Rwandan labour force.[34] Thus, by encouraging housing production the government may be able to create exactly the sort of non-agricultural jobs needed as well as help satisfy an extraordinary demand for housing. The case of the SDC-funded company, Skat, is illustrative of the potential: Skat has proposed a model in Rwanda in which modern bricks can be produced by local companies and substitute expensive imported cement. The bricks require less cement than traditional bricks, and can be used to build cheap formal housing according to their Swiss Cube system. Their model implies the idea that expanding the market for cheap housing market can both reduce import spending and create jobs.[35]

3.4 Housing policy in relation to governance and fiscal policy

We believe that many of the most important policy changes in housing policy are with respect to governance and regulation. More broadly, the effectiveness of public policy depends upon the quality of governance, as well as fiscal and financial discipline. Governance includes what have been described as "the rules of the game," that govern how easily and transparently transactions can be undertaken. Are property rights clear? Is there rule of law? Is corruption extensive? And how capable is the government of implementing both rules and policies? Rwanda's performance on these measures has been strong, one of the best in sub-Sahara Africa. For example, the World Bank's (2019) *Systematic Country Diagnostic* describes the country's "governance as the foundation on which Rwanda's future prosperity will be built" (p. 63). Whilst there has been extensive administrative decentralisation in Rwanda since 2000[36], the report goes on to suggest managerial changes to decentralise the country's centralised decision-making. However, it is widely recognised that Rwanda is a leader among sub-Saharan countries in its efforts at collecting and using evidence as a basis for decision-making.

Housing policy should seek to be as evidence-driven as possible. Because policy-makers are less effective than are individuals in choosing how to exploit spatial opportunities, policy-makers must be able to understand the choices being made by individuals. For example, which cities are growing most rapidly and why? What parts of particular cities are most in demand and does public

[33] In the Russian reform program, the housing sector was identified by the Russians as the least productive sector in the economy. See the Shatalin Report (1991)
[34] The World Bank (2019) finds that 70 percent of those at the 40 percentile income level had either not completed primary education or had no schooling at all.
[35] Relevantly to housing and jobs, the construction sector grew 12.7 percent annually between 2005 and 2017, and comprised most of the 8 percent of jobs in the industry sector in 2016 (World Bank, 2019).
[36] Chemouni (2016)

infrastructure affect these trends? As we show below, it is impossible to exaggerate how important timely data and analysis are to help target resources and adjust program implementation.

Thus data is vital for decision-making. The household surveys from the National Institute of Statistics and other relevant sources that exist are of excellent quality and compare extremely well to continental peers, but other data could be systematically collected including high quality building footprint data nationwide and other highly spatially disaggregated data. On analysis, the GoR would do well to develop greater ownership and capacity for data analysis, and uptake of this analysis into policy and practice should play a leading role to help manage the complexities of the urbanisation process. Therefore the announcement of the Minister of Infrastructure at the National Urban Forum in February 2019 to launch an urban think tank, is welcome.

Finally in relation to governance, communication is vital to gather sufficient information for good policy. In constructing housing policy, mistakes will almost certainly be made. Therefore, ongoing consultation with the many actors in the sector is vital. Housing is such a long-lived and multi-sectoral good that policy with respect to it can have important second-order effects. As a result, seemingly innocuous policies on housing regulations can have profound and often unidentified effects. For example, policies in one city can have implications for outcomes in the entire economy. Further, without continual feedback on how policies are working, course corrections will be less likely. In this context, the consultations around the City of Kigali and Secondary City Master Plans, and the government's working group on housing, are clearly important steps to keep abreast of the dynamics of policy, but other higher and lower level forums could be considered and other stakeholders included. The key questions are: are all the relevant actors involved? and how is the information synthesized for decision-making?[37]

On fiscal affairs, Rwanda has increased the share of tax revenue in GDP from 6 percent in 2001 to 16.1 percent in 2017. While this is a significant improvement, the share is still lower than is the average, 18.2 percent, of the 20 sub-Saharan African countries analyzed by OECD (2019). Its primary deficit now exceeds 4 percent of GDP, but its financing is eased considerably by the development assistance it receives, which whilst it has decreased considerably, was still 13 percent

[37] A key question will be the extent to which the composition of key decision-making and discussion groups and of topics covered reflect all the effects that housing and urban policy can have on citizens. Are relevant private sector, finance sector, and informal sector stakeholders included? Should relevant enterprises be included such as construction material and construction firms, as well as a range of types of private sector actor in the housing sector? Should community groups and cooperatives be included? Is it necessary to establish subgroups which report to the Task Force so that the many indirect aspects or effects of housing policy are recognized? A final question for these forums is what kinds of data are needed to monitor government policies and to make evidence-based decisions about which policies are appropriate or need to be revised? How can such efforts be developed on an ongoing basis?

of Gross National Income in 2017[38], an amount which compares to 3% in the Sub-Saharan Africa IPA and IRBD countries. Perhaps the main contributions of housing policy to the country's fiscal probity would be to encourage and facilitate the private sector, avoid the wastefully expensive expenditure programs on high rise housing that have been characteristic in many countries, and systematically apply the principle of least cost and highest impact per household across all expenditures and subsidies, principles we apply in the next section. Without careful targeting and design of expenditures and subsidies, the scale of both housing and jobs demands could result in very costly risks being realised. Some international experiences with both well-targeted schemes and those that were costly mistakes, are included in the next section.

4. Housing policy review: how the Government of Rwanda can optimize its policies and investments to improve housing conditions.

In section 3 we outlined two broad goals for housing policy: first, the gains that could be realised by developing a housing policy that allows or encourages spatial reallocation of people across cities, and second, the agglomeration economies that can accrue from optimal housing policy within cities. We also emphasised the effects of these policies on employment growth and poverty alleviation. Finally, we also discussed the broad context of governance and fiscal policy in Rwanda.

In what follows we discuss policy initiatives relating to three policy targets: maximizing growth benefits from urbanization by increasing spatial mobility across cities through a flexible supply of low cost housing, increasing urban built density and connectivity within cities, alleviating poverty and creating jobs. For each goal we address governance, fiscal policy, and where relevant, financial policy that contributes to each goal. We add financial policy to fiscal policy as a policy instrument. We do this because given the nascent stage of Rwanda's financial system, the large public role in this important sector, and the fact that imperfections in this market have major implications for the rationale for and the effectiveness of all government policies.

4.1 The policy goal of increasing spatial mobility across cities through a flexible supply of low cost housing

4.1.1 Governance: There is a need to legitimize and encourage flexibility, self-build and incrementalism in all relevant regulations, especially the Building Code. The most direct and least costly measure that can improve the housing situation, is to reform all inflexible, costly

[38] World Bank Data

and low-density housing regulations, and to legitimize self-building in the relevant initiatives and regulations.

The Kigali Master Plan 2013 housing regulations – which have since been reviewed as described below – were widely criticised, because their regulations on minimum plot size, setbacks and floor area ratio being expensive to implement[39]. Nkubito (2016) argues that the Kigali Master Plan's regulations of 2013, along with regulations such as the Building Code, "further [undermined] traditional means of access to affordable housing". Similarly, World Bank (2012) argues that these regulations "no longer permit the use of the traditional palette of materials that many residents are used to building with and can afford. Instead, the codes encourage the use of formal, engineered materials such as brick, metal, glass and concrete." The Bank report goes on to say that, the regulations "inadvertently created disincentives for incremental additions or improvements to existing properties." Whilst it is important to ensure housing restrictions are not too expensive, an interesting empirical question is the extent to which high costs of housing in Kigali have been due to restrictive planning regulations in the city's Master Plan, or whether it is driven more by other factors such as topography, import of construction materials, design factors and others.

The need to legitimize incrementalism and self-building was raised at the Kigali Advisory Council in December 2018; indeed the National Housing Policy states that "self-construction is considered a valid and effective way of creating housing in an affordable approach," and "self-construction may be developed in an incremental approach aiming at high-density housing" if done through building permits. The National Housing Policy recommends that "the authorization process for building and real estate development" be audited to achieve these aims. The principle of incrementalism is also at the core of sites and services projects, or any projects that allow neighbourhoods to improve housing conditions as their finances allow. This is especially important given that housing finance reaches a small proportion of households, and the vast majority of households build using their own savings or revenue from sale of properties rather than formal credit (Rajashekar et al., 2019b).

Some government policies are encouraging on incrementalism, but others remain to be addressed. First, at the time of writing the Kigali Master Plan Review (2019) was about to be completed and addresses these issues by introducing more flexible zoning that is not too expensive to implement; it incorporates a zone that allows for sites and services to be implemented. Second, in 2019 the Rwanda Housing Authority has lifted a 2006 ban on mud bricks, by issuing guidelines that permit the use of "rukarakara" mud bricks. These guidelines represent a significant reduction

[39] Kanamugire, 2019; IFC, 2019 and World Bank, 2019

in the cost of the cheapest formal house. These changes should play a role in lowering housing costs. Third, the Building Code was revised in 2019 to incorporate a form of incrementalism. However, it specifies that the final building design is fully specified in advance, which is not realistic for households in most income brackets. It is also a long and complex document; for the average Rwandan household, a simple guideline legitimizing incremental self-building would be more suitable.

Moreover, incremental approaches to housing that are implied by sites and services projects, face concerns among policy-makers in Rwanda[40]. One concern is that incrementalism would allow irregular, unattractive neighbourhoods to proliferate. We argue that the opposite effect is likely: incrementalism would allow standards to have a far wider reach by making formal housing affordable to a larger proportion of households, increasing supply and reducing overcrowding in the process. If incrementalism is not allowed, the medium term result will not be neater housing, but more unplanned settlements. Moreover, a version of incrementalism is possible that specifies that aspects of the building type remain similar within a single street or neighbourhood; this approach would still have the benefits of financial flexibility.

4.1.2 Governance: National spatial plans should follow rather than attempt to dictate spatial population and resource allocation. The draft National Land Use Master Plan, being considered at the time of writing, would attempt to restrict Kigali's population to below 2.5 million by 2050 even though projections estimate a population of 4 million (Bower & Murray, 2019). It also calls for two entirely new joint second-largest population centres in Rwanda that each would have more than a million people in 2050. Neither of these planned cities are among the seven currently most populous cities. Providing the infrastructure involved for these new cities would be extremely costly with no way of ensuring that the population of the two new cities would grow as planned. The record of such essentially newly constructed cities is notoriously dire. Few of them have been successful and many extraordinarily costly (Bertaud 2019).

The GoR has begun implementing plans for ten industrial parks around the country. If these investments are carefully calibrated to the economic and business contexts in which they are located, they can succeed. However, if they are a blind attempt at equalizing spatial investment, they may be based in locations that do not have appropriately skilled workers or comparative advantage in transport costs. They also risk becoming large expenditures redirected away from more productive locations, without corresponding private sector development or tax revenue. India followed – and eventually disavowed - a failed spatial industrial investment strategy for many

[40] According to discussions attended by Jonathan Bower as Country Economist for IGC Rwanda

years in what has become known as the "license raj," a policy that directed private investments away from many of the country's most productive cities.[41] Uganda also unsuccessfully developed a similar industrial park on the outskirts of Kampala[42].

4.1.3 Fiscal policy: The allocation of government resources to the housing sector, and to urban economic development more broadly, should account for Kigali's position as the national growth engine. Public resources should be allocated after careful analysis of the potential contribution to growth of population, jobs and income in each location. We now know how much more productive and rapidly growing Kigali is than any other location in Rwanda; it comprises between 25 and 40 percent of GDP, is several times larger than the next largest city, Rubavu, and is the fastest growing location in absolute, if not relative, terms. It follows that a proportional share of donor funding now under discussion should be targeted on Kigali, and not exclusively on the secondary cities.

For example, the World Bank Rwanda Urban Development Project allocated more than 85 percent of the initial $95 million credit to secondary cities; an upcoming Enabel urban development-themed grant for €20 million also has an exclusive focus outside of Kigali, even though Enabel elected to work only in locations that in its analysis, which we find to have been in error, have high growth potential. Allocation of government and donor funds on a locational basis, should take into account both analysis of the potential impact of those funds given evidence now available on economic activity and population growth, and also coordinate with funds that have already been allocated. In addition, while the World Bank Rwanda Housing Finance Project does not appear to have an explicit locational focus. While spatial neutrality for financial lending, in general, has a great deal to recommend it, giving it a spatial focus could improve its effectiveness.

4.2 The policy goal of maximizing growth benefits from urbanisation by increasing the supply, density and connectivity of housing within cities

A key pillar of Rwanda's National Urbanisation Policy (2015) is densification; it is also encapsulated in Policy Statement #9 of the National Housing Policy (2015).[43] The policy eloquently outlines the benefits of densification and contains the many of the right ingredients to facilitate it. Rwanda's cities need 'Goldilocks' density (World Bank 2018) – high enough to bring the economic benefits of agglomeration and the environmental benefits of dense land use, but not

[41] See *The Times of India,* June 24, 2016 for a discussion of how Indian policy-makers now by consensus find the license raj that governed Indian industrial policy for many years prior to 1991 was badly mistaken.
[42] World Bank Independent Evaluation, 2004
[43] "Compact, clustered and dense layouts shall dominate all forms of housing development", p23, National Housing Policy (2015)

so too that tall buildings become too expensive for the market to afford. The land market reflects demand and thus the market price of land is the best guide to achieving the density that is conducive for economic development, implying the need for well-functioning land markets and flexible zoning regulations. However, Rwanda has a long way to go to densify, and has a predominance of single unit, single-story housing. Recommendation 3.1.1, on incrementalism and sufficiently low-cost regulation, is also crucial to this policy goal as it can work to increase supply and density of housing.

4.2.1 Fiscal policy: Subsidies or tax breaks might incentivise densification by going up a floor or building additional rooms. One potentially cost-effective way to allow the market to promote densification of these single-story buildings is by "going up in height", especially in locations more central to Rwanda's urban areas. This is one of the least expensive ways to add to the supply of housing. Importantly, this approach should be done only incrementally – that is, a limited number of floors.[44] Buckley (2014), for example, suggests encouraging and assisting the families that already own single story units to make their houses taller – ground plus two or three floors, as in Nairobi. The government might provide some small subsidies to encourage such investments to encourage use of finance to densify locations close to the central business district. Of course, this latter step would be necessary only if such encouragement is needed. A more cost-effective approach would be to rely upon access to credit to make such densification investments viable, a topic we discuss in section 4.3.2.

A simple way to densify the city is to encourage the use the existing single-story units by more households, a pattern that is already widespread. For example, according to the *Fourth Census of Housing and Population* (2012), 36 percent of urban housing units are occupied by more than one family. Families are willing to share their units, and in Kigali the average number of households per house rose from 1.0 in 2011 to 1.2 in 2017. Whilst occupancy of houses appears to be densifying in urban areas but not rural areas, overcrowding decreased in urban areas from 12.5% to 9.5% between 2011 and 2017 and was consistently 2 percentage points higher and showing the same decreasing trend in rural areas.[45]

[44] Taller apartment blocks can significantly increase the costs of construction and maintenance costs and can suffer from bad management. Moreover, traditional high-rise apartments tend to promote social isolation and do not result in the interactions so important to human welfare (Montgomery 2013).

[45] Of course, it is desirable for the increased crowding not lead to situations where the crowding causes the housing to become unhealthy and/or to reduce personal dignity, and in this respect, it is worth noting that the population density, of 0.94 adult equivalents per room, is below the level that the World Health Organization defines as sufficiently overcrowded to be a health risk (WHO online). A convincing measure of critical overcrowding is the percentage of households that have more than three adult equivalents per bedroom (Gray 2001). According to this

4.2.2 Financial policy: The World Bank $150 million housing finance credit could be used to add floors to residential buildings. Finance for housing is expensive and inaccessible to most urban households. Whilst mortgages are generally only accessed by households in the top income decile of Kigali the recently approved World Bank $150 million housing finance IDA credit directs resources at only the two highest income quintiles in the capital city. This represents progress but will not reach the bottom three fifths of urban households as we demonstrate in Annex 4. Nor will it be able to reach many first-time homebuyers as it aspires to. But, given that increasing urban density is such an important Rwandan policy goal, a productive use of the loan would be to add the additional floor or two that could substantially increase density. This would more likely add housing for lower-income migrants than would the currently planned targeting. At the same time, it would also to encourage greater density. For example, the housing finance credit could finance those homeowners who are willing and able to add an additional floor to their existing units to provide rental housing and help the City of Kigali to achieve its objective of lowering the share of single-story housing, particularly in central city locations. This effort could significantly increase density and thereby target the funds to investments which have high returns in terms of the potential agglomeration economies they would yield.

In general, the public role in using housing finance to support incremental improvements would be minor: i) it would direct that some of the credit provided by the World Bank loan on the country's broader economic growth objective of densifying Kigali; and ii) it would pursue the traditional banking supervision function that assured that the private underwriting of these loans is prudently done. Lowering the interest rate from the current rates should be sufficient to encourage the provision of more affordable housing at locations that are very valuable.

This approach proposed above follows the approach taken by a World Bank credit to Ghana that helped develop linkages of its provident fund to the mortgage market that has contributed to Ghana now having a mortgage market that is more than twice as large as the average sub-Saharan African country.[46] The use of individual loans which targeted the densification of certain neighbourhoods could also be viewed as a simplified version of an approach that is considered in the Government of Rwanda's recent draft. The approach taken in the *Guidelines* focuses on private investors and community trusts could provide support for specific locations. Under the individual

measure in EICV data, overcrowding in urban areas fell from 12.5% to 9.5% in Rwanda (Bower et al (2019). An improving trend but a still very high level.

[46] See the appraisal and evaluation of World Bank project Urban II for details on the project and *Ghana Access to Finance (2016*) for data on the scale of the country's mortgage market relative to the sub-Saharan African average. That component of the project was very favorably reviewed.

loan approach lending would support individual owners in place of communities and in place of private investors it makes use of the World Bank funding opportunity.

Of course, private investors may also be interested in such activities as may community organizations. The method proposed here is a simpler step that has been used in many cities around the world. Because of its simplicity it may be begun more rapidly. One other simple version of it, that has been used in many countries, would be for a private investor – a developer – to trade the construction of an additional unit in return for enhancing the owner's existing property or in some partnership with the owner as to sharing the rental income. This approach is also simpler than engaging multiple owners – as in community-based development – and would also have minimal public involvement, other than oversight to assure fairness.

4.2.3 Financial policy: Rwanda Social Security Board should consider mortgage financing. A related issue on the provision of housing finance, is the role of Rwanda Social Security Board. To this point, the RSSB has served as an investor in real estate development rather than a lender of funds. Real estate development is a much riskier proposition than is mortgage lending. The RSSB could reduce its risk exposure while simultaneously become a provider of the long-term credit that is so lacking in the economy. The fact that it holds long-term assets also nicely balances its interest rate risk exposure. Such lending could undoubtedly be done at considerably lower risk to the economy than direct investments now made in new, expensive housing.

Such a recommendation was followed in Ghana through a World Bank credit, Urban II, that helped develop what has subsequently become one of the largest commercial banks in the country. The World Bank Internal Review of the Bank's support (2000) found that the support helped establish the Ghanian housing finance system that was effectively functioning a decade after the credit had been made. It is, of course, a recommendation that goes well beyond urban policy, but given the apparent risks involved with the current RSSB investments and the experience with similar approaches in other places, it is a topic worthy of further analysis.

4.2.4 Fiscal policy: Investing in transport connectivity could be as effective as investing in housing to reduce living costs. Transport costs are a high proportion of earnings for most households. Particularly in Kigali, policies and investments in roads and public transport that improve the connectivity of locations beyond the core of the city, even as far as the secondary cities, can be expected to make more people able to commute to work in ways that make their all-in housing plus commuting costs more manageable. That is, there may be circumstances in which investments in greater mobility may be a more effective way to lower living costs than is making the same expenditures on housing; this question should be further investigated.

4.2.5 Governance and fiscal policy: To ensure connectivity and cost-effectiveness, neighbourhood roads should be planned and built before housing. Road infrastructure constitutes a substantial share of the total cost of new housing developments. Paul Collier has said that it is far more expensive to retrofit infrastructure after households have already invested in housing in an area. In Bogotá, the costs of regularizing informal settlements have been calculated as 2.8 times higher than the costs of developing serviced urban land for the poor (Abiko et al., 2007). Changing the order by building infrastructure first, could reap potentially enormous gains. Provision of road grids, infrastructure and transport links planned in advance of rapid peripheral expansion, are important, and should involve land pooling, as recommended in *Future Drivers of Economic Growth* (2019). Cost effectiveness and efficiency should be primary concerns when building road grids. Sites and services is a way to deliver connectivity to low income households that may otherwise live in disconnected unplanned settlements. Owens et al (2018) found that "sites and services" investments made in in Chennai and Mumbai thirty years ago, containing varied plot sizes, densification, mixed-use layouts and strategically-selected locations for connectivity to economic activity, are now thriving communities that are inclusive, liveable and have benefited from decades of incremental household investment in improved housing.

4.2.6 Governance and fiscal policy: The provision of government land for affordable housing needs to recognize how current commercial circumstances affect its decisions; any land subsidies provided should be transparently accounted for. One constraint on the provision of public land for housing development in Kigali is the state of the commercial building stock**.** According to Malunda et al (2019) at Rwanda's Institute of Policy Analysis and Research (IPAR), the vacancy rate for the 468 commercial buildings in their sample is 15 percent; this is a high rate that depresses the land market. But, more important than the effect that the implied over-building has on land market development is the lack of an explanation for how this over-building occurred. Was it the result of weak underwriting by the banking sector or was it part of an overly-ambitious master plan? Who will bear the cost of the losses involved? How long will it take for this excessive stock to be brought onto market? Indeed, the IPAR study raises some questions as to whether some of the vacant buildings are likely to be occupied at all in the near future. Were they over-designed for the types of investors and businesses likely to locate in the city?

There are many questions regarding the city's land market, including the location and amount of public land holdings. The IFC (2019), for example, says that there is not a great deal of public land available. Certainly, continued urbanisation will place a high priority on land development at the periphery, as is discussed below, but the details of other public land development – particularly the ability to develop it at no cost in return for the development of

some portion of affordable housing – needs to be developed in a broader context that takes the city's current situation into account.

In coming years, a great deal of housing construction will certainly take place. But not only will it occur on vacant land, as suggested by a focus on developers, much, if not most of it, will involve a restructuring of the existing housing stock. In terms of policy priorities, these investments in the existing housing stock are not only likely to be profitable, they will also play a significant role in slowing down the need for the rapid expansion of the urban peripheries. To emphasize once more, the recent study on *Future Drivers of Economic Growth* (2019) provides strong empirical evidence of the need to densify the central city of Kigali if the agglomeration economies so important to the country's growth are to be exploited. Hence, the engagement of these land owners with both banks and possibly private sector investors can be expected to have broader positive economic benefits.

4.3: The policy goal of poverty alleviation, job creation and improved housing conditions for all

4.3.1 Governance: Relaxing housing regulations would be good for poverty alleviation. We discussed housing regulations in more depth in preceding sections, but note the following here in relation to the policy goal of poverty alleviation. For households, poverty in Kigali was on average 22 percentage points lower than that in the country as a whole[47], and World Bank's (2019) *Rwanda Systemic Country Diagnostic* indicates that Kigali is the only location in the country where poverty reduced significantly between 2014 and 2017. This indicates that any regulations that increase the cost or obstruct migration to this location reduce the potential for poverty alleviation. Many of the other regulations discussed in the preceding sections have similar effects on productivity and hence jobs so it is clear that changes in governance of this sort could have powerful effects on national development aspirations.

4.3.2 Governance: There is a need for interaction with the private sector that focuses energy on generating and financing innovative designs, materials and business models that reduce construction costs. An important part of facilitating the private sector to deliver formal housing to households in the lowest possible income quintile is the reduction of the total cost of building a house, a cost that the African Centre for Affordable Housing Finance (2019) claims is much higher than those in near-by countries. Some private sector developers perceive that costs

[47] As of December 2019 IGC is beginning a study of the urban wage premium in Rwanda in partnership with Laterite, forthcoming

cannot be cut much further,[48] and perceive a key bottleneck to be the availability of affordable land that is not too peripheral to Rwanda's urban centres especially Kigali. Whilst cost reduction has its limit, more can be done: we support the suggestion of Harmony Kunu, CEO of Workers Affordable Properties, at the MININFRA-IGC Housing Day workshop when he stated that innovative uses of construction materials or designs to reduce cost, could be discussed at a value engineering workshop. But in addition this idea should be combined with a recommendation made at the Kigali Advisory Council in December 2018 that a suitable convening party assembles developers and facilitate discussions about low cost housing models including row or terraced housing, and sets them a challenge, potentially a competition, to design housing that may work on the market and be affordable to households below the top quintile.

At the same meeting the Chair, IGC Director Collier, recommended that the City of Kigali and the Government more generally, discuss with international development finance institutions to provide financing to scale up the construction materials sector to address high costs of construction materials driven by low economies of scale. A final useful recommendation of the Council was to research ways in which traditional local construction materials can be used in modern form; the work of Rwanda Housing Authority on this, especially on *rukarakara* (adobe bricks), which led to its being allowed in the revised 2019 Building Code, is to be applauded.

The construction materials and design developed by the Swiss-sponsored construction material company, Skat, and used to develop eight houses in an area subject to flooding in Nyakabingo Village in Kimisagara Sector, appear to offer opportunities to lower material costs, allow for construction material to be used to increase the height of buildings, and build in areas that were previously considered too dangerous. If its scale-up is successful, this production could also have significant employment effects. It would permit the development of a relatively low-skilled manufacturing industry that could not only produce material for lower cost housing, it could also produce manufacturing jobs to produce the inputs for construction for the fixed capital stock. The high level of government interest in this model, including by allowing compatible zoning regulations in the Kigali Master Plan, is wise, although a cost-benefit analysis of this program is warranted as its initial efforts look to be very interesting. However, the SKAT model would ideally have competition from other equally innovative companies to maximize the implementation of low cost housing models.

[48] Discussions at the MININFRA-IGC Housing Day in June 2019 and a conversation between Jonathan Bower and senior managers at Mass Design,

4.3.3 Fiscal policy: Public investment in social housing is laudable but has often been extremely expensive at sufficient scale. Government policy documents discuss the development of social housing. For example, Rwanda's National Housing Policy refers to the development of social housing which it claims serve as "an important contribution to serve the right to shelter and to poverty alleviation". The Government has built a small number of IDP (Integrated Development Project) Model Villages as part of an "approach as a comprehensive strategy to fast track rural grouped settlements development aligned to broad based income generation and economic expansion towards achieving the EDPRS (and now NST) targets on economic growth and poverty reduction."[49] These are rurally focused as mentioned, but have been built in limited numbers. Admirably, since 1998, 28,174 houses have been provided by Fund for the support of Genocide Survivors (FARG), with significant government support, to the special case of survivors of the Genocide Against the Tutsi.[50] FARG has managed to keep the cost per house low at Rwf12 million.[51]

Thus, while well-designed social housing provision targeted at smaller groups is laudable, especially if it is well located, if it was scaled up significantly, social housing would constitute an ambitious and prohibitively expensive approach. For example, if such housing was provided to the poorest 10 percent of households (roughly 240,000 households), and the cost for each household could be driven down to just 9 million RWF[52], it would cost roughly a quarter of Rwanda's 2018 GDP. [53]

Cities with low-density and high population growth, like Kigali, must, by definition, produce more housing at the city's outskirts. The international evidence indicates that governments are not well-placed to do this and have often engaged in very costly abandoned developments. Events in South Africa and Mexico provide compelling evidence of the scale of this sort of problem. In Mexico, the government production of housing through its main subsidy program, INFONAVIT, has resulted in hundreds of thousands of vacant and abandoned units as the government produced the housing at locations where the land was inexpensive.[54] But, the low cost of the land was the

[49] Rwanda Housing Authority web site, accessed 17 October 2019 http://www.rha.gov.rw/index.php?id=177&tx_ttnews%5Btt_news%5D=212&cHash=f9aeaa343c312687d297b6b84c91ce3a

[50] https://www.newtimes.co.rw/news/farg-needs-rwf18b-vulnerable-survivors-housing accessed 17 October 2019

[51] https://www.theeastafrican.co.ke/rwanda/News/Rwandan-genocide-survivors-to-get-new-homes/1433218-4491530-ppbi63z/index.html accessed 17 October 2019

[52] This KT Press story https://ktpress.rw/2016/12/inside-rwandas-affordable-housing-explosion/ (accessed 17 10 2019) suggests that the cost per block, for 4 families, in the IDP Model Village is 36 million, implying a cost of 9 million per household

[53] Authors' calculations: 9 million RWF*240,000 households/8,189 billion RWF (GDP in 2018) = 26%

[54]https://www.google.com/search?q=maxico+infonavit+deserted+housing&rlz=1C1CHBF_enUS814US815&oq=maxico+infonavit+deserted+housing&aqs=chrome..69i57.21543j0j4&sourceid=chrome&ie=UTF-8

case because the locations were inaccessible to employment opportunities. The result was millions of dollars of wasted public expenditures, as well as lasting "white elephants" of deserted building covering the landscape, see Monkkonnen's careful empirical analysis (2019).

In South Africa, a similar picture emerges. Since the end of Apartheid the country has pursued one of the most ambitious housing programs in the world, producing more than 3 million units that were supplied at zero cost to the beneficiaries. Not only were did these units follow the same location pattern as occurred in Mexico so that here too there were many abandoned and vacant units, as well as incredibly long commutes for the beneficiaries who occupied the units. But, in South Africa another series problem arose out of a condition faced in Rwanda: that there is an extraordinary demand for housing. This high demand and eligibility for the subsidy along with the high per unit cost, resulted in the production of fewer units every year – even though hundreds of thousands were produced annually – than the increase in the number of eligible households. The result is that after 25 years of providing one of the most ambitious housing subsidy program ever implemented that South Africa now has more people eligible for assistance than it did when the program began (Tissington 2011). Billions of dollars of housing subsidies resulted in more excess demand for housing.

The point of highlighting the problems with urban expansion programs such as those described above, is not to criticize the need for planning for expansion. On this score the evidence is very clear, the expansion of the urban footprint will be even more rapid than that of the extremely high rate of population growth (Angel et al. 2007). To be effective planning must take such growth into account. However, if it doesn't also take into account the very low density of Kigali, the rate of expansion is certain to be compounded. In addition, the IFC (2019) reports that in 2019 the GOR agreed with a private firm to develop and provide 10,000 housing units. Once again, more housing is certainly needed, but so too is the need for careful development of such large amounts of housing.

4.3.4 Governance and fiscal policy: The policy of provision of government land for affordable housing requires careful monitoring of the final housing beneficiaries. The National Housing Policy of 2015 calls for increased efforts to join together the interests of public, private, and banking interests to establish financing schemes for affordable housing. Policy Statement 13 requires the development of a supportive legal framework. A Rental Housing Strategy and PPP Guidelines for Affordable Housing Development (henceforth, the *Guidelines*) were drafted by the Ministry of Infrastructure in December 2018 and amended in the first half of

2019 to provide a number of different approaches including those that apply to the development of public and private land; and those that link private investors with community land owners.

The December 2018 version of the *Guidelines* recommended the sale of public land to private developers at "low or free cost" to developers who would build an earmarked amount of affordable housing. The *Guidelines* call for 70 percent of the housing developed to be affordable housing. The Government contribution to affordable housing is part of the value of the asset it owns – the public land. This approach to land development is one that is used in many places around the world, from the U.S. to India, and almost everywhere difficulties arise in defining and allocating the affordable units. Are they young, upwardly mobile families whose income is temporarily qualifying? Or are the families persistently struggling to get by? Moreover, in many cases the lower-income beneficiaries sell their units to higher income families and then return to live in informal housing. In such cases, the subsidy is really just an inefficiently provided cash grant to the low-income family rather than a housing subsidy.

The policy of provision of cheap or free government land lowers the return to government relative to the value of public land. Moreover, to finance a meaningful quantity of housing, under this arrangement the size of the tax must be either relatively large, resulting in a potentially significant distortion in the price of urban land if the land is well-located, or on properties that are badly-located. In the latter case, the value of the housing provided is often considerably less than the cost of constructing the units because no one wants to live in the location, as discussed below, occurred in similar projects in Mexico and South Africa. That is, the tax is either: a large tax on a small number of properties rather than a small tax spread around the tax base; or it results in highly inefficient government expenditures that have a lasting adverse effect on the urban fabric.

4.3.5 Fiscal Policy: Housing subsidies should be targeted at housing-related causes of poverty. Lack of water and sanitation and substandard shelter conditions – such as dirt floors – are aspects of the housing stock that intensify poverty and there are strong rationales for directing resources towards mitigating these negative externalities. Such a policy would be in contrast to the current policy of directing resources to building complete dwelling units in low quantity at high cost. [55] [56]

[55]The following references were accessed on 10th October 2019:
http://www.mininfra.gov.rw/index.php?id=19&tx_ttnews%5Btt_news%5D=174&cHash=cbeed2c6215f175524f6bc8e62fcef08 https://www.newtimes.co.rw/section/read/215787
http://www.theeastafrican.co.ke/rwanda/Business/RSSB-moves-to-recover-funds-stuck-in-Vision-City-project-/1433224-4392404-9pyy4vz/index.html

[56] Bower & Murray (2019) give more detail on public investment in housing so far

Fortunately, there are a number of successful international examples of such programs which may be adaptable to Rwandan circumstances. Two successful World Bank-supported housing subsidy schemes seem relevant for the Rwanda context. The first is a slum sanitation program in Mumbai[57], and the second, a project to replace dirt floors in Mexico. Because of their health effects, particularly for children, effective sanitation services are one of the most important reasons for government support to the housing provided to the poor arable. If such services were to be provided in the densely populated neighborhoods, the GoR-World Bank Poverty Study 2015 suggests they would not only directly improve health conditions, they would also have such a strong link with poverty reduction. Moreover, the evidence is compelling that when such services are provided by a community organization the cost of such assistance is greatly reduced. A World Bank-supported project in Mumbai, for example, showed that by relying on community organizations to be the service provider on shared sanitation services that subsidies were reduced by 90 percent. According to the official report, the project "provides a good example about how sustainable urban community sanitation programs can be implemented effectively. The experience is instructive since this impacts communities' lives not only in Mumbai but also provides lessons for other Indian cities as well as other large metropolitan areas in the developing world" (Sarkar et al 2006).

As noted, 68 percent of the country's households rely upon earth or sand for flooring. In light of this, a World Bank supported project in Mexico, *Piso Firme,* is worth exploring and potentially replicating. This project financed the provision of the cement needed to improve the flooring. The materials were provided to households who were willing to provide the labor inputs to install the new flooring. The costs per unit were approximately $400 and a number of studies have shown that the expenditures had significantly positive effects on the health and well-being of the occupants; Cattaneo et al. (2008) found that replacing dirt floors with concrete "significantly improves the health of young children", "leads to a 78 percent reduction in parasitic infestations, a 49 percent reduction in diarrhea, an 81 percent reduction in anemia and a 36 to 96 percent improvement in cognitive development".[58]

In general, the international experience suggests that at scale, social housing is expensive and can be a highly inefficient sector. European countries used social housing as a way to address the severe housing shortages following the destruction of World War II. In their bombed-out cities

[57] http://documents.worldbank.org/curated/en/620841468041130033/The-Mumbai-Slum-Sanitation-Program-partnering-with-slum-communities-for-sustainable-sanitation-in-a-megalopolis accessed 17 October 2019
[58] Accessed on 16 October 2018: http://documents.worldbank.org/curated/en/857881468288000006/Housing-health-and-happiness

there was an extreme shortage of basic housing and the government had to respond. However, over time as the shortage was eliminated, in virtually all European, as well as North American countries, housing assistance programs, have moved away from the public sector supplying housing assistance through social housing. Furthermore, in its reform program after the fall of the Former Soviet Union, Russia's production and ownership of public housing was identified as the most inefficient sector of the economy.

Other methods of providing housing subsidies, such as the two approaches discussed above, or other are certainly examples of exemplary social housing schemes. There are many other ways to assist the housing needs of the vulnerable than social housing, and, as such, it is not clear that identifying that social housing as the way to address the most pressing social needs is the most effective strategy.

4.3.6 Fiscal policy: Public expenditures to encourage the supply of affordable housing should focus on infrastructure and simple land development definitions rather than housing production. Kigali will undoubtedly expand under the demographic pressure extant in the country. Public expenditures to alleviate this concern can best be allocated to plot identification where development will take place and to developing the basic infrastructure. As noted earlier, large-scale public housing production at the periphery of the city may offer some gains on the rationale that industrial production of housing can lower costs, but these gains must be weighed against the frequent failure of these efforts as detailed above. Angel and his colleagues at New York University have developed a low cost way of implementing planning and minimal infrastructure investment programs that reduce risk and increase the return on government expenditure. The infrastructure investments are also labour intensive which addresses the concerns with employment growth.

4.3.7 Fiscal policy: The new property tax is a very important pillar underpinning efficient urban growth, and should be implemented carefully; other means of infrastructure financing for neighbourhoods should also be explored. Property tax is important for housing because it is the most important means by which infrastructure underpinning residential neighbourhoods is financed, and adequate infrastructure finance helps avoid unplanned settlements. However, property taxes tend to be under-utilised in developing countries; accounting for only 0.6 percent of GDP, compared to 2.1 percent of GDP in member countries of the Organisation for Economic Cooperation and Development (Connolly and Bell, 2010). Moreover, Kopanyi (2019) calculated that before 2019 Rwanda's property tax burden was among the lowest in Africa, at less than a dollar per capita per year for Kigali and less for secondary cities. A new

property tax law became effective in January 1st, 2019.[59] According to Kopanyi (2019), whilst the law is imperfect it represents a "quantum leap of progress" with respect to developing the tax base – it extends property tax from freehold to include holders of long term emphyteutic leases and it increases rates, with the result that tax revenue could be increased substantially. This law is crucial for decentralised entities as it will allow them to mobilize some of the resources needed to provide the basic infrastructure for economic growth and efficient service delivery; currently, districts rely heavily on central government funding.

The law includes a land tax per square metre, set by a Ministerial Order according to land type, and a tax on commercial and residential buildings with an exemption for residential buildings occupied by the owner. The residential building tax will be applied on an incremental basis over a period of four years with owners paying 0.25 per cent in the first year, 0.5 per cent in the second, 0.75 per cent in third year and ultimately one per cent in the fourth year and onwards. The rates are halved for commercial buildings but unlike residential buildings, there are no exemptions for commercial buildings. In addition to a tax on land and buildings, the law also governs rental income tax and trading license tax. The Rwanda Revenue Authority is responsible for collecting the tax, but Districts have some powers to set rates.

This tax could also strengthen incentives that exist to make productive use of valuable land, because owners of land, especially large quantities of unproductive land, have less incentive to allow the land to remain idle and speculate on the increases in future values. The tax would obligate them to pay a carrying cost on the value of the land so that they would not be able to hold land off the market without cost. This might also lead to a decrease or a slowdown in the increase in the price of land and a decrease in speculation.

As the law is written, some improvements in the value of the land would be captured, although imperfectly – for instance public investments in infrastructure would lead both to a change in land classification leading to a higher land tax rate per square metre, and to an increase in building value which would increase the building tax which is levied as a percentage of value. The extent of value capture depends on the extent to which the rates per square metre reflect actual valuation changes.

While the property tax offers many benefits, a number of issues in its implementation should be carefully considered; three examples are as follows but the rest were captured in a policy note

[59] Law No. 75/2018 (07/09/2018) Determining the source of revenues and property of decentralized entities

by Kopanyi (2019). First, it is necessary to consider the basis on which land rates per square metre in the Ministerial order are set, which could be informed by property valuation models developed in 2019 by MINECOFIN, IGC and the World Bank; at the time of writing, the Government has yet to decide whether to follow through the mandate the law gives to use these property valuation models or similar models to calculate building value. Second, the definition of residential land should be clear to avoid misclassification for the purpose of tax avoidance. Third, other means of gaming the system by exploiting exemptions should be eliminated. The overall aim should be to position the tax as a fair price associated with the value of the public goods associated with each fixed asset.

Other strategies for financing neighbourhood infrastructure should be carefully considered as part of the overall urban infrastructure financing strategy, including betterment levies and developer charges. Betterment levies are charged to property owners who directly benefit from a new road close to their property; this approach may have been applied in certain ad hoc cases in Rwanda but is not widespread. Currently, for large housing and commercial developments, the Government pays for all infrastructure costs, but in many countries the developer also has to contribute infrastructure costs. These two options may or may not be appropriate for Rwanda but should be evaluated.

5. Conclusion

During the past two and a half decades, Rwanda has urbanised at a rapid rate and continues to do so. The government is forward-thinking and recognises the importance of this process to a continuation of the country's inclusive growth trajectory. The evidence strongly supports this perspective, but it also indicates that mistakes can and often are made, and the governance process needs to recognise how difficult the implementation process is. Rwanda has also made great strides in improving public governance throughout the economy, and is one of the most rapidly improving sub-Saharan countries on that score.

The urban governance issues discussed here are in a sense, second generation governance concerns. That is, they are not the traditional concerns with reducing corruption, or increasing transparency and accountability. Instead they build upon the sharp improvements that have already been made on these policies and seek to focus governance on the subtle issues of accumulating the sorts of evidence and perspective needed to ride the urban whirlwind. The importance of gathering evidence and views on trends and conditions about how events are evolving are impossible to exaggerate. Informed consultation is essential if seemingly simple choices – such as

regulations which make housing more expensive than need be, or targeting resources on secondary cities rather than the growth engine of Kigali – can severely reduce growth and slow poverty reduction.

It is equally important to understand the full implications of the fiscal policy steps taken to support housing affordability and density. Public assistance will certainly be needed to support the continuation of the country's rapid urbanisation, but the international evidence indicates that when such a large share of the population is affected by the process careful subsidy targeting is essential. There are many ways to undertake such targeting. However, the experiences indicate that public provision of lower-income housing on urban peripheries can be extraordinarily costly.

Annex 1. Housing conditions in Rwanda.

Housing is expensive for Rwandan households because of structural economic and geographical factors, private sector and taste-related factors, planning and regulatory factors and of course purchasing power of households (documented and projected for Kigali from EICV data in Bower & Murray (2019). According to Centre for Affordable Housing Finance in Africa, in 2015, Rwanda had the worst housing affordability in Africa, with less than 10 percent of households able to afford the cheapest newly constructed formal housing unit. IGC-Laterite (2019b) find that the median household in Kigali's unplanned settlements pays more than 30 percent of their income for housing. This figure is higher than the shares expended in four other African cities, according to Buckley and Mathema (2007), although the Rwanda urban figure and the Kigali figure was closer to 14 percent in 2017 using EICV 5 data, and using consumption as a proxy for income.

The cost of construction is high – and this is partly due to the cost of imported construction materials from larger neighbouring economies, which is intensified by Rwanda's lack of access to a sea port. The smaller size of Rwanda's economy compared to the region, along with Rwanda's quite recent urbanisation process which means that urban populations are largely new, has led to a lack of development of scope and scale in the local construction materials industry so far (Kigali Advisory Council meeting minutes, 2018). Cement costs are almost double the amount paid in Uganda, Tanzania and Kenya, and are about 40 percent more than the median cost in East African Countries.[60] Moreover, Rwanda's steep topology drives up landscaping costs and demand

[60] *Housing Finance in Africa, 2018*. Centre for Affordable Housing Finance in Africa, 2018.

for cement for large retaining walls; the significant share of undevelopable land on steep slopes and in wetlands that cannot be developed, complicate the provision of mass housing.

On private sector and taste-related factors, both households and developers tend to prefer to build single family houses built in large compounds, rather than imaginatively densified housing such as row housing, apartments and other arrangements. As attendees of the Kigali Advisory Council in 2018 and the MININFRA-IGC Housing Day in 2019 noted, there is a lack of imagination in terms of both housing design and the use of innovative material, and apartments tend to be unfamiliar and unpopular. For Kigali, especially before the 2019 Master Plan update, some high housing costs could be attributed to the role that planning and building regulations can play in affecting housing costs – for example, the effects of building set-backs, lot size restrictions, building height restrictions, road widths and availability, and the provision and regulation of a variety of housing-related services - account for higher costs in some locations. Rwanda's building code was reformed in 2019 to allow adobe or "Rukarakara" bricks, and to allow a less restrictive form of incrementalism for commercial development of residential property; this incrementalism nonetheless requires that complete building plans have been drawn up for the finished product.

Housing finance is also expensive and the market for it is in an early stage**.** Mortgage interest rates in Rwanda are about 17 percent, one of the highest levels in the 10 East African countries analyzed in *Housing Finance in Africa,* while the inflation rate is around 2 percent. This implies that the inflation-adjusted cost of borrowing to buy a home is on the order of 15 percent (17 minus 2). That is an extraordinarily high borrowing rate, particularly for long-term debt. Not only does borrowing at such high real rates mean that many other consumption choices must be sacrificed, it also means that only a small portion of households can afford to borrow. For the overwhelming portion of the population borrowing is effectively out of the question with the result that buying a home is similarly out of the question. In short, such high rates severely limit the scope of housing demand.

On the one hand, expanding the supply of mortgage credit at much lower real interest rates would expand the demand and affordability of housing. However, a major concern is who is able to access such credit. *Housing Finance in Africa* suggests that at present less than 5 percent of Rwandan households are able to do so. Consequently, just increasing the supply of credit without consideration of limits on the amounts borrowed will simply increase the demand for the highest priced housing, with little effect on affordability for most families. Accordingly, such a policy will usually result in simply higher house prices at the top of the market. On the other hand, if mortgage credit is supplied to more moderate-income families demand can be expected to increase

significantly, leading to private suppliers able to supply housing to meet this demand. Moreover, as discussed further below, if this credit were directed towards those units that add to agglomeration benefits, the credit could greatly facilitate the realization of those broader economic gains.

Quality of housing conditions is low but improving: Comparison of EICV data for 2011 and 2017 show that houses having walls built from higher quality materials such as oven-fired bricks, stones or bricks containing cement, increased from 27 percent to 41 percent of households nationally. The figure for urban areas increased from 63 percent to 78 percent of urban houses. In 2017 26 percent of the housing in Kigali and 68 percent of the country's housing rely upon earth or sand for flooring (Bower et al, 2019). One-third of the urban households rely upon shared toilet facilities, as do more than 60 percent in Kigali's informal settlements, according to IGC-Laterite (2019b) – which is effectively a way to rent sanitation services rather than own them – it is clear that devising clever ways to share housing costs is extremely important. Renting either the housing unit itself, or an important feature of it, such as the provision of improved sanitation services, is an important way to address this cost and people are endlessly innovative in how they do it. The water in a quarter of housing in Kigali comes from sources other than water piped into the dwelling, yard or a public standpipe. For the entire country, one third of households have similar limited access. Three quarters of Kigali's families have electricity while the figure is 27 per cent of the entire country. Firewood is used for cooking in 80 percent of the country's households and 22 per cent of the residents of Kigali. Just over half of households in Kigali province are served with waste disposal services, and the figure is ten percent nationally although most rural households' waste is organic (Bower et al, 2019). According to the Census (2012), 10 percent of the capital city residents have refrigeration in their homes as opposed to less than 2 percent for Rwanda.

Housing in Kigali is not densely structured: At only 4 kilometers from the city center, connectivity declines sharply World Bank (2017). Density falls from 100 in the central business district to half that level at 4 kilometers. In contrast, in five other African cities, an average density as low as 50 is not achieved until more than 7 kilometers from the city center. This density may be driven partly by topography, partly by planning regulations, and partly by taste-related factors in relation to building design. At the same time, IGC-Laterite (2019b) indicate that the cost of bus transportation also takes up a high proportion of income. Hence, the lack of density causes longer commutes at higher costs, and because Akinyemi and Bigirimana (2012) found that Kigali's poor tend to live on the outskirts of the city, these costs are borne largely by the poor.

Housing in Rwanda's urban centres is not densely structured and its connectivity is fragmented: At only 4 kilometers from the city center, connectivity declines sharply World Bank (2017). Density falls from 100 in the central business district to half that level at 4 kilometers. In contrast, in five other African cities, an average density as low as 50 is not achieved until more than 7 kilometers from the city center. This density may be driven partly by topography, partly by planning regulations, and partly by taste-related factors in relation to building design.

Henderson et al (2017) find that paved roads in Kigali occupy a small share of urban land, which is high for the city centre but drops off abruptly beyond it. According to the Future Drivers of Growth report, Kigali also scores low compared to other developing countries on the Puga index, which measures the connectedness of people in a city. Lack of density and connectivity cause longer commutes at higher costs, and these costs are borne largely by the poor: Akinyemi and Bigirimana (2012) found that Kigali's poor tend to live on the outskirts of the city. At the same time, Rajashekar et al. (2019b) indicate that the cost of bus transportation also takes up a high proportion of income for households that live in unplanned settlements – the median earnings for the head of household is 50,000 RWF and 22 percent of this is spent on an average commute for a five-day work week. These patterns suggest that for many of those who would come to the city to pursue the opportunities offered there, the costs of commuting may be high enough that fewer people can exploit the job opportunities offered by the city.

Certainly, Kigali should plan for urban expansion. But it should also consider how the transport system, from the provision and layout of roads to the means of commuting, supports connectivity. In lower-income countries walking to work is a very common practice, and the Kigali figures suggest that it is an important dimension of commuting. Changes in these patterns will be essential as the city's population increases and the provision of better methods of mobility will play an important role in both housing demand and the ways that demand can be accommodated.

Annex 2: Land market regulations

Linking land market policy to urban density. The approaches posed by the recent draft Guidelines prepared by the Ministry of Infrastructure carry different kinds of managerial and/or policy challenges. In general, these proposals make use of the existing asset value – land that is either publically-owned or regulated -- to provide more affordable housing either by selling public land at a discount to private developers or by requiring that private developers provide a certain amount of affordable housing in order to receive for approval for development. More importantly, all of the approaches would also fundamentally be affected by the revisions in Urban Master Plans

which are now underway. In fact, the effects of those revisions, particularly for Kigali, are so strong that it would be desirable to forestall the specifics of these models until after the revisions are finalized in late 2019. As a result, instead of commenting of the specific plans, as a general perspective, we suggest selling land at market values so that the urban land market is not distorted, and the earnings could be used to develop a subsidy scheme that could be targeted on lower - income households.

The Guidelines emphasize the role of private developers in supplying affordable housing. This focus is of course important. However, it is also important that the vision of the private sector be broadened to include the individual owners of the existing housing stock. Existing homeowners will have an essential role to play because they own most of the housing stock, and correspondingly, the underlying land. Consequently, because the demands for housing associated with the country's rapid urbanisation will lead to a restructuring of much of the stock, there will be strong incentives to invest in these properties. As Paul Collier has noted (2018), despite Kigali's rapid growth only about one-third of the city that will exist in 20 years is now built.

A great deal of building will certainly take place. But not only will it occur on vacant land, as suggested by a focus on developers, much, if not most of it, will involve a restructuring of the existing housing stock. In terms of policy priorities, these investments in the existing housing stock are not only likely to be profitable, they will also play a significant role in the country's economic growth. To emphasize once more, the recent Government of Rwanda and World Bank study of Rwanda's spatial development, Future Drivers of Economic Growth (2019) provides strong empirical evidence of the need to densify the central city of Kigali if the agglomeration economies so important to the country's growth are to be exploited. Hence, the engagement of these land owners with both banks and possibly private sector investors can be expected to have broader positive economic benefits.

Annex 3: A selection of recent GoR policy initiatives.

Recent GoR housing policy initiatives include but are not limited to the following:

- First, national urban plans are being reformed. For example, a 2019 update to the Kigali Master Plan reforms the earlier Kigali Conceptual Master Plan (KCMP) of 2007 and the Kigali Master Plan of 2013, to calibrate them to the purchasing power of households, and to be more accommodating of lower income housing; the same approach is planned for the secondary cities.

- Second, there are three World Bank grants – one $95 million for urban upgrading and infrastructure which has been implemented; another for housing finance for $150 million, has recently been approved, and another for low-income housing which is in development. Cumulatively, these efforts account for a significant amount of funding.
- Third, government is also undertaking a variety of infrastructure investments and has introduced a property tax to help finance these local expenditures. If implemented correctly this tax mechanism could encourage the development of idle urban land as well as contribute to fiscally healthier cities.
- Fourth, the GoR is revising its land policies so that they become more transparent and facilitate more rapid development, in keeping with the improvements made under its improvement in its *Doing Business* rankings.
- Fifth, through the Rwanda Social Security Board, the GoR has also produced a large number of new housing units, documented in Bower and Murray (2019).
- And finally, along with the World Bank and IGC the GoR has undertaken a number of studies of the spatial and financial situation of the country's cities which greatly improve the understanding of this complex process and can provide invaluable information about how to better target resources.

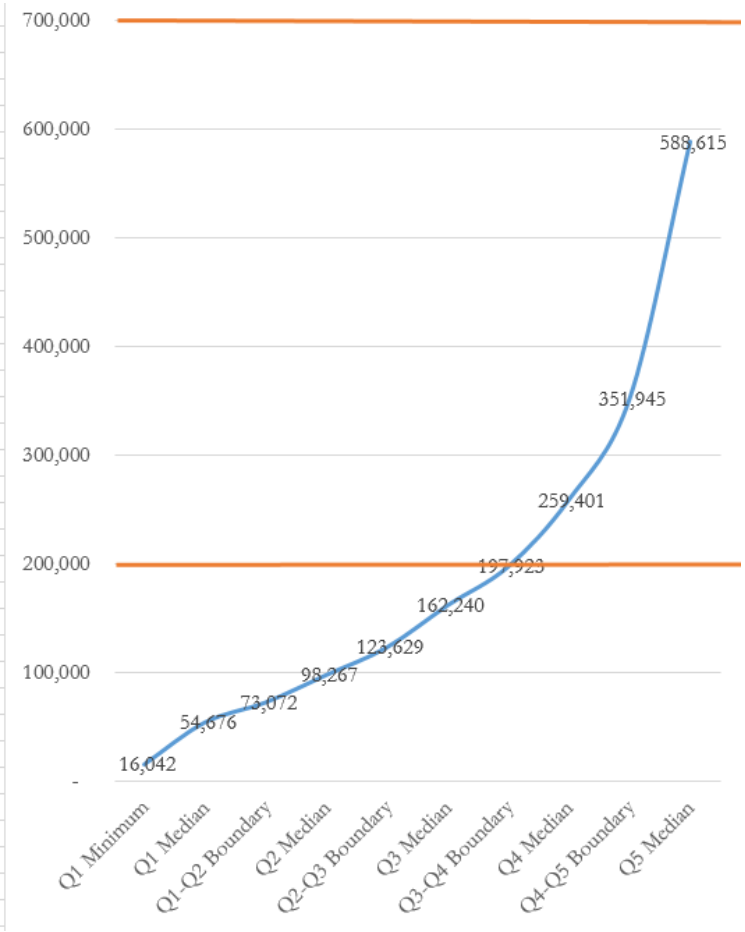
Annex 4: Housing finance beneficiaries and interest rate structure.

The World Bank loan could be an important stimulus to housing demand because it plans to provide mortgage rates well below the 15 percent inflation-adjusted cost of borrowing in Rwanda's underdeveloped credit markets.

The Appraisal Document states that the project targets the 50th to the 80th percentiles in the income distribution. However, based on data from the National Institute of Statistics Rwanda (NISR) it appears that the Bank has overstated the income of this group. Figure 2 shows the Kigali income distribution according to consumption data from EICV 5 (2017), adapted from Bower & Murray (2019). This shows that the target income range of this grant of 200,000 RWF to 700,000 RWF per month, corresponds to the top two quintiles. The boundary between the third and fourth quintile for EICV 5 data is 198,000 RWF and the median income of the top quintile is 589,000 RWF, so the true range the World Bank project targets is around 60 to perhaps 93 percent of households in Kigali. This represents some progress as it will outperform the private banks on inclusivity, but it is considerably less inclusive than would be ideal; moreover first-time

homebuyers, a putative target group of the World Bank loan, are less likely to be able to borrow under the current approach.

Figure 2: Kigali income distribution (from EICV 5)



And, while we applaud lowering the real cost of borrowing from the current excessive one, an important caveat is that the loans should be made at a rate sufficiently high to provide a sustainable rate of return that covers all intermediation costs and takes inflation into account. Interest rates below that level entail a subsidy that will ultimately decapitalize the housing fund and discourage the development of privately-provided housing finance.

This position on the appropriate lending rate is in contrast to the position taken by a number of government documents which suggest that the interest rates charged by the Fund should be subsidized. Lowering the rate to one that accounts for administrative costs, expected inflation and a real interest rate would prevent the Fund's decapitalization and the discouragement of other potential lenders. Indeed, it could compel other lenders to lower they excessive lending margins. It is also important to note the opposite: allowing the market to provide mortgage loans at 17 percent in Rwanda's low-inflation environment is equivalent to allowing the banks to place an implicit tax on borrowers in ways that discourage or prevent investments with high social and private returns – such as densifying Kigali.

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