



THE 2030 AGENDA: SUSTAINABLE URBANISATION AND THE RESEARCH-POLICY INTERFACE – ISSUES FOR THE G20

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EXECUTIVE SUMMARY

The starting point of this scoping report is that the rapid force of urbanisation is a powerful catalyst to advance all three aspects of a transition to sustainable development – social, economic and environmental – as set out in the 2030 Agenda on Sustainable Development. The task of identifying catalytic actions, setting priorities is not simple, especially in poor and rapidly urbanizing regions. The multi-stakeholder process of addressing urbanization typically also requires devolution and collaboration at all levels of the multilevel governance agenda – global, regional, national and local. The complex governance imperatives associated with urbanization and transformation for sustainable development necessitates new research and more effective research-policy interaction.

Section 2 of the report provides a conceptual framework on what sustainable urbanisation actually entails, illuminating in particular the imperative of a paradigm shift on infrastructure and urban form that will secure a common, inclusive future given the population expansion.

Section 3 of the report explores what exists within the G20 by way of research policy capacity on global urban issues, with a particular focus on the engagement group Think 20 (T20). It argues that the ‘urban dimension’ of the sustainability challenge is a layer of thinking in which the G20 itself has yet to engage comprehensively and on which the T20, given its current areas of expertise, is at present not fully equipped to speak.

Various examples of G20 affiliated urbanisation research capacity are explored in section 4 to illustrate modes of improving research-policy interfaces. At the global level these include National Urban Policies (NUP) as the point of convergence between local,

national and global policy interventions supported by key multilateral partners such as the Organisation for Economic Co-operation and Development (OECD), the global science-policy dialogue led by organizations such as the Intergovernmental Panel on Climate Change (IPCC) and the International Council for Science (ICSU) and transnational research networks such as Future Earth. Regional research-policy platforms can be found at the level of the European Union and Latin America. The case of the United Kingdom (UK) is highlighted as an example of effective national urban science-policy engagements of a G20 country. The case of the Gauteng City Region Observatory in South Africa is an example of strengthening the sub-national research-policy interface.

Section 5 presents an overview of an ideal research-policy interface highlighting the importance of the replication of research-policy interfaces to advance sustainable urbanisation, the role of National Urban Platforms, urban policy deliberation and the role of think tanks as strategic intermediaries.

The report concludes that the G20 can better utilise existing knowledge and generate new multi-stakeholder ‘urban’ research within and beyond its borders, but especially in rapidly urbanising regions to support, enhance and promote multi-stakeholder interaction and knowledge exchange. The implementation of the 2030 Agenda will be advanced through proving disaggregated urbanisation data, sharpening the urban content and reformulating the research-policy process to enable stronger multi-stakeholder interactions on urbanisation. We elaborate on how this can be done in terms of content and process through the following recommendations:

Content

Approaching the 2030 Agenda through the perspective of urbanisation is imperative because of the rapid demographic shift. The second rationale for a step-change in the way the G20 engages research for the implementation of the 2030 Agenda emerges from acknowledging that a common urban future applies simultaneously to G20 countries and low-income countries. Third, understanding the multi-location, multi-stakeholder urban nexus and the cumulative impact of urbanisation on other drivers of sustainable development requires a different sort of research and a multi-scalar, multi-sectoral understanding of urban complexity.

Process

In addition to addressing the global architecture of urban governance and investment, it is clear that research will play a critical role in directing sustainable development action in ways that foreground urbanisation as a driver of global change and prioritize cities and towns as the dominant form of settlement and sphere of implementation of the 2030 Agenda. We suggest that the German G20 presidency as well as future presidencies reflect on possible ‘global urban’ intervention processes that might include:

1. Re-align the urban knowledge agenda in the G20 itself by:
 - Fostering greater linkages between issues of traditional concern to the G20 (trade, infrastructure, finance flows) to include spatial and urban governance concerns in the way that the 2030 Agenda has done
 - Proposing that G20 engagement groups such as the T20 put a stronger focus on urbanisation in its membership so that G20 meetings are properly briefed on the latest issues. In a new area such as urbanisation it is imperative that the T20 produces clear messages for debate.
 - Ensuring continuity despite annual rotation of the G20 presidencies, e.g. by establishing an urbanisation working group to allow the G20 to better pick up on and further develop responses

to new global challenges such as those associated with the urbanisation of world population and resources. This working group might liaise with other regional groups as a global architecture of urban policy making evolves.

- As cities play an essential role in achieving the Sustainable Development Goals (SDGs), the G20 should identify an appropriate format to actively engage with relevant non-governmental stakeholders involved in (sustainable) urban processes. This could be achieved by e.g. leveraging the experience of the various G20 engagement groups: and fostering continuous knowledge exchange and collaboration among the engagement groups and with the G20.
2. Strengthen the research capacity in and through the G20 to link the 2030 Agenda to the realities of urbanisation by:
 - Focussing research funding through national, regional and global Science Councils and other official funding stream on harmonizing the research demands of global reporting effective national, regional and global policy development on urbanisation.
 - Using the ongoing research efforts of specialists to define implementation, monitoring and review of the New Urban Agenda and National Urban Policies as an opportunity to concretizing policy priorities, knowledge gaps and research lacuna.
 - Working regionally to ensure that the urban agenda is not spatially restricted and is oriented to tackling global urban challenges.
 - Focus on areas where rapid urbanisation and urban change will be greatest and where research capacity is least developed (e.g. low and middle income regions).
 - Ensure a cohort of international scientific leadership that can synthesize existing urban research and point to policy priorities and knowledge gaps – possible through mentoring programmes for future urban leaders and by providing platforms for researchers to understand the policy imperatives of the 2030 Agenda.

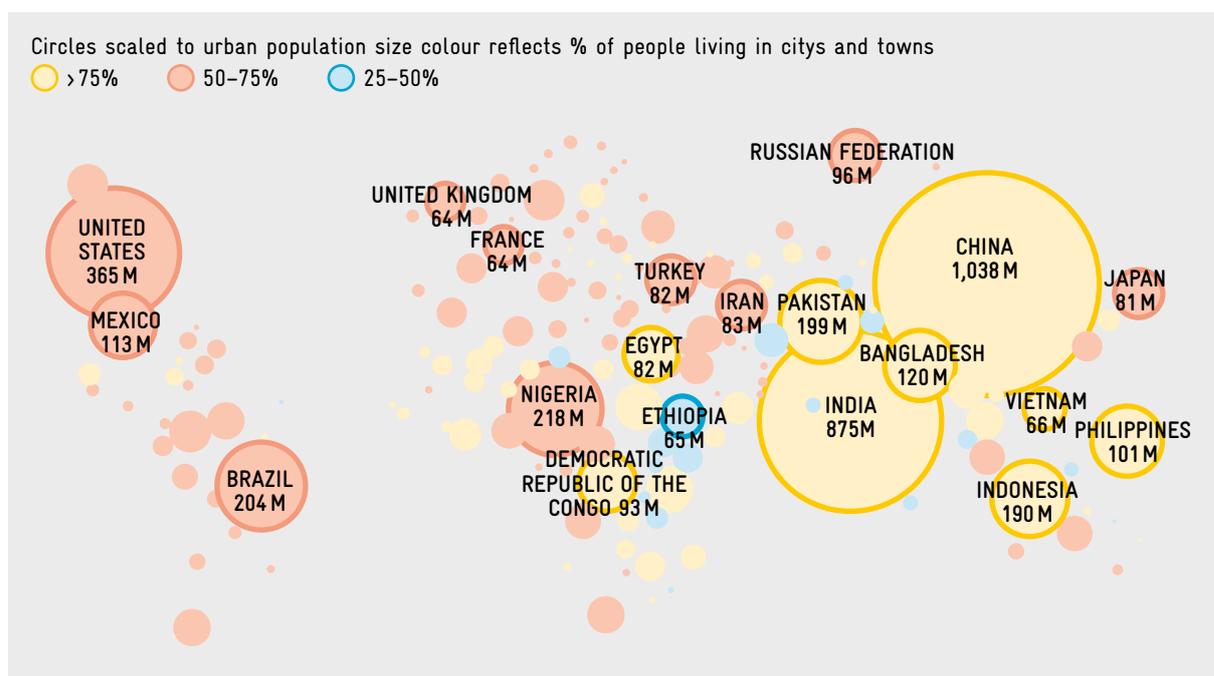
3. Reform the research-policy interface to enable the G20 to link the 2030 Agenda to the realities of urbanisation by:
 - Strengthening the training of urban research professionals and non-governmental organisations (NGOs) in the global South.
 - Building effective global policy platforms – such as the Future Earth Knowledge-Action Networks (KAN) or the Regional Urban Think Tanks run by Cities Alliance Joint Work Programme.
 - Support the reform of the United Nations (UN) system to ensure that it provides an enabling environment for the complex multi-stakeholder, multi-sectoral and multi-scale interventions needed to shift the global urban trajectory – including creating a mechanism for multi sectoral urban exchange in the UN itself.
 - Foster a global information and fiscal architecture that does not discriminate against cities in favour of nations.

1. INTRODUCTION

The 2030 Agenda for Sustainable Development and its 17 SDGs can only be successfully implemented and achieved if cities, countries and the international community embark on a transition towards sustainable urbanisation. The imperative for change stems from the demographic fact that the 21st century is irrevocably urban: by 2050, 66 per cent (6.4 billion people) of the world population will live in cities and towns (UN 2014). High rates of urbanisation in populous countries such as India, China, Nigeria and Ethiopia mean that low and middle income regions will be at the heart of the new urban expansion (Figure 1).

Cities are the crucibles of our common economic, social and ecological future. It is not just people that concentrate in urban areas: traditionally economic activity, employment and value addition have also aggregated in cities. While there is considerable debate about the relationship between urbanization and industrialization, with Africanists especially pointing out that very large cities exist without obvious industrial activity (Parnell/Pieterse 2015), other scholars even insist that this relationship between urbanisation and agglomeration is hardwired into the functioning of globalization (Spence/Annez/Buckley 2009). The concentration of

Figure 1: An urban world – UNICEF Countries and territories with urban populations exceeding 100,000 in 2050



people and capital in cities may have positive spin-offs, through improved access to education, health services and markets which improve the quality of life. However, if the urban environment is not protected, affordable services are not proactively supplied, managed and regulated and no careful attention is paid to supporting job creation and sustainable livelihoods, poverty, inequality and vulnerability grows (UN Habitat 2016). Cities generate around 80% of global economic output, but around 70% of global energy use and energy-related greenhouse gas (GHG) emissions (The Global Commission on the Economy and Climate 2014). The concentration of rapid urbanisation in ‘emerging urban regions’ in Africa and Asia represents a specific challenge for global development and human wellbeing, as well as significant developmental opportunities.

The universality principle is a defining feature of the 2030 Agenda that recognizes this global interconnection by highlighting the imperative of common goals for all countries. Cities are specifically identified as drivers of sustainable global change (SDG 11) – but the 2030 Agenda also embraces the idea of leaving no one or no place behind, making the future of all cities one that cuts across the SDGs and is a collective international responsibility. The confluence and linkage of people, ideas, markets, institutions and opportunity make cities a necessary and strategic entry point to transition towards a sustainable global system as envisaged in the holistic 2030 Agenda. In addition, as most people already live in cities achieving the SDGs will require urban application.

The starting point of this scoping report is that the rapid urban transition can be a powerful catalyst to advance all three dimensions of sustainable development – social, economic and environmental. However, the substantive dimensions of sustainable urbanisation, and associated political processes of devolution that need to be embarked upon to effect this transition in an inclusive and informed manner, remain unclear in many contexts and especially in the rapidly urbanising

regions. The potential role of G20 countries will be reviewed in relation to the research and innovation that will be required to clarify the “what” and “how” of sustainable urbanisation as a bridgehead to the achievement of the SDGs for everyone and all places. A key finding is that the G20 can and should play a strong role in accelerating the creation of enabling research-policy architectures for sustainable urbanisation – both within and beyond G20 countries’ borders – but especially in Africa and Asia where the most significant urbanisation will occur over the next decades.

The scoping paper starts by providing a conceptual framework on what sustainable urbanisation entails as substance and process, illuminating the urbanisation research-policy imperatives of an emerging and fluid global system. The section that follows explores what exists within the G20 by way of research policy capacity on global urban issues, with a particular focus on the T20. Since there is not much of direct relevance to work with at present, the next section spells out how research and policy expertise can be fostered in a manner that strengthens local, national and global institutional effectiveness around the 2030 Agenda outcomes and principles. Various examples from G20 countries are explored to illustrate modes of improving research-policy interfaces that connect the city scale with the national, (supra-national) regional and global levels. Conceding the overall gap in knowledge on the major global challenge of urbanisation, we then flesh out recommendations in the last part of the paper.

2. THE 2030 AGENDA – A NEW UNIVERSAL PARADIGM FOR SUSTAINABLE URBANISATION

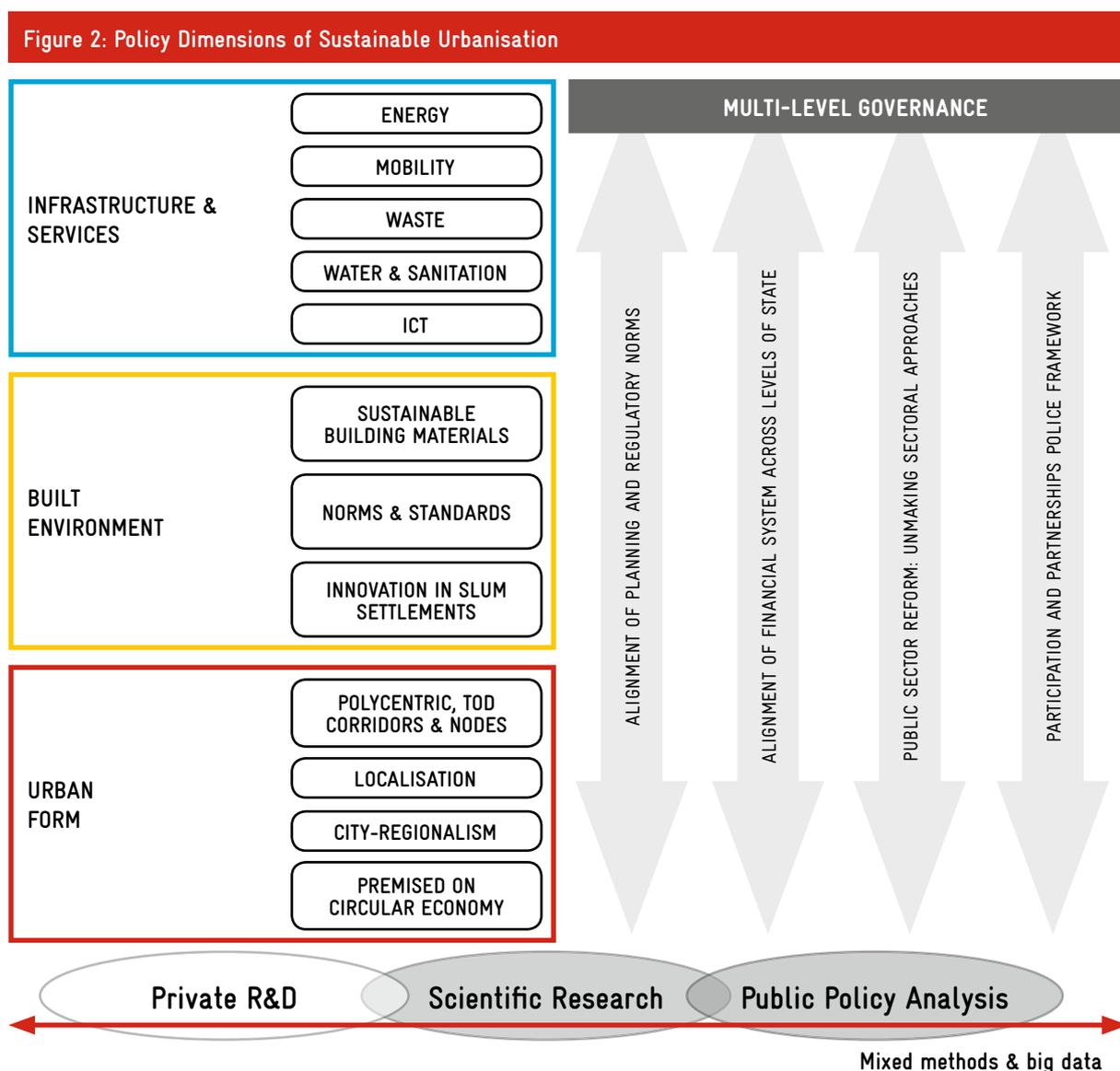
The 2030 Agenda is comprehensive and bold, simultaneously insisting that no one should be left behind and recognising that if the world economy continues along the current path, the imperatives of growth, inclusion and sustainability cannot be achieved (UN 2015). The 2030 Agenda insists that inclusion and sustainability are not just moral anchors but also the keys to rethink the purpose, nature and functioning of the global society, economy and environment. While the 2030 Agenda is holistic in nature, putting no single SDG over the other, the inclusion of a stand-alone goal on “*inclusive, safe, resilient and sustainable cities and human settlements*” (SDG 11) confirms the growing global recognition of the importance of cities as drivers and sites of sustainable development. This perspective was further reinforced by the multi-lateral endorsement of the Paris Climate Agreement on Climate Change, the Addis Ababa Action Agenda, the Sendai Agreement on Risk and Resilience and most recently through the approval of the ‘New Urban Agenda’, where emphasis was placed on all aspects of cities (not just housing) and the functioning of the overall urban system. The centrality of the city across the overarching global Agendas warrants a brief discussion of what is meant by sustainable urbanisation.

Cities are large complex metabolic systems. Various natural, social, economic and cultural systems co-exist and influence one another, creating challenges of coordination and alignment in shifting these systems from a state of unsustainability to one of inclusion and increasing sustainability. The core problem of composite urban systems is the one of path dependency or urban lock in (WBGU 2016). The functioning of a city in terms of levels of resource consumption per unit of economic output, carbon emissions per unit of economic output or patterns of inclusion/exclusion are

carved into space (urban form) and reproduced through the routine functioning of urban infrastructure systems that support services, economic activity and the metabolism of the physical built environment (buildings, roads and green spaces). The morphology of cities is also a determinant of human health and can shape patterns of social interaction and crime.

Building cities takes a long time and consumes vast resources – sunk investments. Because the physical form of a city endures across generations, along the way norms and vested interests consolidate and ‘the city’ begins to shape society and our relationship with nature. Unsustainable city forms mean that change is required. On the back of the dominance of modernist planning norms, made virtually universal in the post-World War II era, the worlds’ established cities are confronted with a highly inefficient and often dirty urban inheritance that needs to be quickly undone, if the ambitious goals of the 2030 Agenda and other international commitments such as the Paris Agreement are to be met. Emergent or yet to be built places require a new template of construction.

In elaborating on the changes required to address the substance and processes of sustainable urbanisation in its economic, social and environmental dimensions, this section focuses on what can be considered the supply-side of the sustainable cities equation: infrastructure and services, the physical built environment and the spatial form of the city (left side of Figure 2). To varying degrees, governments have powers and tools to make a profound change in these domains if they are able to carry out a systematic program of policy reform (right side of Figure 2).



Source: authors

Both aspects of the sustainable urbanisation policy agenda require up-to-date data and research and scientific capacity not only to generate the local data but to interpret it to advance innovation and policy efficacy in locally appropriate ways. This is why the development of effective research-policy interface mechanisms are so important at all levels of the multilevel governance agenda – global, regional, national and local.

Although urban innovation is by definition a local imperative, the New Urban Agenda suggests that a substantive programme of urban policy reform that is ambitious enough to respond to the 2030 Agenda will

likely be set out in the National Urban Policy of a country. While there is no template for nations to engage in urban transformation there is an expectation that members will report to the United Nations using a ‘National Urban Policy’ of some form. Accepting that there will be huge variation in the form and process of national urban deliberations, it is nevertheless useful to briefly elaborate on the elements that might be covered by a deliberative engagement on cities at the national or even regional scale. The proxy of a ‘National Urban Policy’ provides a heuristic device to establish a shared vantage point across the G20 countries on what

sustainable urbanisation means in terms of substantive policy domains and multi-level governance reforms (left hand side of Figure 2). We return to these priorities for urban transition in setting out the scope and form of an ideal policy-research interface in section 5 below.

The normative vision set out in the 2030 Agenda requires a dramatic transformation across almost all aspects of public action ranging from health to education and service provision. Amongst others, one critical element in securing a more sustainable city lies in rethinking the resource-intensity and quantum of pollution that accompanies economic development. Box 1 provides a perspective from the International Resource Panel linked to United Nation Environment Programme (UNEP) that clarifies the stakes of how future cities are to be built.

context for such exchange and learning. Think tanks can play an important role as strategic intermediaries within these forums, bringing research and policy in close conversation.

Apart from infrastructure hardware and resource flows, sustainable urban metabolisms will also require a social-cultural revolution so that the popular or general conception of what constitutes a “good life” becomes delinked from a modernist ideal that is tied to car-based mobility and mono-functional suburban planning and land-use (The Global Commission on the Economy and Climate 2014). A sustainability-oriented system of cultural aspiration, for example using walking, biking and public transport as the standard mode, needs to become the norm in rich and poor urban contexts. This depends on strong political leadership and economic

Box 1: Resource decoupling from economic growth

To maintain stable future economies and natural life support systems, resource productivity increases would need to be greater than the rate of economic growth for the world as a whole. This is called “decoupling”. Decoupling can either reduce the use of resources absolutely as an economy grows, or only relatively – so that the rate of increase in resource use is lower than the growth rate of the economy. With absolute decoupling, in contrast, resource use declines, irrespective of the growth rate of the economies. Indeed, for resources – although pressures differ greatly by resource and country – approximately a factor five improvement [...] in total resource productivity by 2050 would be required for OECD countries (resulting in just 20 per cent of today’s material usage/unit of production), including also the resources embedded in the goods and services they import from other countries. This implies that each unit of production is produced using between 25 per cent and 10 per cent of its current resource inputs by 2050 [...], a much greater rate than resource productivity gains previously seen. The ways in which resource flows are mediated by infrastructure systems, the built environment and urban form can be a major contributor to achieving this efficiency (UNEP 2014: 6–7).

Resource efficient urban production will require partnerships between business, governments, and consumers. The pricing of inputs and costing environmental externalities such as pollution will be an important driver to achieve this level of efficiency. As important will be the resource efficiencies of urban mobility systems that are constructed and maintained by governments. Long-term integrated infrastructure plans will become vital sites of policy development where these goals will be addressed and international and national policy forums will have to provide the deliberative

incentives – new employment opportunities and new forms of wealth and higher urban densities.

International scientific research and policy development since the 1992 Rio Summit on Sustainable Development has taken us a long way in understanding the dimensions of more sustainable physical patterns of urban development in different economic settings – high income, middle income and low-income countries. More is required. For the sake of clarity and ease of debate, it is possible to identify three broad areas of reform to shift urban metabolisms – infrastructure and

services, built environment and urban form – which all in turn require much higher levels of private and public resources, and where appropriate indigenous knowledge systems, to conduct the necessary research to move from concept and proposition to large scale deployment of sustainable technologies and systems. As in the case of social and economic innovation for sustainability, effective think tanks have a key role to play in brokering an innovative milieu that draws in different disciplines and professions as well as linking researchers and practitioners – as reflected in our example from the UK in section 4 below.

In terms of infrastructure and services, both households and businesses depend on network infrastructure systems to ensure that they can access essential services such as energy, water, waste treatment, mobility and so forth. The health of the city will also be shaped by these physical interventions. However, the professional standards developed by engineers in an era of abundant and cheap fossil fuels have been designed to support the car-based city and the over consumption of scarce natural resources, such as water. Moreover, the norms and standards for buildings produced an urban environment that were far too energy intensive in terms of embodied energy (a bi-product of the pervasive use of concrete, steel and aluminium and the energy needed to warm and cool poorly designed structures). These forms of unsustainable city building are not only found in affluent nations but are being rapidly exported to all areas of the globe via global construction megaprojects and new town development – often on a low density layout. It is against this backdrop of generally weak urban government in the parts of the world that will see major city expansion that there is recognition that we need an infrastructural and morphology transformation, which will require new cultural norms and new business models and value chains (in both public and private sectors). The reference to resilient infrastructure, safety and health in the 2030 Agenda denotes the interface of the physical/social/economic/ecologic form of the city as a major area of global policy development and debate.

In fact, the case has convincingly been made that it is impossible to achieve a sustainability transition without dramatically changing the nature and functioning of infrastructural system. According to Bhattacharya et al. (2015: 11), “Sustainable infrastructure is infrastructure that is socially, economically, and environmentally sustainable.” Social sustainability denotes access to sustainable infrastructure for those who do not have a dignified quality of life due to poverty. Economic sustainability refers to infrastructure investments that produce higher GDP per capita and job creation without creating crushing debt or reinforcing uncosted environmental externalities. Environmental sustainability reflects “infrastructure that establishes the foundation for a transition to a low-carbon economy. Environmentally sustainable infrastructure mitigates carbon emissions during construction and operation (e.g., high-energy efficiency standards). Sustainable infrastructure is also resilient to climate change” (Ibid. 11). These definitional reflections remain broad in part because the literature on sustainable infrastructure is still in its infancy and clearly the discussion about city building must be infused with attention to not only the material or resource aspects of sustainability but to deliberation on how urban form can enhance social and economic vitality too.

In practical terms one can sketch the broad contours of the differences between traditional infrastructures versus more environmentally and socially sustainable approaches (Table 1). A number of possibilities for adopting low-cost, labour intensive approaches to urban infrastructure exist at local level, but to be scaled up and robust these local efforts must articulate with city-wide networks, which may involve community-based organisations, social entrepreneurs and non-governmental organisations, as well as national and regional systems.

Table 1: Socio-technological options available when creating institutional hybrids

	Local	Network	National and regional
Energy provision	Off-grid micro solar systems inter-operable with smart-grids; efficient biomass stoves, community grids; neighbourhood-scale waste to energy systems, articulated with the network system; subsidies for demand-side management	Off-grid micro-energy (solar, biogas) interlaced with a city-wide expanding grid fed by a dynamic energy mix; bilateral power-sharing with industry connected to appropriate building regulations, extension of access, retrofitting public buildings	Integrated energy planning involving coal, hydro, gas, liquid fuel, renewables and demand-side management. Increased supply, decarbonising utilities, better-integrated regional power pools, reduced transmission losses, implementing policies that prevent anti-competitive behaviour from multinational hydro-carbon companies so as to allow new renewable entrants.
Water and sanitation	Hand-held and community water purification, bio-centres, community-run biodigesters and biogas projects, permeable paving locally manufactured and installed, aquifer recharging.	Water treatments and sanitation, effective water pricing, biodigesters for purification, preservation of wetlands, rainwater harvesting, greywater recycling, composting toilets and showers.	New dams (linked to energy), inter-basin transfers, trans-boundary water-sharing agreements
Waste management	Waste-picking and recycling, school programmes, waste-to-energy	User-pays waste charges, demarcation of space for recycling, biodigesters, upcycling, composting	Packaging legislation, hazardous waste legislation, waste transport legislation
Mobility	Densification, dedicated mass transport lanes, connecting pedestrians with retailers, vehicle parking restrictions, secure bicycle parking facilities	Taxis, car-pooling, ICT and virtual business, motor/bicycle delivery services, electric bicycle facilities, bike share schemes, Bus Rapid Transit system	Inter-city connections, regional transport hubs, rail-freight, fuel-quality control

Adapted from: Cartwright 2015

Achieving an urban energy transition is central to achieving the SDGs, the Paris Agreement and the New Urban Agenda. Climate change targets agreed to at global level, and substantiated in (Intended) Nationally Determined Contributions fundamentally depend on delinking from fossil-based energy sources and adopting renewal energy strategies. Recent technological advances have turned the renewables sector into a profitable and competitive segment of investment. In the USA, renewable energy now accounts for more employment than coal, gas and oil combined (US Department of Energy 2017). The renewables revolution is an important catalyst for the transformation of other infrastructure sectors but to make progress cities will have to provide energy in new ways that embrace renewables and also make the commitment to more energy efficient denser urban form.

The second catalytic infrastructure transformation pertains to mobility efficiencies. Urban economies, and by extension the global economy, depend on the efficient circulation of goods and people to optimise value along the entire production and distribution value chain. The high yielding service sectors in turn depend on high speed and reliable Information and Communications Technology (ICT) infrastructure, and since the workers in these sectors constantly travel and move between home and work, they are also impacted by the efficiency of urban mobility systems. The research consensus is clear: sustainable cities require low-carbon and highly efficient mobility and data systems for people and goods. This is much easier to achieve and finance if a given city is relatively compact, or at least comprised of multiple high-intensity nodes that can be connected to achieve a highly variegated, diverse and well connected urban fabric. In other words, an urban mobility system that is dense and predominantly based on a

public transport-based network of circulation will be much more resource efficient, carbon efficient, and oriented towards the public realm and cosmopolitanism. Ensuring that transit oriented development is affordable and integrates segregated cities, reducing spatial mismatch and enhancing access to jobs, rather than the more normal housing-led sprawl is a central logic of new city construction e.g. across the emerging cities in Africa and thus one obvious way of advancing the implementation of the 2030 Agenda. That these urban strategies works so well with the imperative to improve human health, reduce risk and improve air quality speaks to the centrality of urban intervention in realising the full suite of 2030 Agenda including the SDGs, targets and indicators.

Energy and transport are not the only priority sectors for sustainable infrastructure. One of the most dramatic impacts of climate change variability is that water scarcity is likely to worsen, especially in peripheral rural areas, and future geopolitical conflicts are likely to flare up around water scarcity and control. These pressures and the potential for rising social tensions, conflict and crime will increase with continued urbanisation and the expansion of the global population to more than 9 billion people. To mitigate these risks in urban areas it will be essential to transform the city tax base and re-cost the processes of water harvesting, usage, loss and distribution. More sustainable approaches include effective service payment of stepped tariffs that track affordability and availability of water and vital policy measures to ensure off-stream dams, household scale water harvesting, grey water systems ('toilet to tap'), fixing leaky pipes and building community-based social enterprises to optimise efficiencies. Furthermore, at a broader scale industrial agriculture based on irrigation will have to be changed to cater for more efficient

small-scale modular systems and non-water based urban farming infrastructures. To date – despite widespread agreement on these priorities there remains inadequate specific research on how to implement sustainable urban water management and it is only the fact of undesirably low levels of consumption by very poor households that makes water provision viable.

The central argument across diverse infrastructure and service sectors is that much greater resource consumption and pollution efficiencies can be achieved in cities, but it requires careful articulation of different sectors in relation to new spatial planning and land-use norms so that more efficient, accessible and equitable urban forms can emerge over time. Public sector infrastructure and service investments are undoubtedly the primary lever to drive these transformations and bring the private sector and citizens along in the process. It is becoming clearer from various experiments across the world that ICT can be a “game-changer” in accelerating and enabling this infrastructural-spatial-land-use transition onto more sustainable pathways. However, a lot more research is required on the affordability and appropriateness of these technology-based solutions before cities (especially unequal and generally poor cities) are again locked into unsuitable pathways that only serve elites (World Bank 2016).

ICT and other innovative urban investments tend to fail if they are not part of a larger framework of institutional reform that promotes sustainable urbanisation in its different dimensions. Most cities that remain wedded to sector-based infrastructure planning and investment, combined with reactive land-use management will resist the introduction of sustainable infrastructure approaches and the retooling of the building materials norms and standards. It is therefore as important to unpack and advance the “soft” institutional reforms that underpin the multi-level and sector-bound governance systems in G20 countries. This is a large policy agenda but four aspects stand out in terms of advancing integrated innovations across the imperatives of infrastructure and services, the built environment and planning approaches that shape the urban form of the city:

- i. **Aligning planning and regulatory norms** so that business and citizens are encouraged to invest in new infrastructural technologies and building materials. An important dimension of this will be a culturally appropriate package of incentives and disincentives so that both moral and market values can be activated. The planning domain offers a larger number of opportunities for active participation by interest groups from business, the academy, civic formations and the public at large. Increasingly e-governance tools can also be deployed to allow citizens the opportunity to instantaneously engage public institutions and make their preferences known. The participation revolution linked to the assertion of the right to the city is an important driver of reform planning and regulatory norms to ensure the deployment of more efficient spatial dynamics and reinforcing infrastructural operations. However, a task for think tanks at the city and country level is to understand the cultural nuances of political systems, understand technical and fiscal capacity constraints and to propose both viable and aspirational interventions.
- ii. **Aligning the intergovernmental fiscal systems** that drive revenue and expenditure to land-use and infrastructure investments and maintenance. This domain is critical because it must advance the principle of subsidiarity endorsed in the 1996 Habitat Agenda and more recently in the New Urban Agenda. In most parts of the developing world local government remains weak and under-resourced due to fiscal frameworks that concentrate resources and powers at the national and regional levels or fail to give local government adequate fiscal authority over settlement management (either because of large scale privatised development or pervasive settlement on common land that is not fully incorporated into the land tax or regulatory system). This all has to change to empower urban government to optimise the integration and calibration of raising taxes locally and land-use regulation with promoting resource efficient and accessible infrastructure and services that will promote local economic development.

iii. **Promoting integrated investment models** to optimise the potential synergies that derive from integrated sustainable infrastructure, especially at the sub-national scale. In the first instance this requires identifying the drivers of sectoral operations in the public sector that reinforces fragmented investment approaches. Public sector reform is a precondition for adaptive, response and participatory governance as few traditional governments are structured to allow sustained public engagement. Partnership-based service delivery is a necessary aspect of sustainable infrastructure because decentralised models of service delivery become possible. The most striking example involves micro electricity grids that are installed and operated by local community associations through grants, and that works in tandem with new private energy companies that pioneer renewable energy systems; all operating within a national regulatory environment that seeks to grow renewables and optimise integration with related sectors, e.g. waste management or electric public transport fleets, and so on. The operational and financial details of innovation like this demand technical as well as local knowledge and deliberative forums within which agreements can be reached between the actors involved in the system. Given the regional impact of the investments in large infrastructure city regional approaches and institutions will be necessary.

iv. **Promoting substantive participation and effective partnerships.** This is important against a backdrop of three decades of policies that promoted the marketization of public services. An important negative aspect of privatisation and corporatisation is that it tends to reinforce sectoral fragmentation and frustrate joint-up planning and delivery of services. The true transformative potential of sustainable infrastructure combined with polycentric urban forms is that it depends on the activation of citizens and rights and the involvement of all other relevant stakeholders. The active participation of stakeholders and effective partnerships are critical elements of the 2030 Agenda. Sustainable urbanisation, given its complex commitments to economic,

ecological and social values, cannot be achieved without a radical reformation of the governance of urban territories and by extension of the organisation of the multi-level governance system. In some contexts this will imply greater stakeholder participation, in others (especially very poor cities) where residents already carry much of the burden of running the city; it will require an expanded role for the state. Substantial research and experimentation will have to be carried out to gain an understanding of how best to structure and promote effective participation in urban planning and governance whilst supporting effective partnerships.

This institutional urban reform agenda for infrastructure alone requires strong voices from the local level to secure the interests of local territories, but it also demands strong leadership and commitment from higher levels of government and the multi-lateral system to ensure the enabling environment is there. The constituent members of the G20 engagement groups (T20, C20, W20, L20, B20, S20 and Y20) should be engaged on how one can strengthen these sectors at all levels of the multi-governance system. By fostering knowledge exchange on prerequisites, strategies and lessons learned better coordination, use of synergies and harmonisation of individual efforts both among engagement groups and G20 countries can be achieved. Adding up the dimensions and layers of urban policy reform is overwhelming, especially when we acknowledge that there will be tensions and competing imperatives as to what should be given priority, that there may be contradictions between the different interventions and that our knowledge on what the most important aspects of change are limited: but it is also very exciting. The imperative of maintaining sustained political support to follow through on the urban ambitions of the 2030 Agenda is precisely why it is essential for the G20 to embrace evidence-driven policy reform and innovation that deals overtly with sustainable urbanisation.

3. THE G20 AND THE URBAN RESEARCH-POLICY INTERFACE

The restoration of global economic growth and (financial) stability has been a priority of the G20 since its inception. This has been combined with a concern with long-term sustainable development, as evidenced by the creation of the G20 Development Working Group (DWG) in 2010. The various G20 Action Plans for development adopted over the past years have sought to add value to and complement existing development commitments, such as the Millennium Development Goals and more recently the 2030 Agenda. However, urbanisation has yet to feature directly or prominently on the G20 agenda.

A review of G20 summit documents indicates that the term ‘cities’ has only featured twice: once under the rubric climate change and green growth in the 2010 Seoul summit document and once with reference to urban mass transportation infrastructure projects in the 2012 Los Cabos G20 Leaders Declaration. There was also a world Café on cities in the lead up to the G20 Brisbane meeting. The “G20 Action Plan on the 2030 Agenda for Sustainable Development” adopted in 2016, however, lacks a comprehensive understanding of the urban issue/sphere. In it, the G20 identified 15 Sustainable Development Sectors (SDSs) in which the existing activities of the G20 are bundled given their linkages to the SDGs. However, the Action Plan only mentions the SDS infrastructure as directly linked to SDG 11 on urban issues (G20 2016). This narrow framing misses the opportunity to treat the pursuit of sustainable urbanisation as a high impact catalyst to achieve the interdependent and holistic intent of the 2030 Agenda.

Urban experts across G20 countries agree that the G20 has not fully grappled with the importance of urbanisation, stating that discussions on urban development in the G20 context have been “superficial”, “unsystematic” and “lacking a coordinated approach” (see annex 1 on experts consulted). In part this is because there is no underlying conduit or structure in G20 engagement

groups directly mandated to deal with urban issues and bring the evidence on urbanisation to the attention of members. While the G20 in its G20 Action Plan on the 2030 Agenda has pledged to “*continue facilitating learning, dialogue and exchanges of experiences and good practices [among various stakeholders including] the public sector, the private sector, and research institutes, with the objective of developing effective policy*”, it has not yet established any guidelines, mechanisms or incentives that would strengthen the urban expertise of G20 engagement groups or that link groups such as the T20 up to existing 2030 Agenda related urban research initiatives.

Urban issues have also not featured on the T20’s agenda since its creation under the Mexican G20 Presidency in 2012. A review of the mission and activities of T20 think tanks shows that few of them work directly on urban issues, although numerous are active in the field of climate change and sustainability (see annex 2). Instead, the focus of T20 members has been inadvertently rather than overly urban – with issues framed in line with the G20’s key pillars of development, as outlined in the G20 Multi-Year Action Plan on Development adopted in 2010: infrastructure; human resource development, trade; private investment and job creation; food security; growth with resilience; financial inclusion; domestic resource mobilization; knowledge sharing (G20 2010). Even recent events such as the T20-Africa meeting that took place in South Africa in February 2017 did not feature a specific urban focus, while the focus of the recently created S20 (the institutional mechanism through which the science community is now included into the G20 process), has been on global health (and did not include a focus on urban health).

The integrative concerns that make the discussion about the future ‘urban’, such as the role of subnational government, spatial policy or the complex systems interaction have also not been collectively acknowledged by G20 countries (though some nations have made greater

progress). As indicated in Section 2, what makes the 2030 Agenda a transformative agenda is the acknowledgment of the wider impacts of the complex interactions of flows through cities across time, space and sectors. There is thus the imperative of understanding the interdependency of social, ecological and economic values in cities and across territories going forward. This ‘urban dimension’ of the sustainability challenge is a layer of thinking in which the G20 has yet to engage and on which the T20, given its current areas of expertise, is not fully equipped to speak.

In pushing for the inclusion of the urban dimension in international development commitments, the urban research community on its part has insufficiently engaged with international fora such as the G20. In part this is because the urban scholarly community is diffuse. The run-up to the adoption of the 2030 Agenda saw the mobilization of vast resources, knowledge and initiatives in pushing for the inclusion of an urban goal, for instance through the Campaign for a Urban Sustainable Development Goal. Major urban networks and institutions such as UN-Habitat, Cities Alliance and local government associations such as United Cities and Local Governments (UCLG) and Local Governments supported the global urban campaign for Sustainability (ICLEI), but no clear forward looking strategy was formulated as to the knowledge and capacity required for the implementation and monitoring of an urban goal.

The lack of a clear policy engagement on urban issues that emerge from the SDGs is also not a simple reflection of the lack of appropriate knowledge. Academic urban research has been burgeoning across the world through the creation of new urban research institutes, regional and transnational urban research networks and new methods of urban knowledge co-production, but these hubs of academic excellence remain disconnected from institutional UN-led urban research and from local, national and global policymaking. Leading urban scholars admit that: “urban research is disparate, marginalized and ill-prepared to interact effectively with global policy” (McPhearson et. al. 2016). A core problem is that the academic discussion about development and urbanisation has, largely, been uncoupled. The deliberation on cities often takes place in isolation from research on health, education or water scarcity: a disjuncture that is seen most obviously in allocations of

international financial resources where the impact of urbanisation on other sectoral interventions (like health) has been largely overlooked. For the G20 the challenge is to ensure both a focussed debate on urbanisation and also the mainstreaming of the urban in the other pillars of development. One example of this is the key domain of health research which includes significant opportunities for much closer research-policy engagement on the interface of the physical form of settlement and the burden of disease.

There are several explanations for why research, science and policy are not currently well articulated around the urban aspects of the 2030 Agenda, the most important of which is geographical orientation. Existing (funding for) research on urbanisation is largely based in the North, even though most urban growth in the next three decades will take place in lower income countries in Asia and Africa. Cities that are expected to experience the greatest increases in population have the fewest financial resources per capita to address the multidimensional challenges that are associated with rapid urban growth (Beard et. al. 2016). Moreover, these cities are least represented in international fora such as the G20. For instance, while the G20 counts India and China amongst its members, South Africa is its only member of a continent that by the end of this century is expected to make up a major part of the world’s urban population (UN 2014; Hoornweg and Pope 2016).

The G20 therefore faces a unique opportunity to use its position as a global leadership forum to strengthen and re-align the existing research amalgam on urbanisation and to channel resources on urban research to where they are most needed and where they will have greatest impact. In doing so, it can contribute towards the creation of the necessary transformative evidence base for global policy and provide much needed leadership around the monitoring and implementation of the 2030 Agenda. Given the centrality of the urban question across the new multi-lateral agreements, it is imperative for the G20 to skill up on cross cutting urban issues, such as risk, food, infrastructure or health, if it is to provide overarching leadership in the global policy implementation. To be effective this will require the implementation of the 2030 Agenda to open up the deliberation on urbanisation through a multi-stakeholder approach.

4. BUILDING ON EXISTING G20 AFFILIATED URBANISATION RESEARCH CAPACITY

Although urbanisation has not featured systematically or comprehensively on the G20 agenda, the G20 has successfully advanced many related issues over the past years, such as climate change and infrastructure. The G20 has collaborated with international organisations and multilateral and regional development banks on urban issues and the research developed and funded by individual member states at the national and regional level bears great relevance to the sustainable growth of cities across the world. In seeking to expand its urban remit, this section reviews some of the entry points and existing G20 affiliated urban research initiatives.

Global knowledge initiatives

Across the multi-lateral system National Urban Policies (that may range from a centralised formal process driven by a Presidency or Treasury to a loose cluster of initiatives from cities, civil society, business and/or national departments) are seen as the apex of the research-policy interface, integrating complex primary information on cities and the settlement system and pointing to priority local interventions. National Urban Policies represent the point of convergence between local, national and global policy interventions and speak simultaneously to the 2030 Agenda, Climate and Risk commitments and the New Urban Agenda (UN-Habitat 2016b). As such National Urban Policies are a portal into the global urban debate that the G20 might want to explore further.

Multilateral partners to the G20, such as the OECD, Cities Alliance and UN Habitat, are set to play a crucial role in supporting the development and implementation of National Urban Policies as key knowledge-generating policies. Since the Pittsburgh summit in 2009, the OECD has been an active partner of the G20 in its efforts to strengthen the global economy, accelerate recovery from the crisis and promote a more harmonious rules-based globalisation process. Hallmarks of the

OECD approach are peer reviews and learning, monitoring and statistical reporting, policy dialogue and soft law. It also aims to foster private sector responses to global challenges. Especially in the global south, where civil society is a major urban service provider, the OECD methods and stakeholders will need expansion to include non-governmental actors who, in the absence of strong or facilitative states, are currently major city builders and service providers.

Under its regional development unit, the OECD conducts national-level Urban Policy Reviews, which evaluate the role of central government in urban policies, and provides recommendations to assist policy makers in achieving their policy objectives. Reviews of cities and metropolitan regions are also conducted in collaboration with local governments (cities, regions and other sub-national levels of government) and central governments with a view of enhancing the economic competitiveness and attractiveness of cities, improve policies put in place to strengthen social inclusion and environmental sustainability, assess the environmental performance and climate change vulnerability of cities and identify obstacles to competitiveness and sustainable development. The OECD has applied its method of peer reviews in more than 25 cities and metropolitan regions, including most recently Mexico, South Africa and China.

In 2016, in line with the universal mandate of the 2030 Agenda, the OECD adopted an Action plan on the Sustainable Development Goals in which it outlines four areas of action: 1) apply an SDG lens to the OECD's strategies and policy tools; 2) leverage OECD data to help analyse progress in the implementation of the SDGs; 3) upgrade the OECD's support for integrated planning and policymaking at the country level, and provide a space for governments to share experiences on governing for the SDGs and; 4) reflect on the implications of the SDGs for OECD external relations.

It makes sense for G20 countries to use this knowledge resource to enrich the deliberations that will take place in their domestic urban policy forums, whether it is at a global, regional, national or local level.

Global science-policy dialogue

While outside of the OECD the research machines of the G20 have not yet comprehensively dealt with urbanisation, it is unfair to suggest that the G20 is ill-equipped to lead globally on issues of urbanisation. Indeed, it is the research energy and investment of G20 countries that underpins the call for a paradigm shift on infrastructure and socially inclusive urbanism that was set out in Section 2. In addition, a major element of the research base underpinning the post-2015 agenda is the outcome of research on global environmental change, funded in large part by the G20 countries and the European Union. Expert evidence that guided the Paris Agreement on Climate Change, the 2015 Sendai Framework for Disaster Risk Reduction and the UN's 2030 Agenda for Sustainable Development and its SDGs all drew from leading researchers across the G20 (McPhearson et. al. 2016; Parnell, Crankshaw and Acuto 2016; Parnell 2016). Because of that research, international organisations and agencies that are working on climate change, disaster risk reduction and other issues of sustainable development are increasingly focusing on cities and recognizing local and regional governments as important actors in the development, implementation, assessment and review of policies (Stepputat and Van Voorst 2016). The focus on cities in the climate change debate has been considered as “possibly the most important example of the interface of science and policy at the global scale” (Rosenzweig et. al. 2010), but the increasingly urban emphasis of other sectors – energy, health and biodiversity have also been significant and are likely to become more so as the full urban rescaling of major funders (like the Belmont Group) become apparent.

Among some of the central organisations leading city centric research are the Intergovernmental Panel on Climate Change (IPCC), the International Council for Science (ICSU) and the International Social Science Council (ISSC). IPCC is the international body for assessing the science related to climate change. The IPCC was set up in 1988 by the World Meteorological

Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.¹ There have been some suggestions that equivalent levels of effort should be made to take up the issue of evidence on urbanisation (McPhearson et. al. 2016).

For now responsibility for advancing research on the global urban agenda remains largely the purview of natural scientists. The recent IPCC meeting in Nairobi saw a commitment to a stronger focus on cities: on mitigation and adaptation opportunities in AR6 [Sixth Assessment Report, to be published in 2022], a commitment to a special report on cities in AR7 [Seventh Assessment Report, release date to be determined], which raised the possibility of a scientific conference on cities and climate change to be held early in the AR6 cycle. More recently, it selected a team of experts with a strong urban understanding to prepare the IPCC Special Report on Global Warming of 1.5 degrees Celsius. These are major steps being taken to draw cities into the climate change debate and a sign of the increasing realization of the important role that they play (Young 2016).

Beyond the IPCC there are other voices organising for a stronger urban research effort. ICSU (soon to merge with the International Social Science Council, ISSU), a key global knowledge partner promoting a greater focus on cities, drawing from its global members who represent a range of national science councils and disciplines, it works at the intersection of science and policy to ensure that evidence is integrated into international policy development and that relevant policies take into account both scientific knowledge and the needs of science. ICSU actively promotes dialogue and shared understanding between the scientific community, policy makers and society more broadly.² In 1992, ICSU was invited to act as principal scientific adviser to the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro and, again in 2002, to the World Summit on Sustainable Development (WSSD) in Johannesburg. It was also the formal representative of the Major Group on Science in the 2030 process. In this capacity scientists were at the forefront of the urban shift in the 2030 Agenda.

1 IPCC website: http://www.ipcc.ch/news_and_events/docs/factsheets/FS_what_ipcc.pdf

2 ICSU website: <http://www.icsu.org/what-we-do> / <http://www.icsu.org/about-icsu/about-us/a-brief-history>

Building on the ICSU Visioning process from 2009–2011, in 2012 *Future Earth* was launched at the UN Rio+20 Conference on Sustainable Development. Future Earth is an international research platform providing the knowledge and support to accelerate transformations to a sustainable world. A second phase was launched in 2015, to advance Global Sustainability Science, build capacity in this rapidly expanding area of research and provide an international research agenda to guide natural and social scientists working around the world. A dedicated urban knowledge action network has just been launched.

The Governing Council of Future Earth is composed of the Sustainable Development Solutions Network (SDSN), which in 2016 published a guide for stakeholders on getting started with the SDGs in cities (SDSN 2016). It also includes the Science and Technology in Society (STS) forum and members of the Science and Technology Alliance for Global Sustainability. They include the ICSU, the International Social Science Council (ISSC), the Belmont Forum of funding agencies on environmental research, the United Nations Educational, Scientific and Cultural Organization (UNESCO), UNEP, the United Nations University (UNU), and the WMO.³ Each of these multinational structures now has the urban on the research policy agenda – though importantly there is as yet no global platform for urban knowledge integration within the multi-lateral partners – making it harder for researchers to access the right policy makers.

In the shift beyond the formulation of an urban SDG there has been ongoing effort by the science and research community to ensure that urbanisation remains key to implementation of the 2030 Agenda, insisting for example on spatially disaggregated subnational data and on reporting on urban progress on all SDGs, a perspective the G20 might consider endorsing. Several parties played a role in representing the scientific research community at Habitat III and there is an appetite to improve the links between the science and local decision-makers.⁴ What is clear from these ad hoc efforts is that, beyond the local and national scale, there is as yet no multilateral structure whose mandate it is to interface urban science evidence and practice in line with the aspirations of the 2030 Agenda.

Regional initiatives to improve the urban research-policy interface

Traditionally the most effective research policy platforms have been hosted by regional bodies, such as the European Union, that have been able to address specific urban challenges and take on the issues of the integration of the urban system as a core component of urban growth and transformation. Although the EU has possibly the most developed regional urban expertise, with dedicated capacity to address the full range of sustainability issues, share knowledge between members and influence specific policy implementation⁵, it is not the only region where evidence-led learning is a pillar of urban change.

Latin American countries have taken a leading role both in the run-up to the adoption as well as in the follow-up and implementation of the 2030 Agenda, with a particular focus on creating new institutional mechanisms to advance sustainable urban development. At the regional level this involves the creation of a General Assembly of Ministers and High Authorities of Housing and Urban Development of Latin America and the Caribbean (MINURVI). This forum serves as a mechanism to exchange national experiences and best practices and has contributed to the emergence of a strong Latin American voice in urban issues as seen at Quito and especially in discussions on the Right to the City. Initiatives and mechanisms created on the national level reflect high level political will and a strong participatory approach in advancing sustainable urban development. They include the establishment of a Specialized Technical Committee on the Sustainable Development Goals (CTEODS in Spanish) and a High Level Council for the achievement of the SDGs by Mexico; the creation of special committees to oversee the implementation of the 2030 Agenda in Argentina; the creation of an Urban Development National Council in Chile, which brings together stakeholders from national and local government, as well as representatives from universities, the private sector and civil society in building the ‘Chile New Urban Agenda’.

The next general assembly of MINURVI will take place in June 2017 in Buenos Aires. This will be followed by a further opportunity to consider wider urban issues,

3 Future Earth website: <http://www.futureearth.org/who-we-are> and <http://www.futureearth.org/blog/2016-oct-14/future-earth-launches-global-network-urban-research>

4 ICSU website: <http://www.icsu.org/news-centre/news/top-news/icsu-at-habitat-iii-the-united-nations-conference-on-sustainable-urban-development> and <http://www.icsu.org/news-centre/news/top-news/icsu-at-habitat-iii-science-cities-and-visualization>

5 For an overview of the various programmes and initiatives funded by the European Commission which have an urban dimension, see: http://ec.europa.eu/regional_policy/en/policy/themes/urban-development/portal/

as Argentina is the holder of the presidency of the G20 meeting in 2018. As one of the world's most urbanised regions and one that has seen significant recent innovation in addressing challenges of informality, sustainability and security there is much to learn from these Latin American co-operative cross city, trans-government urban interventions.

National research-policy initiatives

There are a number of exemplars of effective national urban science policy engagements in the G20, most obviously in the 2017 G20 host nation Germany where a strong tradition of both local and international urban research and policy dialogue exists. Here we highlight the case of the UK that has a fairly new national research and science-policy engagement on cities and an emerging global urban programme that offers an interesting reflection on how ODA resources might be used post 2030.

There are a number of research-policy mechanisms used by the UK government that include differentiated interventions on cities and the urban system rather than a single National Urban Policy. There is no clear hierarchy in the UK's urban interventions though an independent Government Chief Scientific Adviser, working via the Government Office for Science, has oversight of a team of Scientific Advisers drawn from the academy.⁶ Typically the issues covered relate to core areas of government such as health, education or trade. Under the leadership of the current Chief Scientist the issue of cities was explicitly taken up in 2013 as a science-policy priority using its 'Foresight' process – an initiative to provide evidence on future challenges.⁷ The foresight exercise on the *Future of Cities: Foresight for Cities* reported in 2016 (Government Office for Science 2016). Initially there was discussion about adopting a wider international brief, but eventually it was decided to focus on the opportunities and challenges facing UK cities over a 50-year period, like the 2030 Agenda assessing the national system of cities and the city and sub-city systems.⁸

In addition to the knowledge advisory focus three, individual Research Councils in the UK have from time to time included "calls for research" with a clear policy emphasis on cities: the Urban Transformations Program funded by the Economic and Social Research Council being one of the most recent examples.⁹ Recently a call for researchers to work more closely together on major 'societal challenges' saw the launch of the 'Urban living partnership'. Significantly this was jointly established by the 7 Research Councils and the implementing agency Innovate UK (that falls under the Department of Business, Energy and Industrial Strategy).¹⁰ Part of the logic of this restructuring of the Research Councils now underway is to ensure a focus on transdisciplinary and policy oriented transformative knowledge generation along the lines identified in Section 2.

The science policy interface is achieved via the *Future Cities Catapult* an operational that supports "the development of new products and services, as well as opportunities to collaborate with others, test ideas and develop business models... turn(ing) ingenious ideas into working prototypes that can be tested in real urban settings... once they're proven, help spread them to cities across the world to improve quality of life, strengthen economies and protect the environment."¹¹ The Catapult city-lab model is explicitly concerned with new knowledge and interdisciplinary thinking (especially big data and new forms of visualization) and probes how these can be deployed to address challenges of cities relating to health, mobility and planning – core themes of the 2030 Agenda.

Finally the urban mandate of government is seen as transnational as well as nation. The UK is one of the few G20 nations to meet its commitment to 0.7% of GDP allocated to Overseas Development Assistance (ODA). As part of the Brown and Cameron government's commitment to the old Millennium Development Goals and a consequent spending of 0.7% of GDP overtly policy oriented research dealing with the national and global urbanisation process has expanded

6 UK Government website: <https://www.gov.uk/government/groups/chief-scientific-advisers>

7 UK Government website: <https://www.gov.uk/government/collections/foresight-projects>

8 UK Government website: <https://www.gov.uk/government/collections/future-of-cities>

9 <http://www.urbantransformations.ox.ac.uk>; see also <http://www.nerc.ac.uk/latest/news/nerc/cities-and-water/> and <https://www.epsrc.ac.uk/funding/calls/lowcarboncities/>

10 <http://www.rcuk.ac.uk/research/xrcprogrammes/urban-living-partnership/> and <https://www.gov.uk/government/organisations/innovate-uk>

11 Future Cities Catapult website: <http://futurecities.catapult.org.uk/about/>

dramatically in recent time with several innovative mechanisms deployed. Over the past few years there has been a significant realignment in both ODA priorities and the way that ODA funds are allocated and spent (c.f. the new Prosperity Fund worth £1.3 billion over 5 years). Significantly a portion of the ODA budget has been reallocated to the UK research councils and this has spawned a series of ODA targeted research programmes that open up opportunities for international urbanisation research – especially as it relates to the 2030 Agenda. For example:

- In 2014 the Newton Fund launched a 5 year £735 million contribution to applied research from ODA funds managed and dispersed through 15 UK partners with a matching contribution from local partners.
- The Global Challenges Research Fund (GCRF) is a new £1.5 billion fund that is explicitly interdisciplinary, forward looking and concerned with global challenges that impact the future.¹²

The UK context is not without some problems. Most importantly it is clear that there has to be clear institutional responsibility (and budget) for urban research/policy interaction. An important national portal for government absorption of the urban research in the UK is the Minister of State for Cabinet Office (Cities and Constitution), especially as it pertains to national findings but there is (currently) no dedicated Scientific Advisor on Cities and so urban science advice remains segmented. The national program is loosely constructed and there are no obvious links to regional (EU) or global (G20 or UN) debates on cities. The Department for International Development (DfID) has a clear ODA mandate and could be expected to pick up the urbanisation challenge given the new global policy imperatives, but there is currently limited internal capacity to take forward the evidence produced on urbanisation. With DfID considered an inappropriate overall 2030 sponsor, the Environmental Audit Committee has now been tasked to look at domestic application of the

SDGs. Reflecting a common tension in taking up the universal 2030 Agenda, it is currently unclear which part of government in the UK will hold overall responsibility for cross cutting issues from the Sustainable Development Goals and the New Urban Agenda.¹³

Local: the case of Gauteng and the Gauteng City Region Observatory

A case of strengthening the research-policy interface at the subnational level can be found in South Africa. Gauteng, which officially came into being as one of South Africa's nine regional provinces following the first democratic elections in 1994 (earning its new name a year later), is essentially a city region broadly triangulated by Pretoria, the Witwatersrand and Vereeniging. The Gauteng Provincial Government administers the province with the smallest geographical footprint but it hosts the heart of the country's space-economy. Gauteng's urban profile is dominated by Ekurhuleni, Johannesburg and Tshwane: three integrated single-tier metropolitan municipalities that cover a large geographic and population size.

In view of this unique geographic, political and administrative configuration a political agreement was reached to foster planning in terms of a city-regional perspective. It was also agreed that vital urban data and research should be collected by a dedicated think tank that is funded by the public sector but housed by two of the local universities, Witwatersrand and Johannesburg respectively. The think tank is the Gauteng City-Region Observatory (GCRO). The purpose of GCRO is to generate shared empirical data on various socio-economic, governance, developmental and cultural dynamics in the city-region to inform integrated planning within all levels of government and especially between them. The GCRO is also tasked to engage various civil society organisations with this data to improve the quality of policy dialogue between the public sector and society at large.

¹² Research Councils UK website: <http://www.rcuk.ac.uk/funding/gcrf/>

¹³ UK Parliament website: <https://www.parliament.uk/business/committees/committees-a-z/commons-select/international-development-committee/inquiries/parliament-2015/sustainable-development-goals-inquiry/>



The ongoing work of GCRO is structured around a major Quality of Life survey that is conducted every two years in order to track the impact of public policies, record the levels of citizen satisfaction with public services and identify the most pressing developmental problems that citizens and communities face. For example, the last Quality of Life survey demonstrated the contiguous reforms required for bus-rapid transit systems in the three metropolitan areas of Tswane (Pretoria), Johannesburg and Ekurhuleni to form an integrated public transport system for the city-region as a whole. This puts GCRO in a position to put evidence on the failure of interventions on the public policy agenda to ensure planning processes and investments are better aligned going forwards.

The GCRO acts as a resource for all the governments in the Gauteng province (both provincial and local) to conduct more studies on topics (many of which fall into the categories of sustainable infrastructure and services, the built environment and spatial form) connecting their vast data sets with these new policy orientations. Most importantly, the GCRO hosts a public facing geographical information based portal where the various data sets on key urban issues are spatialized, making it easier for politicians and the public to grasp the scope and complexities of integrated sustainable urban development. Lastly, although GCRO is designed to serve government, it connects with all universities in the region providing scholars access to meta-data sets.

5. TOWARDS AN IDEAL URBAN RESEARCH-POLICY INTERFACE

The international, regional and national research-policy landscape on sustainable urbanisation is in the process of being established. This provides the G20 with a unique opportunity to contribute to broader processes that are being enacted to ensure the implementation of the 2030 Agenda, of which the urban track is a major component. This section explores a proposal for the ideal policy-research architecture inferred by the New Urban Agenda with its focus on National Urban Policies that must aggregate the diverse dimension of urban transformation, and ensure rigorous implementation of commitments made in terms of the 2030 Agenda, the Paris Agreement and the New Urban Agenda.

The G20 can play a major role in stabilizing the emerging research-policy system by fostering extended research on cities within its membership and by creating or supporting an ad hoc joint working group comprised of urban experts on global urban issues relating to the 2030 Agenda. Its output could be passed on to an organisation with convening power to prepare a list of issues that need to be taken up in the G20 context and through the multi-lateral system more generally. A starting point for addressing the global urban component of the 2030 Agenda in this way might include forging a connection with key upcoming events such as the UN High Level Political Forum in 2018 that will focus on “Transformation towards sustainable and resilient societies” and a review of SDG 11. Beyond that it will be imperative to build transformative urban research/science policy engagement across the world with the involvement of different stakeholders, but especially in the poorly resourced areas of rapid urbanisation where there is weak data, uneven scientific capacity and the ability of government to absorb disparate and complex information on urban management is limited. In these contexts a more formulaic approach that streamlines but does not oversimplify urban choices is called for.

Replicating research-policy interfaces to advance sustainable urbanisation

One of the tensions in linking urban research and policy is the disjuncture in the scale of investigation and the differential research and policy capability of different sectors and contexts. In this section we suggest that while household, neighbourhood and city scale investigation is imperative, to have 2030 impact researchers will have to be able to engage the complexity of the urban system at the national scale where critical decisions about budgets, powers and functions and large scale reform and incentives are made. This logic is embedded in the emergent priority being given by the 2030 reporting structures to National Urban Policies (NUP) as the primary research policy engagement platform.

The New Urban Agenda, where the clearest reference to NUP is found, is clearly consistent with the holistic interpretation of the 2030 Agenda. Giving effect to the NUA extends well beyond Goal 11 that deals with sustainable cities and human settlements (although the existence of a NUP is also a proposed SDG indicator). The institutionalisation of the NUA comes down to four interventions:

1. National Urban Policies/Strategies
2. Urban legislation and governance provisions
3. Territorial planning and urban design protocols (e.g. building standards/environment, health and other codes, zoning)
4. Strengthened municipal finance systems

It will be necessary to establish or strengthen research-policy interface mechanisms on all aspects of developing and institutionalising these imperatives. However, in recognition of the newness of this agenda, it is evident that the first step will have to focus on strengthening

in country processes in lead sectors (like transport, education or health) and at national, sub-national and local levels to feed into a National Urban Policy for the given country. In this section we want to sketch a stylized understanding of how effective research-policy architecture might emerge at the national level in support of localising the 2030 Agenda. Given the enormous variation across countries and the existing institutions that will have to be retooled to come in line with the provisions of the New Urban Agenda, we propose this generic perspective and it will become apparent that examples, like that of the high income United Kingdom, discussed in the previous section are compatible with this loose approach.

National Urban Platform

Ideally every country will endeavour to establish a formal multi-stakeholder deliberative forum where the substance of the country's National Urban Policy will be debated and agreed upon. For this paper these entities will be identified as National Urban Platforms/Forums (hereafter we use Platforms). Given the substantive focus on urbanisation, it is understandable that National Urban Platforms will have to be replicated at regional/provincial levels and of course at the urban scale.

Across these levels the constituent interest groups of Urban Platforms, which could take many different institutional forms depending on how a nation allocates its fiscal and human resources, might include the following actors and sectors:

- Relevant sectoral departments of the state and key parastatals with a significant footprint in urban areas and the productivity of urban economies.
- Organised local government as well as various bespoke networks of urban governments that may be in effect in each country.
- Statistical agencies of various levels of government and credible analytical centres in the academy.
- Municipal trade unions.
- Business councils and major private sector players with large investments in the functioning of the built environment (e.g. real estate, finance, insurance, construction, legal services, infrastructure providers).
- Social movements with a significant presence in urban areas and cross-cutting concerns such as economic empowerment, environmental sustainability and culture.
- Academia in the form of universities, and other higher education actors along with scientists working on key aspects of sustainable urban development. It is vital that burgeoning urban science epistemic communities are given a key role in these structures to ensure that there is a credible evidentiary base to the deliberations, and once priorities have been identified, implementation can be tracked.
- NGOs and Think Tanks that are actively working on aspects of sustainable urbanisation.
- International organisations that operate at a supra-national regional scale and globally, but deeply engaged in urban development and institutional building issues in a given country. Various multilateral development actors in the UN system and beyond can be grouped in this category.

Substantive domains of urban policy deliberation

The New Urban Agenda suggests that there are four priority outcomes that must be achieved en route to realising sustainable urbanisation. These can be read in relation to the spirit of 2030 Agenda of leaving no one, and no place, behind: i) universal access to basic services (incorporating SDGs 1, 2, 3, 4, 6, 7, 10 and partially 11); ii) promote adequate housing for all (SDGs 10 and 11); iii) harnessing the economy and creating jobs (SDGs 5, 8, 9, 10, 11); and iv) vibrant culture as the heartbeat of sustainable development (SDGs 4, 5, 11, 16). National Urban Policies must elaborate how the national (and regional/local) infrastructure system will be reoriented towards universal access to services and climate friendly patterns of economic development and mobility.

Given the expansive dimensions of sustainable urbanisation, it will be important for the stakeholders in each country to achieve substantive consensus on how they will prioritise this deliberative agenda. Ideally, this step will be based on evidence generated by credible think tanks that are organised to support National and Local Urban Policy Platforms. These think tanks will also be

important to set out how the conditions in each country (based on evidence) implies specific policy choices that will have to be debated by the stakeholders to forge a systematic plan to ensure effective implementation across the urban system – public sector, civil society and the business sector. Since the imperatives of the 2030 Agenda and the need for holistic strategies will require all actors to unlearn established modes of operation and learning new ones, it will be crucial to build a Research and Innovation “back-end” to the National Urban Platform. There is simply no way that large-scale system change can be achieved without innovation and radical institutional change.

Think Tanks as strategic intermediaries

Think Tanks are fundamentally intermediary institutions that can create a bridge between diverse and conflicting institutional rationalities and priorities. In an era of open data imperatives, large data sets (also known as “big data”), insistence on full transparency and accountability by citizens and civic movements, and a broad-based commitment to evidence-based policy making, multi method think tanks are more important than ever to mediate between the diverse and often conflicting stakeholders listed above. Thus, the optimum approach to strengthen research/policy interfaces is to prioritise the intermediation functions that must accompany the work of local, regional and national urban policy platforms that are designed to influence a country’s National Urban Policy. Furthermore, these in-country platforms can greatly benefit from instructive debates and processes in other parts of the world. Thus, creating mechanisms for the design and circulation of good practices at the global and supranational regional scales is a very important function that think tanks can play. They are ideally placed to accelerate learning and innovation and support processes of reflection and learning in order to continuously improve actions.

6. RECOMMENDATIONS

In addition to making a conceptual case for why an evidence-led global sustainable ‘urban’ development agenda (ideally led by the G20 and embracing among other elements a paradigm shift in infrastructure and urban form) is imperative, we have profiled specific frontiers for expanding critical research-policy engagement. The core assertion is that the G20 can better utilize existing knowledge and generate new ‘urban’ research to advance the 2030 Agenda by sharpening the content and reformulating the research-policy process to enable stronger multi-stakeholder interactions on issues related to urbanisation in the 2030 Agenda. We elaborate on how this can be done in terms of content and process in the form of a series of recommendations below.

Content

Approaching the 2030 Agenda through the perspective of urbanisation is imperative because of the rapid demographic shift. This fact alone must change the research agenda. The simple point is that the dominance of urban population growth and resource consumption means an increasing centrality of cities in meeting climate targets, directing fiscal investments, generating jobs, mitigating social and other risks like migration. The G20 research community would be remiss in not giving fuller attention to the global urban question and its relation to the 2030 Agenda.

The second rationale for a step-change in the way the G20 engages research for the implementation of the 2030 Agenda emerges from acknowledging that a common urban future applies simultaneously to G20 countries and low-income nations. The world is connected through cities not just by the globalisation of trade but by disease vectors, migration of people and ideas and pollution flows. Given this starting point, it is in the interest of all G20 countries that urban research has a global focus. This global urban research agenda is already being pioneered, but will require massive expansion in capacity and reach to have meaningful impact.

Only the resources of the G20 countries are suitable for the large scale complex knowledge generation and policy reform that will put the city and the process of urban change at the core of the analysis of wider global changes. Given the overall importance afforded by the window of opportunity in Africa and Asia but also in Latin America it is imperative that research of the highest standard is generated and used to inform the critical policy decisions that will be made in cities in these regions leading up to 2030.

Third, understanding the multi-location, multi-stakeholder urban nexus and the cumulative impact of urbanisation on other drivers of sustainable development requires a different sort of research. In addition to site specific and sector specialist interventions there are imperatives to synthesise multi-scalar, multi-sectoral understanding of urban complexity. Such dynamic transdisciplinary and transnational urban research agendas will have to operate vertically and horizontally and should include opportunities for knowledge sharing – from inception of the research questions, through the research design and execution, right the way to implementation and assessment. It may also require a whole new type of urban specialist who is able to synthesise and prepare the complex information that policy makers will need to absorb in ways that are digestible and useful for prioritisation and implementation – a central part of this is forging a common urban language or mode of engagement that, while respectful of specialist or expert views, is not locked into particular disciplinary or professional modes that exclude others.

Process

In addition to addressing the global architecture of urban governance and investment, it is clear that research will play a critical role in directing sustainable development action in ways that foreground urbanisation as a driver of global change and prioritize cities and towns as the dominant form of settlement and sphere of implementation of the 2030 Agenda. Given these imperatives for an “urbanised” vision of sustainability, the

centrality of the G20 in the global system, in the multi-lateral process and in the generation of new policy-useful knowledge, we suggest that the German G20 presidency as well as future presidencies reflect on possible ‘global urban’ intervention processes that might include:

1. Re-align the urban knowledge agenda in the G20 itself by:
 - Fostering greater linkages and common understanding between issues of traditional concern to the G20 (trade, infrastructure, finance flows) to include spatial and urban governance concerns in the way that the 2030 Agenda has done.
 - Proposing that G20 engagement groups such as the T20 put a stronger focus on urbanisation in its membership so that G20 meetings are properly briefed on the latest issues. In a new area such as urbanisation it is imperative that the T20 produces clear messages for debate.
 - Ensuring continuity despite rotation of the G20 presidencies, e.g. by establishing an urbanisation working group to allow the G20 to better pick up on and further develop responses to new global challenges such as those associated with the urbanisation of world population and resources. This working group might liaise with other regional (e.g. EU or Latin American) groups as a global architecture of urban policy making evolves.
2. Strengthen the research capacity in and through the G20 to link the 2030 Agenda to the realities of urbanisation by:
 - Focussing on research funding and partnerships through national, regional and global Science Councils and harmonizing the research demands of global reporting across national, regional and global policy development on urbanisation.
 - Using the ongoing research efforts of specialists to define implementation, monitoring and review of the New Urban Agenda, the urban dimension of the 2030 Agenda and National Urban Policies as an opportunity to concretizing policy priorities, knowledge gaps and research lacuna.
- Working regionally (and transnationally) to ensure that the urban agenda is not spatially restricted and is oriented to tackling global urban challenges.
- Focus on areas where rapid urbanisation and urban change will be greatest and where research capacity is least developed.
- Ensure a cohort of international scientific leadership that can synthesize existing urban research and point to policy priorities and knowledge gaps – possible through mentoring programmes for future urban leaders and by providing platforms for researchers to understand the policy imperatives of the 2030 Agenda.
3. Reform the research-policy interface to enable the G20 to link the 2030 Agenda to the realities of urbanisation by:
 - Strengthening the training of urban research professionals and NGOs in the global South
 - Building effective global policy platforms – such as the Future Earth KAN or the Regional Urban Think Tanks run through Cities Alliance Joint Work Programme.
 - Support the reform of the UN system to ensure that it provides an enabling environment for the complex multi-sectoral and multi-scale interventions needed to shift the global urban trajectory – including creating a mechanism for multi sectoral urban exchange in the UN itself.
 - Foster a global information and fiscal architecture that does not discriminate against cities in favour of nations.

7. ADDENDUM

In March 2017 the German G20 presidency took the initiative to stage a first knowledge exchange between representatives of the G20 DWG and three G20 engagement groups (T20, B20 and C20) by initiating a G20 multi-stakeholder dialogue on implementing the 2030 Agenda, using urbanisation as an example. The dialogue examined the role played and contributions provided by G20 engagement groups in the successful implementation of the 2030 Agenda.

The present report was presented at the event and discussed with representatives from the G20 DWG and the engagement groups. Main aspects that were stressed during the discussion include:

- If the growing demand for urban infrastructure is met in a sustainable way it holds great potential for sustainable development and the achievement of the SDGs.
 - Urban decarbonisation will provide a lever towards achieving the goals of the Paris Climate Agreement.
 - A stronger focus of G20 on how to achieve sustainable urbanisation can help in generating real solutions.
 - Need for new ideas on the institutional framework, financial issues and the role of the private sector.
 - The G20 can help effect a change of mindset within the multilateral system.
 - Engagement groups could deliver joint statements on selected topics prioritized by the respective G20 presidency.
 - Recognition of the importance and added value of putting a stronger focus on urbanisation within the G20 agenda, especially regarding the generation and exchange of knowledge on sustainable urbanisation.
- One result of the workshop was the elaboration of joint key messages by the engagement groups. These messages were presented to the DWG by Argentina.
- Engagement Groups recognize that the successful implementation of the 2030 Agenda is a common task. The complexity of the 2030 Agenda and the interdependencies among SDGs require multi-stakeholder approaches. Successful implementation demands combined efforts by governments and non-governmental actors alike.
 - G20 Engagement Groups have specific knowledge on prerequisites, strategies and lessons learned to support the successful implementation of the 2030 Agenda. The G20 needs to unlock this potential by promoting continuous dialogue.
 - Engagement Groups are aiming to deliver joint statements on selected topics prioritized by the respective G20 presidency. The importance and added value of putting a stronger focus on urbanisation within the G20 agenda, esp. regarding knowledge generation and – exchange on sustainable urbanisation was recognized by the Engagement Groups.
 - It was suggested that the G20 DWG in its function as a dialogue platform should institutionalise structured, continuous and timely dialogue and knowledge exchange with all Engagement Groups in future presidencies.
 - Collaboration among Engagement Groups and with G20 needs to be strengthened not only at G20 level but also at national and sub-national levels.

BIBLIOGRAPHY

- Beard, V.A./A. Mahendra/ Westphal, M.I. (2016): Towards a More Equal City: Framing the Challenges and Opportunities. Working Paper. World Resources Institute, Washington, DC.
- Bhattacharya, Amar/Oppenheim, Jeremy/Stern, Nicholas (2015): Driving sustainable development through better infrastructure: key elements of a transformation program. The Brookings Institution, Washington.
- Cartwright, Anton (2015): Better Growth, Better Cities. Rethinking and Redirecting Urbanisation in Africa. Working paper prepared as an input to the 2015 Africa Progress Report Power, people, planet: seizing Africa's energy and climate opportunities. Available at: <http://newclimateeconomy.report/2015/wp-content/uploads/sites/3/2015/09/NCE-APP-final.pdf>
- G20 (2016): G20 Action Plan on the 2030 Agenda for Sustainable Development, Hangzhou. Available at https://www.g20.org/Content/DE/_Anlagen/G7_G20/2016-09-08-g20-agenda-action-plan.html
- G20 (2010): Multi-Year Action Plan on Development, Seoul. Available at: https://www.g20.org/Content/DE/StatischeSeiten/Breg/G7G20/Anlagen/G20-seoul-entwicklung-2010-en.pdf?__blob=publicationFile&v=3
- Global Commission on the Economy and Climate (2014): Better growth, better climate. The New Climate Economy Report. The synthesis report, World Resources Institute, Washington.
- Government Office for Science (2016): Future of cities: foresight for cities. A resource for policy-makers. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516443/gsl-16-5-future-cities-foresight-for-cities.pdf
- Hoornweg and Pope (2016): Population predictions for the world's largest cities in the 21st century, *Environment & Urbanisation* (1), pp. 1–22.
- McPhearson, Timon/Parnell, Susan/Simon, David/Gaffney, Owen/Elmqvist, Thomas/Bai, Xuemei/Roberts, Debra/Revi, Aromar (2016): Scientists must have a say in the future of cities. *Nature* 538, 165–166.
- OECD (2016): Better policies for 2030. An OECD Action Plan on the Sustainable Development Goals. OECD, Paris. Available at: <http://www.oecd.org/dac/Better%20Policies%20for%202030.pdf>
- Parnell, Susan (2016): Defining a global urban development agenda, *World Development* Vol. 78, pp. 529–540.
- Parnell, Susan/Crankshaw, Owen/Acuto, Michele (2016): 2030 Policy Endorsement of a Sustainable Future: Implications for Urban Research, Discussion Paper, Prepared for the ESRC Urban Transformations Programme.
- Rosenzweig C./Solecki W./Hammer S.A./Mehrotra, S. (2010): Cities lead the way in climate-change action. *Nature* 467: 909–911.
- SDSN (2016): Getting started with the SDGs in cities: a guide for stakeholders. Sustainable Development Solutions Network.
- Spence, Michael; Annez, Patricia Clarke; Buckley, Robert M. (2009): *Urbanisation and Growth: Commission on Growth and Development*. World Bank, Washington.
- Stepputat, Finn and Van Voorst, Roanne (2016): Cities on the agenda: urban governance and sustainable development. DIIS Reports, Danish Institute for International Studies, No. 2016:04.
- United Nations (2014): *World Population Prospects: The 2014 Revisions*. United Nations Department of Economic and Social Affairs, Population Division, New York.

- UNEP (2014): Decoupling 2: technologies, opportunities and policy options. United Nations Environment Programme, Nairobi.
- United Nations (2015) UN (2015) Transforming Our World: The 2030 Agenda for Sustainable Development, General Assembly, A/Res/70/1
- UN Habitat (2016a): Urbanisation and development: emerging futures. World Cities report 2016. United Nations Human Settlements Programme, Nairobi.
- UN-Habitat (2016b): Policy paper 3: National urban policy. Preparatory Committee for the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), 3rd Session. New York: United Nations.
- US Department of Energy (2017): US Energy and Employment Report. Available at: <https://energy.gov/downloads/2017-us-energy-and-employment-report>
- WBGU – German Advisory Council on Global Change (2016) Humanity on the move. Unlocking the transformative power of cities. Berlin: WBGU.
- World Bank (2016) World Development Report 2016: Digital Divides. Overview. Washington DC: World Bank.
- Young, Denise (2016): The time for science and cities to work together is now. Future Earth Blog 19 September. Available at: <http://futureearth.org/blog/2016-sep-19/time-science-and-cities-work-together-now>

ANNEX 1

List of consulted urban experts

1. Greg Clark, City and regional development advisor, EU Sharing Cities
2. Michael Keith, Director of COMPAS, Co-Director of the University of Oxford Future of Cities Catapult programme and Portfolio Coordinator Urban Transformations Programme
3. Heide Hackman, Executive Director of the International Council for Science
4. Vivi Stavrou, Senior Executive Manager International Social Science Council
5. Cheikh Mbow, Executive Director START
6. Carlos Dora, Coordinator, Interventions for Healthy Environment, Department of Public Health, Environmental and Social Determinants of Health, World Health Organisation
7. Marie- Alexandra Kurth, senior urban specialist, Cities Alliance
8. Michele Acuto, Professor in Diplomacy and Urban Theory UCL, United Kingdom
9. Jago Dodson, Professor of Urban Policy and Director of the Centre for Urban Research RMIT University Australia
10. Carmel Rawhani, Project Officer Foreign Policy Department and Rudolf du Plessis, Project Officer & Research Assistant Economic Diplomacy Programme, South African Institute for International Affairs
11. David Sweeting, Urban Strategy Adviser Save the Children Australia and Co-chair ACFID Urban Community of Practice
12. Alexander Carius, Managing Director Adelphi, Germany
13. Nuha Eltinay, Director of urban planning and sustainable development, Arab Urban Development Institute, Saudi Arabia
14. Michael Cohen, Professor and Director of the International Affairs Program, New School and member of the U.S. National Academy of Sciences Panel on Urban Dynamics
15. Gabriel Lanfranchi, Director Cities Programme, Centre of the Implementation of Public Policies for Equity and Growth Argentina
16. Clare Cummings, Senior Research Officer, Overseas Development Institute, United Kingdom
17. Yovi Dzulhijjah Rahmawati, researcher Urban and Regional Development Institute Indonesia
18. Rajat Kathuria, Chief Executive at Indian Council for Research on International Economic Relations
19. Rebecka Villanueva Ulfgard, Instituto Mora, Mexico City
20. Irina Iliina, Director Institute of Regional Studies and Urban Planning, the Higher School of Economics, Moscow, Russia
21. Jeong Ho Moon, Director of Global Development Partnership Center at Korea Research Institute for Human Settlements
22. Aromar Revi, Director of Indian Institute for Human Settlements
23. Deputy Minister Andries Nel, Department of Cooperative Governance, South African government
24. Laura Criqui, International urban development fellow, Institut du développement durable et des relations internationales, France

ANNEX 2

List of T20 Think Tanks (selection)			
Name	Country	Urban	Environment/sustainability
Institutional Development Division, Center for the Implementation of Public Policies Promoting Equity and Growth (CIPPEC)	Argentina	Cities programme under working stream state and government	
Lowy Institute for International Policy	Australia		
Crawford School of Public Policy at the Australian National University (ANU)	Australia		Asia Pacific Network for Environmental Governance
Escola de Administração de Empresas de São Paulo	Brazil		Sustainability studies centre
Chinese Academy of Social Sciences (CASS)	China	Center for Urban Development and Environment Institute of World Economics and Politics (IWEP)	
Shanghai Institutes For International Studies (SIIS)	China		
Renmin University of China (RDCY)	China		Advanced Institute for Sustainable Development
International Economics Research at Chatham House	England		
Grantham Institute for Climate Change, Imperial College London	England		Innovating for Sustainable Development programme

Name	Country	Urban	Environment/sustainability
German Development Institute (DIE)	Germany		Department of Sustainable Economic and Social Development Environmental Policy and Natural Resources Management
Institute for the World Economy (IfW)	Germany		he Environment and Natural Resources The Kiel Earth Institute
Research and Information System for Developing Countries (RIS)	India		Post-2015 Global Development Agenda Under Global Economic Issues and South-South Cooperation
Indian Council for Research on International Economic Relations (ICRIER)	India	Challenges and Opportunities of Urbanisation	Climate Change and Sustainable Development
Institute for Economic and Social Research, University of Indonesia	Indonesia		Environmental Economic and Infrastructure Group
Institute for International Political Studies (ISPI)	Italia		Energy
Center for International Public Policy Studies (CIPPS)	Japan		
G20 Research Group, University of Toronto	Canada		
Centre for International Governance Innovation (CIGI)	Canada		Environment and Energy
Ethos Public Policy Lab	Mexico		

Name	Country	Urban	Environment/sustainability
Economic Theory Department, Institute of World Economy and International Relations (IMEMO)	Russia		
Gaidar Institute for Economic Policy (IEP)	Russia		
Institute for Security Studies (ISS)	South Africa	Urban component to African futures and innovation programme	
African Center for Cities	South Africa		
The Economic Policy Research Foundation of Turkey (TEPAV)	Turkey	City Studies programme	
Brookings Institute	USA	Cities and Regions programme with Economic Development, Infrastructure, State and Local Finance, State and Local Fiscal Policy, State and Local Governance as sub-programmes	

Missing think tanks: France, Saudi-Arabia, South Korea

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