INTA – McGill University Collaboration: Urban Development Matrix Project

Initiative for Habitat III

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Matrix Themes

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| T1 Urban Economy          | FORMAL ECONOMY:  
- The triple helix (3H) of university-industry-government relations has become one of the most popular innovation lever models in the last two decades.  
- Growing service and knowledge-based economies.  
- Subsidies and tax incentives attract specific industries to central urban areas (Montreal Software companies, Brazil R&D, China R&D, Malaysia Research, South Africa R&D).  
- Industries are relocating their headquarters internationally to developing economies and spatial relocation to urban peripheries in the Western world.  
- Continued disproportionate investment in first-tier cities of many developing countries.  
- International economic slowdown has limited jobs opportunities for new graduates.  

FORMAL ECONOMY:  
- Growing public concerns surrounding the Triple Helix model that corporate interests may dictate university research agendas.  
- Increased economic congestion in first-tier cities leading to increased costs of doing or starting a business in many prime cities of developing countries.  
- Cities as hubs of one type of industry  
- Post-secondary education is no longer seen as a de facto passport to better job opportunities in places where the job market is saturated.

INFORMAL ECONOMY & MIGRATIONS:  
- Incapability of urban economies and urban formal infrastructure of developing countries to deal with the massive rural exodus exacerbates the growth of slums and the informal economy with numerous economic and social consequences.  
- Informality is closely linked

- Development of new zoning regulations that can adapt to changing local/global economic trends, while respecting the local context and its history.  
- Increasing investment in medium-size cities to minimize congestion and its negative externalities.  
- Coordination failures may prevent the market from achieving such investments and thus governments may be needed to incentivize and push investment in medium-size cities.  
- Need for agglomeration economies to adapt to global market changes (ex. Dealing with manufacturing/rust belt).  
- Importance of incorporating expected future demographic trends in planning the future urban economic agenda. This includes recognizing slums as a legitimate urban form and planning for the provision of necessary infrastructure so as to increase access to services.  

In Detroit, The Empowerment Plan is giving previously homeless women living wage manufacturing jobs and skills-training to produce water-resistant, self-heating coats for the homeless community.  
http://www.empowermentplan.org/  

The jobs that support Denmark’s green living policies and sustainable economic projects represent nearly 3% of total employment.  
http://denmark.dk/en/green-living  

“Organizing in the Informal Economy: A Case Study of the Minibus Taxi Industry in South Africa”:  

World Bank and Cities Alliance “Upgrading for Growth” slum upgrading initiative in Ekurhuleni, South Africa:  
INFORMAL ECONOMY & MIGRATIONS:
● Growing importance of informal economies linked to economic downturns and inefficient formal markets. However, continued formal non-recognition of informal economies and the output they produce.
● Rural-Urban migration in developing economies is exacerbating pressures on the urban economy to accommodate new city dwellers.

to jobs of bad quality, high risks and insufficient social protection. Current poverty dynamics can be exacerbated.

for slum dwellers.
● Need for a redefinition of what “formalization” means so that formalization of the informal economy can better incorporate the active flexibility of informal economies.
● Encouraging government initiatives to create regulatory frameworks for informal sector jobs and incentives to create formal quality education and employment opportunities for unskilled labor moving to cities. For example, increased funding for on-the-job apprenticeships where hiring slum dwellers is encouraged.
● Increased appreciation of the informal sector in terms of women’s work and empowerment of women.
● Potential promotion and regulation of the informal sector (for example by providing infrastructure for stands in specific places) in the outskirts of cities to decrease density pressures in city centers.
● Need to increase global

https://www.citiesalliance.org/sites/citiesalliance.org/files/CA_Images/SUFactsheet_English_0.pdf

“Women Working in the Shadows: The Informal Economy and Export Processing Zones”:
http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1408&context=globaldocs
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<th>Connections and support for greater research and development initiatives in developing countries geared towards their specific needs.</th>
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<td>● Need to diversify the economy of cities to ensure economic resilience.</td>
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| **INEQUALITY:**  
- Witnessing increased economic and social inequalities  
- Spatial inequality exacerbated by overcrowding in slums.  
- Approaching urban development projects in terms of economic rather than social needs, exacerbating urban social inequalities.  | **INEQUALITY:**  
- Greater awareness of social and economic inequalities has led to a rise in social movements and increased instances of population upheaval.  
- Increased instances of popular group formations to meet the urban social needs that authorities do not.  
- Increased in-and out-group divisions coupled with rises in nationalism  
- Isolated spurts of technological innovation with limited social innovation.  | **Greater awareness of the complexity of urban development, and greater understanding that one-size-fits-all models may not be appropriate.**  
- Valuing local knowledge and local skillsets, investing in the local population at market value to reduce brain drain  
- Need to conceptualize the city in a more, on that includes the systematic recognition of slums as a legitimate urban form, enabling their mapping and increasing the possibility for the provision of infrastructure and services.  
- Increasing public-private partnerships to increase corporate incentives for corporate social responsibility and social development.  
- Institutionalizing a definition of basic needs that incorporates UDHR requirements, and the recognition that these are dependent on local context and are subject to change over time.  
- Emphasizing the needs of vulnerable populations in | **The potential of complementary currencies to address social problems**  
- Counter-mapping and participatory mapping for recognition of informal settlements and assessment of local needs  
- Slum upgrading initiatives rather than slum clearance and displacement: [http://www.citiesalliance.org/About-slum-upgrading](http://www.citiesalliance.org/About-slum-upgrading)  
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<th>Options for New Urban Agenda</th>
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<td><strong>ECOLOGICAL TRANSITION</strong></td>
<td>• Damage from extreme weather has an impact on human life, livelihoods, and asset: floods and extreme heat can affect infrastructure, road infrastructure, telecommunications infrastructure, and disrupt essential services such as healthcare.</td>
<td>• The creation of legally binding conventions rather than simple declarations are needed at the global level to make ecological concerns a priority for all.</td>
<td><strong>Strengthening resilience:</strong></td>
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<td>• Many cities have developed climate change adaptation plans.</td>
<td>• Greater anticipation of future demographic trends is needed to pro-actively plan zoning and infrastructure development.</td>
<td>• Flooding and storm protection infrastructure from various leaders e.g. New York, London, Vancouver.</td>
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<td>• Two thirds of the world population will live in cities by 2050 and CO2 emissions from industry, transport, and housing are huge contributors to global climate change. Cities are the hub of all these activities and as such are huge contributed to global CO2 emissions.</td>
<td>• Increased cross-sector integration of climate change concerns into public health, spatial and land use planning: assigning green spaces to alleviate urban heat island, protecting biodiversity, building resilient infrastructure.</td>
<td>• Green infrastructure bylaws and schemes in Toronto and Los Angeles. <a href="http://www.adb.org/sites/default/files/publication/149164/urban-climate-change-resilience-synopsis.pdf">http://www.adb.org/sites/default/files/publication/149164/urban-climate-change-resilience-synopsis.pdf</a></td>
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<td></td>
<td>• Creation of vast urban slums, often devoid of sanitation and state-sponsored social amenities.</td>
<td>• Resilience in urban design, strengthen both physical infrastructure and social fabric through the redesign of spaces.</td>
<td>• Capacity building through knowledge sharing ICLEI: Local Governments for Sustainability (<a href="http://www.iclei.org/">http://www.iclei.org/</a>); C40 Cities (<a href="https://drive.google.com/drive/folders/0B2mrM_lDbQbgbG1CQ1dvVmxtY0k">https://drive.google.com/drive/folders/0B2mrM_lDbQbgbG1CQ1dvVmxtY0k</a>)</td>
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<td></td>
<td>• Poorly planned urban design may exacerbate the risk for the urban heat island and expedite loss of biodiversity.</td>
<td>• Incentivize low-carbon transport, industry, and energy production for housing and commerce.</td>
<td><strong>Decreasing carbon footprint of cities</strong></td>
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<td>• Acting economically often appears to be in competition with being ecologically sustainable.</td>
<td>• Need for monetary resource flows directed toward adaptation and/or mitigation projects, supported with green funds, from current profits from polluting industries</td>
<td>• Copenhagen achieved a 31% reduction in CO2 emissions by 2014. <a href="https://stateofgreen.com/en/profiles/city-of-copenhagen/solutions/copenhagen-carbon-neutral-by-2025">https://stateofgreen.com/en/profiles/city-of-copenhagen/solutions/copenhagen-carbon-neutral-by-2025</a></td>
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<td></td>
<td>• Climate agreement signed in Paris signals global commitment to energy</td>
<td>• Flooding and storm protection infrastructure from various leaders e.g. New York, London, Vancouver.</td>
<td>• City of Oakland bylaw: 50% of construction debris must be re-used in new construction.</td>
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**ECOLOGICAL AND TRANSITION**

- Experienced and expected impacts from climate change will put population, infrastructure, and economic activity at risk.
- Rapidly growing cities are experiencing rising population densities without sufficient creation of public green spaces accessible to all.
- Zoning and infrastructure development in rapidly growing cities of less developed nations is not keeping pace with sprawling patterns due to rural exodus, exerting increased environmental pressures on urban peripheries.
- Major environmental changes associated with land-use transitions and human migration: increasing agricultural land, and growth of cities.
- Rising attempts to enhance public awareness about environmental issues and adverse consumer behaviors.
- Burgeoning, albeit limited and elitist, ‘zero waste’ movement is initiating a paradigm shift, away from rampant and thoughtless consumption towards more mindful and moderate buying.

**ENERGY TRANSITION**

- Decreasing carbon footprint of cities
- Need for monetary resource flows directed toward adaptation and/or mitigation projects, supported with green funds, from current profits from polluting industries

**Illustrative Cases**

- City of Oakland bylaw: 50% of construction debris must be re-used in new construction.
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<td>HEALTH &amp; WELL-BEING:</td>
<td>Linger and sometimes deepening of health inequalities as integration of social, economic, and environmental determinants of health is lacking is public health policies of numerous cities.</td>
<td>Encourage cities to explore models of interactive or hybrid governance</td>
<td>Improving and diversifying modes of transportation</td>
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<td>- Health inequality exacerbated by socio-economic inequality</td>
<td>Urban policies that promote walkability, density, mixed land-uses and public modes of transportation to reduce the negative effects of car-centric cities, which harm economic productivity and the environment</td>
<td>Advocate for safer and better infrastructure in public and alternative modes of transportation, and promote walkability of neighborhoods by institutionalizing neighborhood “Walkscore” assessments.</td>
<td>“America Walks” and “Every Body Walk! Collaborative” campaigns: <a href="http://americawalks.org/partner-directory/everybody-walk-collaborative-2/">http://americawalks.org/partner-directory/everybody-walk-collaborative-2/</a></td>
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<td>- Increased recognition of social, economic, and environmental determinants of health, increasing consideration for upstream impacts on health (i.e indirect causal pathways).</td>
<td>Acknowledging that buildings, streets, and public spaces play a key role in serious public health issues to discourage sedentary lifestyles, which are linked to high rates of obesity and diabetes.</td>
<td>Encouraging the conceptualization of public health as an interdisciplinary field in which doctors, urban planners, architects and builders need to work collaboratively.</td>
<td>Bus Rapid Transit in Bogota <a href="http://www.colombiainfo.org/en-us/cities/bogota/transmile-nio.asp">http://www.colombiainfo.org/en-us/cities/bogota/transmile-nio.asp</a></td>
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<td>- Fast-growing and sprawling cities are growing too fast for municipalities to effectively provide adequate infrastructure and services for all new urban dwellers, augmenting difficulties in the control of epidemic diseases.</td>
<td>New ways of thinking about upstream impacts has allowed health officials to begin considering the root causes of poor health.</td>
<td>Greater emphasis on preventive rather than curative health care is needed, valuing the specific needs of local populations, especially those most vulnerable.</td>
<td>Prevention through knowledge building</td>
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<td>- Increase in focus and attention on human-scale planning initiatives and paradigms</td>
<td>Increasing public awareness concerning social, economic, and environmental determinants of health through informal and formal education initiatives.</td>
<td>Increasing public accessibility to the arts, including cultural and creative activities for the arts.</td>
<td>Building Health Literacy in the United States, activities by state: <a href="http://www.cdc.gov/healthliteracy/statedata/">http://www.cdc.gov/healthliteracy/statedata/</a></td>
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<td>- Increased recognition for, but limitations in implementation of, the role of social support in ageing populations, including the importance of proximity and contact with family and friends for emotional support.</td>
<td>Increasing use of geographic information systems technologies and platforms to improve data on social support in ageing populations.</td>
<td>Capacity building through local civic engagement in the arts</td>
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<td>- In-door pollution is associated with chronic health and well-being.</td>
<td>Double burden of disease is exacerbating in urban areas, where air pollution is growing and increasing.</td>
<td>Public Health Systems and Adaptation to Changing Climate Program”**: <a href="http://www.phac-aspc.gc.ca/hp-ps/eph-nos/iteracy/statedata/">http://www.phac-aspc.gc.ca/hp-ps/eph-nos/ iteracy/statedata/</a></td>
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**Illustrative Cases**

- Improving and diversifying modes of transportation
- Prevention through knowledge building
- Capacity building through local civic engagement in the arts
  - [http://www.artscapediy.org/Creative-Placemaking/Approaches](http://www.artscapediy.org/Creative-Placemaking/Approaches)
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| SCALE OF GOVERNANCE  
- Local units have gained power in larger decision-making processes through a decentralization trend.  
- Urban governance is trending towards a "principle of subsidiarity"  
- Increasing openness and interest in community participation facilitated by online platforms  
- Obsolescence of the state associated with increasing trend towards the local on the one hand, and regional blocks on the other. | SCALE OF GOVERNANCE  
- With decentralization, increasingly lower-level governments are receiving larger mandates and greater responsibilities, but without additional funding.  
- The strength of both local and regional movements creates multiple identities within one state jurisdiction, potentially leading to tensions | Options for New Urban Agenda  
- Cultivating local capacities by providing resources to support public participation of lower income and marginalized communities.  
- Providing smaller scale units of governance with direct access to resources.  
- Increasing the use of social media for improved governance and addressing citizen concern.  
- Need to create structural support for information and knowledge sharing across and within scales of government.  
- Need for greater effective and efficient investment in the welfare state to support demographic shifts and social cohesion. | The Neighbourhood Revitalization Program and empowerment of local residents: [http://www.nrp.org/R2/AboutNRP/Basics/Primer.htm](http://www.nrp.org/R2/AboutNRP/Basics/Primer.htm)  
| TERRITORY FOR DEMOCRACY  
- Privatization and commodification of public spaces and resources, leads to physical exclusion of the citizen and his removal from decision-making influence over the space.  
- Concepts and institutionalization of democratic ideals are unique to space and place; as the boundaries of places shifts, particularly of cities, which don’t have clear boundaries, the influence of a democratic system over people and place changes. | TERRITORY FOR DEMOCRACY  
- Participatory process is often more accessible to higher income citizens leading to increasing tensions and fragmentation.  
- Delayed response to citizen driven issues: government are not keeping pace with technology enabled participation.  
- Accountability is strengthened by proximity to local officials. | | |
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<td><strong>PUBLIC FUNDING</strong></td>
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<td>Allocation of funding needs to be determined at the local level and include the participation of citizens from various social groups to ensure that funds are spent in a socially and economically appropriate way, and go towards smart growth projects and developments.</td>
<td><strong>• ALBA-TCP Trade Agreement:</strong> <a href="http://alba-tcp.org/en/contenido/principles-alba">http://alba-tcp.org/en/contenido/principles-alba</a></td>
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<td>- Crowdfunding platforms are increasingly used to gain financial support for local initiatives.</td>
<td>- Crowdfunding is becoming an alternative way to fund grassroots projects</td>
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<td>- Government-based funding: Pre-existing taxes and tolls (such as highway tolls, gas &amp; diesel taxes, emissions tax) are being rebranded as ‘alternative’ funding methods.</td>
<td>- Public funding methods may be relatively secure, but the allocation and breakdown of said money isn’t always transparent, and goes towards a variety of projects rather than solely smart growth and development efforts.</td>
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<td><strong>PRIVATE FUNDING</strong></td>
<td><strong>PRIVATE FUNDING</strong> Corporate Funding:</td>
<td>Questions and concerns regarding the morality and ethics of profit maximizing corporate mandate</td>
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<td>- Corporate Funding: Cities that are privately funded by CEOs have been increasingly popular (Ex: Tianjin, King Abdullah Economic City, &amp; Yachay).</td>
<td>- Corporate interests dominate to the detriment of local population needs.</td>
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<td>- Religious Funding: The funding or revitalization of religious city centers has been an increasing occurrence in the Middle East and Asia, with countries such as Qatar funding the development of Islamic cities worldwide.</td>
<td>- The presence of corruption in new master-planned city projects.</td>
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<td>- Foreign Direct investment: Developing countries are becoming increasingly attractive foreign direct investment (FDI) destinations, contrasting familiar trends of</td>
<td>Religious funding:</td>
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<td>- Can be exclusionary to those not apart of the dominant religion and may therefore foment divisions.</td>
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<td>HYBRID FUNDING</td>
<td>FDI:</td>
<td>Numerous cities in the developing world have begun to adopt corporate friendly policies and tax incentives to attract FDI</td>
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<td>TRANSPORTATION</td>
<td>● Suburbanization of employment and population growth increasing the need for suburban public transportation.</td>
<td>● Increased flexibility is needed to accommodate dynamic economic and demographic trends; potential increased recognition and legitimization of informal transportation systems to increase access and facilitate flexibility.</td>
<td>Efficient and cost-effective public transportation models</td>
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<td>TRANSPORTATION</td>
<td>● Increased urbanization, increasing the need for public transportation services.</td>
<td>● Understanding transportation and mobility as involving more than the “transported” individual, but also those at the destination (those visited, shop keepers, etc); better integration of mobility, commercial, and residential planning.</td>
<td>● Curitiba rapid bus transport system <a href="http://www.theguardian.com/cities/2015/may/26/curitiba-brazil-brt-transport-revolution-history-cities-50-buildings">http://www.theguardian.com/cities/2015/may/26/curitiba-brazil-brt-transport-revolution-history-cities-50-buildings</a></td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>● Increased use of cars as a status symbol within cultural norms; class mobility toward higher levels leads to increased purchase of cars.</td>
<td>● Using app technology for more effective transportation, increased ridership and for making general mobility safer.</td>
<td>● Bus Rapid Transport in Chengdu, China [<a href="https://nextcity.org/daily/entry/brt-trains-transit-chinas-urban-perimeters-a-transit-invasion">https://nextcity.org/daily/entry/brt-trains-transit-chinas-urban-perimeters-a-transit-invasion</a>, and elsewhere](<a href="https://nextcity.org/daily/entry/brt-trains-transit-chinas-urban-perimeters-a-transit-invasion">https://nextcity.org/daily/entry/brt-trains-transit-chinas-urban-perimeters-a-transit-invasion</a>, and elsewhere)</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>● Increased air pollution of urban centers due to continued incentives to use personal cars.</td>
<td>● Apply the principles of the sharing economy to all modes of transportation to reduce cost of offer and improve service provision</td>
<td>Leveraging ICT to enhance current transportation system</td>
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<tr>
<td>MIGRATION FLOWS</td>
<td>● Increased international flows of money through remittances.</td>
<td>● Design policies to make public transportation a de facto choice for people of all social classes.</td>
<td>● Safetipin app, developed ‘safety score’ for streets and improves urban governance through efficient data collection systems <a href="http://safetipin.com/">http://safetipin.com/</a></td>
</tr>
<tr>
<td>MIGRATION FLOWS</td>
<td>● Increased mistreatment and exploitation of temporary foreign workers and undermining local low-skill workers.</td>
<td>● Increased needs for international migration</td>
<td>● Transit app. Facilitates movement through the city by providing upcoming departure times for all nearby transit lines, giving notifications about disruptions (etc) <a href="http://transitapp.com/">http://transitapp.com/</a></td>
</tr>
<tr>
<td>ICT</td>
<td>● Knowledge transfers as a type of mobility through the use of ICT.</td>
<td>● Walkability, streetart and ICTs. <a href="http://www.paintthisdesert.com/field-notes/-art-as-tool-for-city-planning-and">http://www.paintthisdesert.com/field-notes/-art-as-tool-for-city-planning-and</a></td>
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### Trends

**OFFLINE PARTICIPATION**
- Decline in civic participation through established media.
- Growing disenchantment, largely in the West, with democratic institutions.

**ONLINE PARTICIPATION**
- Increased use of alternative forms of engagement (online, mass social movements are on the rise; mobilization of popular protest movements through digitized means)
- Online participation enables individuals outside target jurisdictions to be involved in local political and social movements.
- Greater institutional inclusion through engagement with the public via social media platforms.

**PLACE, SPACE AND IDENTITY**
- Increasing privatization of public spaces coupled with growing recognition that shared spaces are places of place-making and collective identity building.
- Concepts of citizenship and collective identity are evolving with mass cross-national and national migration movements.

### Breakthroughs/Consequences

**OFFLINE PARTICIPATION**
- Increased mobilization of the public, mostly in the Western world to participate in shaping future urban dynamics and policies.

**ONLINE PARTICIPATION**
- Growth in the number of citizens indirectly involved or trying to influence the dynamics of urban problematics they face.
- Increased obligation for city governments to respond to public pressures generated online.
- Blurring of the frontiers regarding who can get involved in trying to shape urban dynamics in particular places; city governments can now face global public pressure.

**PLACE, SPACE, AND IDENTITY**
- Place-making and identity building through branding of places (i.e. this place is known for a given quality/trait/attraction)
- Loss of quality green spaces, and public spaces in general, reduces the number of location of social and political gatherings
- Large refugee flows are

### Options for New Urban Agenda

- Despite progress in certain cities more transparency and accountability is needed in urban development projects.
- Increased and institutionalized attempts to devolve decision-making to the grassroots; this can be done through increased use of online mass survey systems for greater inclusion of grassroots input (increasing access to online media is needed for this purpose).
- Ensuring that the majority of green spaces are publicly owned to increase inclusive access, and enhancing the quality of green spaces for all in all areas.
- Make quality green spaces places of artistic and cultural activities
- Reconfiguring governance structures such that they are more capable of responding to various means of civic engagement (online and offline)
- Establishing international governance structures that are accountable to

### Illustrative Cases

**Participatory GIS Initiatives:**
- [http://www.ppgis.net/](http://www.ppgis.net/)

**“Cities for People” movement in Canada:**

**“Offline Dimensions of Favela Youth Online Reactions to Human Rights Violations Before Rio 2016”**:
- [http://www.csduppsala.uu.se/devnet/CivilSociety/Outlookserien/2013,%20ClaimCit/ClaimCity_Cust%C3%B3dio.pdf](http://www.csduppsala.uu.se/devnet/CivilSociety/Outlookserien/2013,%20ClaimCit/ClaimCity_Cust%C3%B3dio.pdf)

**“Urban green space, public health, and environmental justice: The challenge of making cities ‘just green enough’”**:
<table>
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<tr>
<th>Trends</th>
<th>Breakthroughs/Consequences</th>
<th>Options for New Urban Agenda</th>
<th>Illustrative Cases</th>
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| **HABITAT LOSS / DESTRUCTION**  
- Habitat loss and fragmentation associated with increased urban and industrial development as well as an expansion of agricultural lands to meet growing food demands.  
- Recognition that biodiversity & nature shape urban ecosystems, contributing to ecosystem services that may make cities more resilient to natural disasters, periods of change, and may help regulate disease vectors, and mitigate pollution.  
- Difficulties in dismantling and changing the popular conception of a binary between nature and the city.  
| **HABITAT LOSS / DESTRUCTION**  
- Exponential increase in greenhouse gas emission and pollution associated with forest destruction and intensification of agriculture to meet growing food demands (and meat demands in particular)  
- Loss of ecosystem functions and services due to land fragmentation, pollution and climate change  
- Replacement of ecosystem services, such as pollinations, pest-management, water purification (etc) is costly, unsustainable, and often time a sources of pollution  
- Geographical spread of disease epidemics linked to weakened urban ecosystems and changes in climatic patterns.  
- Environmentally mindful consumer behavior remains inaccessible to many low-income individuals. | **Institutionalizing the development of monetary values for Ecosystem Services (ES), allowing ES to be better understood across non-natural resource sectors.**  
**Increasing adaptability and resilience of urban ecosystems by enhancing the integration of native species in urban planning initiatives.**  
**Using a variety of native species in urban planning projects to strengthen the resilience of urban ecosystem.**  
**Increasing the concept of sustainable consumption and behavior as desirable in popular thought and extending its accessibility to all income groups without distinction.**  
**Multidisciplinary approach to planning, including ecologist, landscape architects, civil engineers (etc)**  
**Need to preserve, value and maintain the knowledge of a city’s natural history and native biota for climate change tracking and adaption.**  
**A City Biodiversity Index – indicators to self-monitor trends that are based on pillars of ecosystem services, ecology and governance are need for.** | Valuing ecosystem services to ensure their protection  
- Method for valuing ecosystem assessment  
**Greening the city initiatives**  
- Benefits and the example of New York City  
[https://www.asla.org/ContentDetail.aspx?id=43535](https://www.asla.org/ContentDetail.aspx?id=43535)  
- Urban ecology plan in Sydney Australia  
**Urban agriculture initiatives**  
- Agriculture Urbaine Montreal links all urban agriculture activities in Montreal  
[http://agriculturemontreal.com/a-propos](http://agriculturemontreal.com/a-propos)  
- Native plants for ecosystem well-being  
- Native species conservation New York  
| **GLOBALIZATION & MOVEMENT**  
- Increased pervasiveness of invasive species, associated with commercial globalization and movement of people. Native biodiversity is increasingly recognized as a strategy for dealing with inevitable environmental changes. |  |  |
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<td><strong>TECHNOLOGY AND GOVERNMENT MANAGEMENT</strong></td>
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<td><strong>Broadening access to the internet</strong></td>
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<td>● Technologies are becoming increasingly pervasive in the management of cities and governments (e-government trend is in full bloom in both developed and many developing countries)</td>
<td>● Digitization of services - technology used for administrative purposes, monitoring traffic, crime, weather, census data collection</td>
<td>● Increasing and leveling access to means of connection to internet services, for example by institutionalizing a right to an internet connection access in the legal frameworks/codes of cities.</td>
<td>● Google’s “Project Loon” offering balloon-powered internet connection: <a href="https://www.google.com/loon/">https://www.google.com/loon/</a></td>
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<td></td>
<td>● Opening data is made complicated by issues of data ownership, privacy concerns, and reticence on the parts of some governments to disclose data.</td>
<td>● Increasing accessibility of online banking systems for slum and other low-income populations in cities for increased access to e-government services.</td>
<td>● M Pesa system in Kenya <a href="http://www.economist.com/blog/economist-explains/2013/05/economist-explains-18">http://www.economist.com/blog/economist-explains/2013/05/economist-explains-18</a></td>
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<td><strong>TERRITORIAL BOUNDARIES AND TECHNOLOGY</strong></td>
<td><strong>TECHNOLOGY AND GOVERNMENT MANAGEMENT</strong></td>
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<td><strong>Mobile banking and cash-transfers</strong></td>
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<td>● Technology is helping to break geographic barriers, by enabling access to other ideas, transnational movements and global markets.</td>
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<td>● Operations center in Rio, Brazil that monitors dozens of data feeds for information concerning weather, traffic, police, medical services on a real-time basis and anticipate looming problem <a href="http://asmarterplanet.com/blog/2012/03/smarter-leadership-how-rio-de-janeiro-created-an-intelligent-operations-center.html">http://asmarterplanet.com/blog/2012/03/smarter-leadership-how-rio-de-janeiro-created-an-intelligent-operations-center.html</a></td>
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<td>● Civic engagement and organization across jurisdictional boundaries is enabled by web-based applications.</td>
<td>● The dissolution of physical barriers gives local entrepreneurs access to other markets, and ideas, facilitating their upward economic mobility.</td>
<td>● Increasing legislation toward mandatory requirement for companies to sustainably manage technology waste products and invest in recycling processes; this must be accompanied by increased transparency of company processes toward meeting such requirements; taxation policies may increase the incentive to effectively deal with obsolete technological products and waste.</td>
<td><strong>Open data movement to strengthen the resilience of territories</strong></td>
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<td>● Inequalities and dependencies between Western and Third World countries, where low-</td>
<td>● Ineffective and unsustainable management of obsolete technological products, where nor governments nor companies are effectively dealing with increasing waste products in terms of economic and environmental sustainability.</td>
<td>● Increased regulation of technology: need for legal frameworks to keep up with technological advances and to guide the use of technology in</td>
<td>● The international open data for resilience initiative <a href="https://www.gfdrr.org/opendri">https://www.gfdrr.org/opendri</a></td>
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<td>income countries become hubs for transposing of Breakthroughs/Consequences</td>
<td>● Social movements have formed across jurisdictional boundaries, galvanizing support for international issues such as climate change.</td>
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**Introducing Theme 11: Political Transparency and Accountability**
Dr. Sarah Moser

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