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Evidence: Urban Productivity linkages to economic growth

Tags: Cities, Productivity, Economic Development, Evidence

Cities are a key driver of national prosperity, producing on average more than half of GDP, even in developing countries. They do this by concentrating activity, resources and knowledge to exploit agglomeration effects and economies of scale. These effects are not always present however and can be reduced where cities to not achieve the necessary levels of densification and infrastructure services provision. For example, urbanisation has delivered fewer benefits in Africa and South Asia than in parts of East Asia as a result. To date the productivity benefits and potential economic development opportunities associated with urban environments, have been poorly understood and under-exploited by national governments, municipal authorities and their development partners. This in part reflects the complexity and cross-cutting nature of the challenges involved.

Urban productivity is a complex and multifaceted concept capturing the capacity for well-planned and managed cities to generate economic wealth, create jobs, encourage innovation and reduce poverty. This is particularly important in countries facing rapid urbanisation and large-scale rural-urban migration flows. Rapid urbanisation without proper design and economic planning can lock-in dysfunctional urban form, exclude certain populations from economic participation, create environmental costs (e.g. air quality, waste management), and build long term exposure to risk (e.g. climate impacts, fossil fuel regulation). Cities authorities often have weak institutional capacity to engage on planning, economic development and finance mobilisation when compared to national governments.

Donors support the emergence of cities as attractive, economically productive and resilient places to live and work for a broad range of socio-economic groups. In doing so they aim to ensure that urban form can be an enabler of economic and employment growth, rather than a constraint. These improvements require an integrated approach to policy, planning, investment and economic development. Programmes therefore need to engage across a broad range of activities including improved spatial and sustainable land use planning, strengthening the city-level investment climate (e.g. property rights), promoting better integrated transport and housing policy, building capacity for municipal-level finance mobilisation, and supporting economic development planning and job creation for key sectors.

Focusing programming on urban productivity is strongly aligned with prioritisation of economic development as a key driver to delivering effectively managed cities as a key opportunity for job creation, poverty reduction, social inclusion and addressing gender inequality. However, measuring changes in urban productivity can be a challenge, and indicator sets may draw upon a range of sectors, including economic development, access to infrastructure, job creation, costs of infrastructure services and inclusivity.

From urban productivity outcomes to economic growth

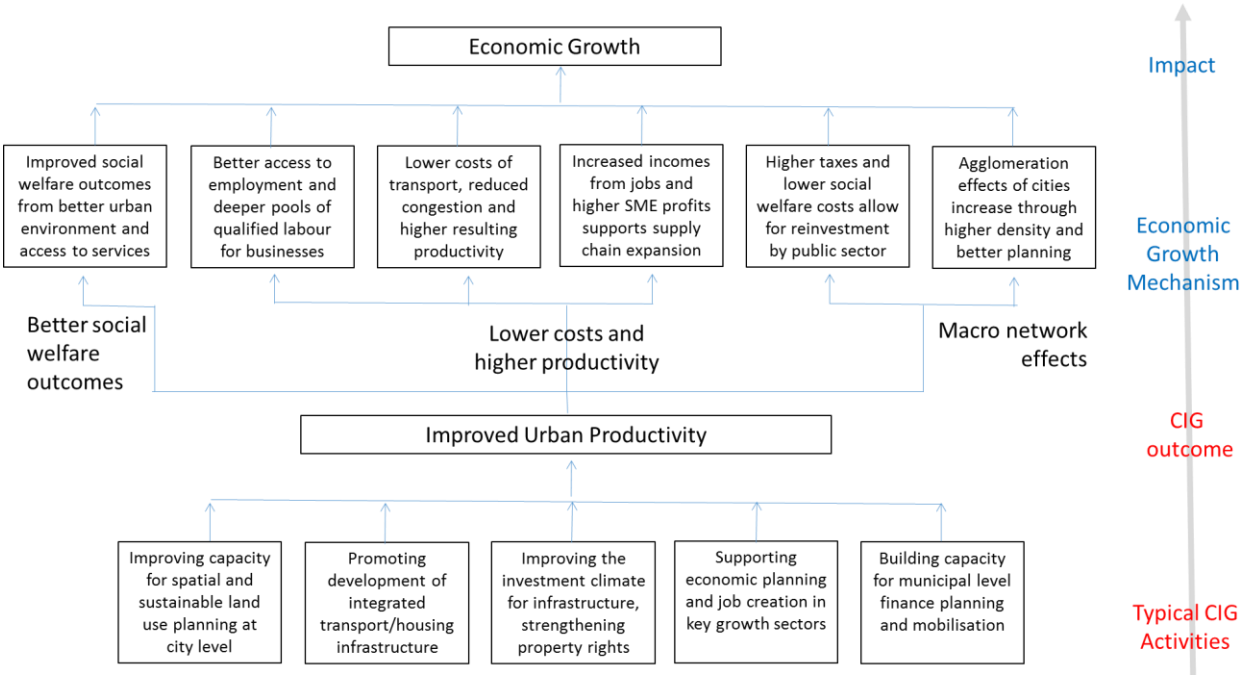

Figure 1: Theory of Change – Improved Urban Productivity

These benefits flow differently to different stakeholders, and generate short term economic benefits directly and indirectly, as well as delivering (longer term) transformational effects. The overall evidence for linkages between improved urban productivity and economic growth (as set out in the theory of change) is considered strong. Transport has been chosen as the primary focus of the assessment (due to the significant evidence base available), but similar types of benefits to urban productivity flow from other sectoral improvements (e.g. energy, WASH, digital, housing).

- *Improved social welfare outcomes:* Better planned urban environments can have significant social welfare benefits (safety, health, air quality). Improved water, sanitation, energy and housing services can reduce the disease burden both in the home and in the public realm. In terms of transport, modal shift and better provision for non-motorised transport can significantly reduce accidents. Low and middle income countries are most affected and typically. Road traffic accidents are the leading cause of death globally for 15-29 year olds and it is estimated that the economic cost is 1-3% of GDP.[1] For example, Bus Rapid Transport (BRT) systems in Latin America have contributed to a 40% reduction in fatalities and injuries on the streets where they were implemented.[2] Secondly, improved planning and transport can also improve air quality near major roads. High levels of transport related pollutants carry significant health costs for local (often poor and vulnerable) populations with air quality health impacts in South Asia estimated at costing 0.83% of GDP. Finally improved urban form and transport can facilitate access to public infrastructure (health, education) thereby increasing the productivity of labour, particularly for women and vulnerable populations. [3]
- *Improved access to employment and deeper more flexible labour pools:* Workers may not be able to take certain jobs due to transport considerations or due to lack of digital connectivity. For example, low-income urban residents in sub-Saharan Africa typically only use public transport for indispensable trips, as it is not affordable for regular use.[4] Better integrated cities can help connect labour with economic demand, allowing better matching of skills and helping to increase household incomes over time. This can also be achieved through the intensification and development of low income housing close to economic growth centres. Companies can expand economic activity where availability of (suitable) labour is a constraint, and benefit from a deeper and more qualified labour

pools over time to facilitate economic growth and expansion. Improving access to transport, and integrating low income housing into urban intensification can increase the employment options available for workers.

- *Reduced costs:* More efficient provision of services (energy, transport) can reduce prices as well as reduce the overall share of income spent on these services by SMEs and households. Lower costs of energy can allow SMEs to increase their margins or divert economic resources for investment. Where improved access to transport entails increased affordability, users enjoy reduced travel costs, particularly compared with the cost of private vehicle ownership. Transport expenditure is often a substantial share of household budgets. One evidence review finds that households in sub-Saharan Africa devote 8-15% of their total expenditure to transport.[5] Travel costs as a share of income can be even higher in larger or higher-income cities, where residents either choose or need to use public transport more frequently. Transport to and from work can cost 20-25% of income in Delhi, Buenos Aires and Manila, and up to 30% in Nairobi, Tshwane and Dar es Salaam.[6] Improving access to transport by increasing its affordability allows households to switch expenditure from non-productive to productive uses, such as education or domestic enterprise.

- *Increased productivity:* Firms and households can increase their productivity from improved access to digital infrastructure, energy and transport services. Digital services (telecommunications, internet) can reduce the need to travel, support remote working options, provide access for higher value added occupations and increase productivity. Higher densification and improved transport infrastructure can reduce journey times maximise economic productivity. Economic losses associated with road congestion (e.g. delays for commercial traffic) can be reduced. The costs of congestion are substantial in many cities. The ADB estimates that increased transport costs and lost working hours may cost up 5% of GDP in many Asian nations.[7] WRI identifies travel time savings as the most significant socio-economic benefits resulting from BRT systems, with the minimisation of waiting and transfer times being a key driver in economic returns.[8] Travel time savings were between 13-52 minutes in cities studied, which commuters can use for more productive activities.

- *Increase in incomes and wider economic activity:* New (and improved) jobs (e.g. resulting from better access to transport and digital services), together with the welfare benefits of improved housing, WASH and urban amenities can increase household incomes. This can result in greater levels of short-term private consumption and longer term wealth accumulation and social mobility. The most effective route out of poverty and into sustainable economic growth for the working-age population, is a productive, fairly-paid job.[9] Increased household incomes can feed through into improved education, health and social welfare outcomes, which in turn have longer term economic multiplier effects.[10] Companies benefit from increased household income levels and associated consumption effects, with beneficial impacts supply chain activity as they expand (indirect effects).[11] Higher levels of employment and wages also generate growth impacts in the wider economy (induced effects).[12]

- *Agglomeration and scale effects of cities:* Better planning and densification can maximise the agglomeration effects of cities which enable businesses to share fixed costs, efficiently match supply and demand of specialised goods, services and workers. Well planned cities can support knowledge transfer and innovation.[13] Land values can be maximised, and connections between areas of economic activity better supported. Data suggests that productivity is closely correlated with density of economy activity (e.g. jobs per km2). There is evidence that the size of the city itself can influence the level of employment productivity and wages, with larger cities generating higher returns, with cities having a 10% larger workforce being able to offer wages that are 0.2-1% higher.[14] These benefits can in turn result in higher tax revenues, lower social welfare costs, creating the capacity to reinvest in public services, further economic development and formalisation of the economy.[15] Scale economies also apply at city level in terms of infrastructure provision and services (waste, energy, healthcare), lowering the cost per connection or user, and supporting universal provision, particularly where resource constraints are an issue.[16]

Constraints on growth narrative

There are a number potential constraints that might potentially act as barriers to achieving the potential economic benefits of urban development impacts:

- *Financial sustainability:* Creating sustainable revenue models for publicly-managed urban infrastructure can be particularly challenging in developing country environments due to the limited revenue base. [17] Governments may therefore not be able or willing to make the necessary investments in maintaining infrastructure and enforcing appropriate use. This can reduce the socio-economic benefits of the initial investment as users become less willing to use these services. For example, users may switch back to private transport where the efficiency, comfort and safety of public transport options is not maintained and upgraded over time.
- *Consumer preference:* Strong consumer preferences may exist for certain patterns of consumption and behaviour that new and more compact urban forms can challenge (e.g. traditional housing, private transport). This can create barriers for adoption that need to be overcome. Prevailing attitudes and opinions can in turn be compounded by perverse pricing and subsidy regimes (e.g. for transport fuels) that further encourage urban sprawl and inefficient use of land, energy and other resources. These can reinforce disincentives for investment in more economically efficient service provision and infrastructure, and reduce the opportunities for wider social and environmental gains.
- *Connectivity:* While densification and improvements in spatial planning have the potential to improve economic efficiency, the first and last mile of journeys are often dependent on informal or non-motorised transport. Formal public transport planning therefore needs to integrate these options to ensure uptake. For example, in Mumbai and New Delhi, there are designated spaces for informal rickshaws to park and line up for customers at stations and dial-a-ride rickshaw taxi services in Ahmedabad.[18]
- *Weak policy enforcement:* Functional cities tend to be drivers of job creation, and conversely, negative effects can arise in cities that are overcrowded and congested.[19] Inefficiencies in land and housing markets, transport and communication infrastructure can cause poor functionalities. This can come about through policies not being enforced, or deregulation on these markets.[20]

Implications for achieving other development goals

This section sets out to what extent investments in urban productivity are likely to contribute to other development goals (e.g. social inclusion, environmental sustainability), and what the economic growth implications are if these outcomes are targeted as part of infrastructure and urban development planning.

Social Inclusion

- Improved urban productivity can improve social inclusion. For example, investment in public transport schemes and reduction in congestion can create positive impacts on public health for those living adjacent to transport routes. Greater connectivity can help the poor to seek employment across wider geographic area, and allow vulnerable groups such as women to travel safely. Better urban form and transport provision can improve access to education, health and other public services for excluded groups for which provision may be limited within their existing areas. However, the benefits of social inclusion are not automatic, and are normally only achieved where urban policy and infrastructure development take a pro-active interest in the distributional effects of growth.
- In practice, poor and marginalised groups tend to be deprioritised in urban policy and investment processes. Planners may choose to prioritise infrastructure that addresses existing economic bottlenecks (e.g. transport projects in areas of high value economic activity or commuting routes for higher income workers), rather than invest in the connectivity of poorer districts. Investments in urban infrastructure, e.g. improvement in transport or housing often rely on private capital and therefore seek a commercial return that can only be achieved by situating investment areas serving wealthier population segments and established formal businesses. Officials will tend to avoid

investments that require on-going subsidy support or that raise the capital costs of investment significantly due to budget constraints. For example, transport infrastructure is normally developed to serve for middle and lower middle income users, rather than the very poor. Service provision may also be prioritised for groups with strong political and economic power who can influence decision making. Given that many excluded groups operate in the informal economy, there is also less likelihood of the public sector being able to capture the economic benefits of increased economic activity through tax revenues and therefore less incentive to make provision.

- Concentrating infrastructure services in high-income areas is likely to lead to a continued concentration of economic activity rather than unlocking the economic potential of workers and industries based elsewhere. Inclusive planning, requires taking account of where different groups of people live, especially the poor.[21] Even where access is provided, affordability can remain an issue particularly where infrastructure and services are developed on a full cost recovery basis. Charges may consume a high proportion of wages or exclude certain groups altogether.[22] This can result in parts of the urban population missing out on income and other well-being improvements that could contribute to overall city-scale benefits.

- There may be significant additional costs associated with providing urban infrastructure services to poorer communities. Measurable economic returns of inclusive planning and investment may be lower in the short run as they are not captured in formal economic statistics. However, longer term growth effects may be more evenly distributed, enabling currently excluded groups to increase their incomes, improve social mobility and transition to the formal sector over time. For example, WEF cites the importance of inclusive infrastructure (supporting access to physical and digital services) as a key enabler of growth and poverty reduction.[23] IMF cites the ability of enagling services facilitation of women into labour market and the resulting economic activity as a key driver of economic growth[24]. Subsidy support for lower income groups may therefore be warranted (such as the investment in para-transit and non-motorised feeder systems. [25]

- The construction or expansion of new urban infrastructure can also create significant economic costs, for low-income and other marginalised groups. Residents of informal settlements have historically often faced eviction to make space for new commercial, housing and transport infrastructure.[26] This can compound poverty by forcing poorer communities to re-locate away from livelihoods and economic opportunities.

- Cultural norms may also inhibit social inclusion. For example, the failure to consider gender safety issues or cultural norms may exclude women from taking advantage of transport investments.[27] The common practice of purdah may mean that women cannot share crowded public transport with men.[28] Perceived and actual safety issues also prevent use of public transport systems, and transport planning tends to focus on formal jobs, rather than informal activities typically undertaken by the majority of women. This means that women and their households cannot benefit from the potential productivity gains (shorter journeys, improved access to jobs, etc.), and investment in design modifications may be required.

- Similarly, urban economic development planning and employment programmes may not lead directly to social inclusion and poverty reduction outcomes. Higher income and better educated groups tend to benefit more from the growth effects of urban agglomeration. The sector mix and profile of growth matters substantially in terms of the extent to which the poor benefit.[29] Jobs that are accessible to poorer and marginalised communities (e.g. lower skilled, labour intensive) are generally required to achieve inclusive growth outcomes.[30] [31] These jobs are often found in SMEs (which represent 60% of GDP in developing countries), and poorer communities may be excluded from other formal economic participation opportunities.[32] [33] Experience in East Asia suggests that SMEs can reduce inequality through their labour effects.[34] However, investment in labour intensive jobs this may run counter to narratives of economic efficiency, productivity and technological automation.[35] Even where opportunities exist for the poor, these may be oriented more towards young men than to women (in turn encouraging further young male urban migration)[36]. Economic development may therefore need to include targeted upskilling and training programmes if poor or other marginalised groups are to take advantage of growth in labour markets.[37]

- Existing employment activity accessible to poorer communities can also be displaced during urban development. The transportation sector, for example, provides an important source of income for unskilled labour (although almost exclusively for men). There are an estimated 12 million rickshaw drivers in South Asia. Uganda alone is reported to have 200,000 bicycle and 90,000 motorcycle taxi drivers.[38] Improvement in formal public transport provision often displaces these informal jobs although the investments may create a smaller number of safer and more secure jobs.[39] New transportation systems also require labour for construction, which can itself provide short-term job opportunities for low- and unskilled labour. [40]

- The informal sector is a major provider of employment for many poor and marginalised groups.[41] It is often underestimated in terms of its contribution to economic growth (contributing 55% of GDP and 80% of the labour force in sub-Saharan Africa) and the extent to which it underpins formal sector activity.[42] The informal sector is also dominated by women and the young. However, while informal work can provide economic opportunities for poorer and marginalised communities, this work typically lacks security and social protection rights associated with the formal sector.

- Efforts to formalise firms and employment benefit not only benefit workers, but can also create wider economic benefits through increased tax revenues and associated investment in social infrastructure.[43] There is strong correlation between the shift to more formal labour markets and a reduction in poverty, although causality between the two is less clear. Policies that facilitate access to formal financing channels, such as micro-credit, can encourage entrepreneurs towards more formal economic activities.[44] Research by WIEGO indicates that a focus on productivity improvements within the informal sector may be more useful than immediate attempts to formalise workers from a growth perspective.

- Social inclusion in job creation can be supported by fostering entrepreneurship programmes for women and the poorest in society, developing basic skills, strengthening labour institutions and mature approaches to industrial relations. In addition, less conventional measures including protecting jobs during industrial transition, and targeted support for sectors important for job creation to ensure that gains and spillovers are realised, are also crucial for economic growth[45]. Support can also be given to the private sector to create jobs for those at the bottom.[46]

- However, it should be recognised that the targeting of job creation to achieve social inclusion outcomes may lead to lower overall economic growth benefits in the short run, as these groups are likely to engage in lower-value added activities and may require more significant investment and support to build functioning markets. In general, there is a broad trade-off between the quantity and quantity of jobs creation. Targeting labour-intensive sectors, such as construction or manufacturing, can create large number of jobs for the poor, but these jobs can be unproductive, and conversely targeting jobs in the professional services can be high in value added to the economy but fewer in numbers.[47] Moreover, higher skilled workers and sectors may contribute disproportionately to short term productivity growth. However, the distributional benefits of growth associated with inclusive jobs are likely to be broader, and the level of growth more sustainable in the long run in due to the cumulative impacts of social mobility, greater formalisation of the economy (and tax raising effects), avoided welfare costs and wider local development benefits (e.g. increases in land values).[48]

- It should also be noted that there may be trade-offs with other development outcomes. For example, efforts to support green growth policies (resource efficiency, automation) may come with a significant opportunity cost, delivering net job destruction for the poorest in society[49]. Substitution effects can also mean that as industries change (and move up the value chain), poorer income groups may be excluded from new opportunities without specific support to education and training and may be forced to work for lower wages or move back into the informal economy[50];

Climate and Environment

- Better urban planning and infrastructure has the potential to deliver significant benefits in terms of environmental improvement, lower carbon intensity and resilience. For example, the transport sector represents an increasing share of global energy related greenhouse gas emissions (23% in 2010) and emissions from the sector could rise by more than 70% by 2050[51]. Improved access to

urban transport (particularly modal shift away from private to public) offers the potential for significant improvements in environment outcomes, particularly in terms of reduction in fuel consumption, and reduced emissions of air pollutants and greenhouse gas emissions[52].

- However, while there are many co-benefits, there are potentially growth trade-offs where investments are made in providing higher capital cost low carbon transport solutions (e.g. alternative fuel vehicles), which might raise the cost of access (e.g. through higher fares), or reduce the scale of transport infrastructure unless funds are identified to offset these incremental costs. Financing such investments can have opportunity costs in the short run, even if they have lower operating costs in the long run.

- Nonetheless, the socio-economic returns (including cost of carbon and non-market benefits) are strong. One global study suggested that incremental investments in modal shift could have a net present value of $1.4 trillion and reduce global emissions by 1GtCO2-e, and that investments in urban planning could reduce global emissions by a further 0.5GtCO2-e while delivering a net present value of $2.9 trillion[53]. A sample of five cities in the Global South, finds that 39% of the total cost-effective mitigation potential is in the transport sector.[54]

- The potential environmental impacts associated with urban economic development and job generation will vary based on local economic, social and environmental factors. Generalisations in this area are there unlikely to be useful. However, in the longer-term, modal shift can contribute to more compact forms of urban development, which in turn can reduce the extent of ecosystem loss at the urban periphery, with implications for hydrological cycles, ecosystem services and biodiversity[55]. Environmental considerations can also be integrated into urban planning (e.g. urban greening), which can have both environmental and social benefits. Although many Asian cities struggle with high population density, transit-oriented development and the accompanying densification offer significant environmental opportunities in the context of sub-Saharan Africa, where population growth is occurring in an expansive rather than dense form.[56]

- The development of environmental industries and markets can support job creation in cities, and help to offset losses in other sectors during economic transition. These industries include those associated with the protection of eco-systems and biodiversity, reduced consumption of energy, materials, and water, development of building scale renewable energy systems, low carbon transport and housing development, waste minimisation and pollution control[57]. For example, a 2011 study of China's power generation sector suggested every one percent increase in the share of solar PV generation would be associated with be a 0.68% increase in total employment in China, greater than any other power generation technology.[58] The number of green jobs is expanding rapidly in developing countries as economies transition to more sustainable models. For example, the South African government has evaluated the potential to create net direct green jobs at 460,000 by 2025[59]. Evidence indicates that growth in green jobs in developing countries is higher (6.1%) than for overall formal employment on average (5.8%).

- Green jobs may also be of higher quality than those that they displace. The UNFCCC and the ILO have argued that taking action to mitigate climate change creates high-quality employment in the long run.[60] There may be social inclusion benefits as many green jobs are in the informal economy and/or accessible to lower tier workers. For example, ILO data for 2010 indicates that there are approximately 2.9 million 'green professionals' in Brazil; of which only 6.6% are in the formal market.[61] UNEP argues that the greening of economies is also a net generator of decent jobs, offering adequate wages, safe working conditions, job security, reasonable career prospects and worker rights.[62]

- There is strong evidence that investment in the green economy can contribute to higher rates of growth in the long run – HSBC forecasts that the global low-carbon energy market will triple to $2.2trillion by 2020 - through reduced vulnerability to climate risks and higher socio-economic benefits of low carbon development (particularly where greenhouse gas externalities are included).[63] However, while some investments have short term paybacks (particularly around resource and energy efficiency), growth effects may be slower in the short-run due to the higher costs of resilient infrastructure and the need to subsidise the costs of low carbon technologies. Wei et al conclude

that the renewable energy and low carbon sectors (e.g. Solar PV) generate more jobs per unit of energy delivered than the fossil fuel-based sector, which may also be an indicator of lower economic efficiency in terms of labour input costs.[64]

- There are also concerns that a switch to greater resource efficiency and lower carbon approaches in some sectors can also lead to short term dislocation effects, where jobs are lost in inefficient and polluting labour-intensive industries, and are replaced with more efficient and automated systems and processes. Bowen and Kuralbayeva find the potential for net job destruction in carbon intensive industries, which is only mitigated if environmental taxes (for example, carbon levies) are recycled for job creating activities and investment in sustainable sectors.[65] In the longer term, gains in other industries would fully offset those losses.[66] However, these effects are poorly understood and require greater evidence[67].

Conclusions and Recommendations for further research

There is strong evidence that investments in urban productivity can support job creation and economic growth. These benefits flow from improved welfare outcomes (better air quality, safety and urban amenity), improved connectivity between workers and labour markets, lower costs (e.g. of energy, transport), reduced impacts of congestion, increased incomes and SME productivity, increased public revenues from greater formalisation of the economy, and wider agglomeration effects due to increased densification and economies of scale.

However, improvements in urban productivity and economic development do not always result in socially inclusive outcomes. Policy makers may choose to focus on addressing economic blockages for value-added sectors and support higher income groups, and may be wary of engaging on urban programming that requires a need for cross subsidy or additional design costs by including the needs of the poor. Inclusion needs to be integrated proactively and at an early stage, recognising that providing services for poor and marginalised communities may have higher costs in the short run, but enable new markets and increase labour participation in the formal economy in the long run.

From an environmental perspective, better urban planning and integrated economic development can deliver strong benefits, in terms of reducing sprawl at the urban periphery, improving air quality, reducing GHG emissions and improving the provision of water and waste services. However, pursuing low carbon infrastructure options (e.g. transport, housing), may incur additional capital costs in the short run, even where operational costs are lower. However, falling technology costs will make green investment more competitive over time. There is good evidence that encouraging the development of green growth sectors in urban environments can act as a source of good quality jobs and economic growth.

Donors designing programmes will therefore need to balance different (and sometimes competing) objectives. On the one hand, this may involve prioritising the timing and economic value of returns (e.g. investing in addressing priority growth blockages for value-added sectors). On the other, it may mean creating the platforms for longer term sustainable growth (e.g. engaging with poor and marginalised groups, developing environmentally sustainable solutions), even where these carry higher programming costs in the short run and are likely to take longer to generate measurable economic returns. Not all interventions need to speak to every priority, but country programmes (and CIG as a whole) will seek to ensure a balanced portfolio that is likely to deliver growth in the short, medium and long term.

Several specific trade-offs exist that should also be considered. These include the challenge of financial sustainability (the need for on-going subsidy to support services for poor communities), the potential for increases in urban efficiency to reduce the need for labour (particularly unskilled), the challenges and additional costs of migrating the poor to higher value added sectors and occupations during periods of economic transition.

From a monitoring and indicator perspective, it is challenging to identify a single set of indicators that can capture the full range of urban productivity or economic development improvements. For example, improved access to jobs is a broad indicator that can encompass a range of additionality benefits (shift from informal to formal sector, inclusivity, green, pro-poor, higher income, higher value-added etc.). Indicators should seek to capture the distributional and environmental benefits when doing so.

In terms of further research, potential areas for investigation include:

- How do different segments of the urban population benefit from improved access to services and how does this impact on their economic productivity, incomes and social welfare outcomes?
- What does ‘affordability’ look like in different urban contexts for different types of services and for different groups? What financing mechanisms can be used to enhance affordability?
- What are the economic (dis)benefits of job creation in the informal sector (tax, growth impacts, productivity, conditions), and the relative benefits of a shift to the formal sector?
- Are there trade-offs between greater urban productivity (e.g. automation, scaling) and job creation for poorer and lower skilled workers in labour-intensive industries?
- How should institutional/governance structures evolve to support urban productivity investments with large economy-wide returns but weak financial returns or significant political cost.

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