Promoting Social Equity and Economic Inclusion in Urban Waterway Development

Michael Tiboris, Fellow, Chicago Council on Global Affairs
Josh Ellis, Vice President, Metropolitan Planning Council
Chloe Gurin-Sands, Associate, Metropolitan Planning Council

June 2019

Introduction

Waterways can be among a city's most valuable assets. They provide transportation, environmental services, economic development opportunities, and access to nature. Today, cities are reinvesting in their neglected industrial waterways as sources for economic growth and urban vitality.

But waterfront development often happens where development is already most active. As a result, its benefits tend to accrue to the wealthier parts of cities, often the downtown core. This trend further concentrates access to the best parts of civic life among a small elite. For cities in which economic inequality falls along racial lines, this development has the potential to further reinforce economic and social segregation.

These features of waterway development can deepen social and economic inequality in cities. It seems possible, however, that cities could use waterway development intentionally as a tool for reducing these divisions and broadening urban prosperity beyond rapidly developing downtowns. This paper builds off of the 2017 Chicago Council on Global Affairs report, "Urban Waterways in Global Cities," which identifies the promotion of equity and social inclusion as among the central goals of waterway development.[1] With these goals in mind, cities must undertake the work of enacting policies that ensure equity and social inclusion in waterway development.

At a bare minimum, existing and planned waterway development must be physically accessible to the public. But that is not enough. This report aims to solicit and examine concrete ways in which urban waterway development might be used by

cities to expressly improve the quality of life and opportunities for economically or socially excluded populations beyond the downtown core. This report provides:

- An assessment of the state of knowledge about water development and equity.
- Advice on conceptualizing and managing eco-gentrification.
- Discussion of the financing opportunities for equitable waterway investment.
- Recommendations and guiding examples for city leaders to use in the design and execution of waterway development projects.

The goal of this paper is to continue and deepen the discussion of waterway development as a social and economic equity building opportunity which began at the 2018 Forum on Global Cities.

The Challenge of Equitable Urban Waterway Development

Improving social and economic equity is one of the great challenges for the current wave of urbanization, which has concentrated wealth and opportunity in city centers.[2] Development has followed this new wealth, along with the simultaneous expansion of sustainability initiatives. Interest in green stormwater infrastructure, more green space, and remediating previously industrial (and often dangerously toxic) land uses has arrived mainly in wealthier, and often whiter, parts of the city.

The benefits of green infrastructure and industrial redevelopment are manifest, and can take place in a variety of ways, including redevelopment of downtown city centers, reclamation of flood plain to park spaces, and post-industrial remediation. These improvements are consistently linked to gains in personal well-being, public health, and rising home values.[3] But lower-income communities and communities of color have seen much lower rates of investment.[4] These communities already start at a deficit, since they are much more likely to be located near un-remediated environmental hazards.[5] For communities of color, *even wealthier ones*, this disparity is still more pronounced.[6] Together this presents a real and serious equity gap which cities must address for social, environmental, and economic reasons.

Waterway development—which includes reducing pollution hazards as well as constructing new amenities—has had special value and attraction for urban centers and wealthier communities. Many cities have transformed previously disused or industrial waterfronts into bustling centers, which have obvious economic, social, and public relations value.[7] There are several connected reasons for thinking waterway development may have even greater value for marginalized urban communities.

First and foremost, contaminated urban waterways are a vector for exactly the sorts of environmental and public health hazards to which these communities are disproportionately exposed.[8] They are contaminated with a legacy of heavy metals, industrial contaminants, runoff from stormwater, and sewage effluent.[9] The resulting lack of waterfront recreational infrastructure—and the potential risk of exposure at existing recreational locations—reduces opportunities for exercise and access to

green space, both of which are connected to gains in individual wellbeing and happiness.[10]

Further, environmentally-conscious development creates new opportunities for business investment in both wealthy and less affluent neighborhoods.[11] Environmental protection and remediation also produce potential benefits in a number of directions beyond public health. These include habitat restoration and environmental services like natural water filtration, reductions in air pollutants, and flood protection.[12] As a result, many of a city's existing goals, including stormwater control, public health, and climate resilience, overlap substantially with waterway rehabilitation and development.

Perhaps most importantly of all, a city should simply want to provide safe, useful, and economically stimulating waterfronts for the entirety of its population. If these things are among the great achievements for thriving cities, then access to them should not be distributed on the basis of wealth or race. Waterways are a unique resource (or liability) for a community. They are also ones that cities have an antecedent interest in protecting and remediating. Rivers can physically connect affluent and less affluent parts of a city and thus can, quite literally, be a pathway for resources to flow between them.

While low-income communities might stand to reap environmental and economic benefits of waterway development, it can create a bind for them. If the investment is not at least partially targeted at fostering non-economic value, long-term multi-faceted support, and an effort to measure and report on progress, the benefits for the people living in these communities will remain aspirational. The biggest challenges for equitable waterway development result from (1) managing the emerging phenomenon of eco-gentrification and (2) finding creative financing for projects outside of thriving development zones, which can attract their own capital.

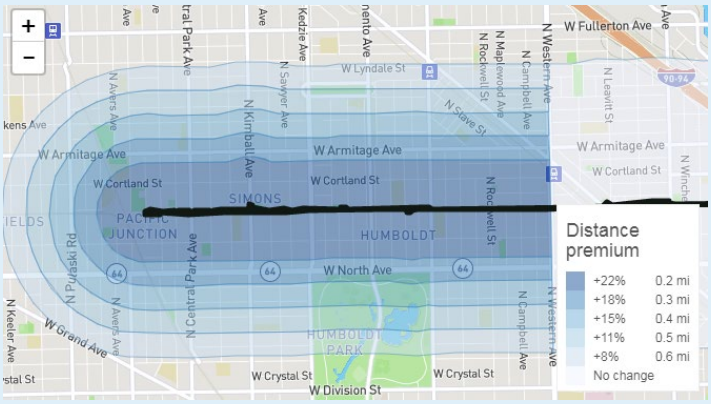
Managing Eco-gentrification in Waterway Projects

"Eco-gentrification" describes cases in which investments in green infrastructure raise the costs of living in a community such that low-income residents who lived there before the new development are progressively priced out of living there.[13] In a sense, eco-gentrification is a consequence of project's success. The central purpose of waterway and park development to make a community into a more attractive, safer place to live and work, and indeed to raise the value of property in those communities. But in low-income communities, where residents are more likely to rent property than own it, this can mean getting pushed out of the neighborhood to cheaper, less desirable places.

Perhaps the most visible example of this is New York City's High Line Park, which transformed a decommissioned elevated train line into a linear park. Since its construction, it has generated a massive real estate, tourism, and development boom that has displaced historical residents in a way that the High Line designer Robert Hammond now says "failed" the neighborhood he intended to benefit.[14] Research on the park's use, residential, and business development shows that the benefits of the

park have overwhelmingly benefited white visitors and residents.[15] The lesson here is not that linear "adaptive reuse" and remediation projects should not be done—they bring obvious financial and social benefits to cities. It is that they must be undertaken within a conscious effort to extend the benefits of development to all populations beyond merely making the space available to all populations.[16]

Doing this is challenging and requires thoughtful planning. While civic green and sustainable development plans frequently reference concern for social equity and economic inclusion, reviews of their implementation and assessment practices show very little by way of actual efforts to ensure these benefits arrive or measure their effectiveness along this dimension.[17] This is hardly surprising because a central element of most waterway development projects is providing an economic return on investment. This cannot be guaranteed from investing in poorer communities. Making the case for such projects may require emphasizing social goods, many of which have economic benefits to society at large and in the long run, even if they do not directly benefit the developer. This suggests that cities must sometimes organize their waterway development plans around the goals of social equity and expanding economic inclusivity consistently and from the beginning.



Eco-Gentrification and Chicago's 606

Much like New York's highline park, Chicago's 606 trail—also on a disused elevated rail line—shows a strong pattern of raising housing prices around it. While the access to recreation is welcome, many low-income residents have found it difficult to remain in the neighborhood as prices rose and new luxury housing replaced existing homes.

Map Source: Institute for Housing Studies, DePaul University, 2016

Inclusive and Participatory Modeling

Projects are, in general, more likely to succeed if they are planned with the active and meaningful participation of the target community. This requires more than simply soliciting community input or presenting plans publicly. Planners and government agencies often use sophisticated models for deciding where and how projects can successfully be built. The results of these decisions are often presented to communities long after all the major decisions are made and ask, primarily, for thumbs up-or-down assessments.

Alternative "participatory modeling" techniques present the key choices planners are faced with for a specific project in a way that non-experts can understand and manipulate.[18] They then solicit stakeholders to participate in experimental decision-making by examining those choices and evaluating their consequences. The value of this is two-fold. First, it involves stakeholders in the actual activity of decision-making. This may well generate new ideas, or raise concerns, that planners less directly fluent in the local community's needs and assets would not have noticed.[19] Secondly, it encourages community buy-in and support by helping non-expert stakeholders understand the trade-offs, potential value, and long-term costs that a project might bring. There are a variety of well-studied methods here that take more effort at the beginning of the project but lead to more successful and inclusive outcomes.[20]

There are existing models of this process to follow. Community leaders in Chicago, working with the Local Initiatives Support Coalition, have produced 27 Quality-of-Life Plans since 2000 generating more than $900 million in neighborhood investment.[21] These plans provide a ground-up view of development planning, through which communities can present a clearer picture of their interests, hesitations, and resources to developers.

Using Multiple Metrics for Success

Riverfront projects in a city's vibrant economic center are easy to justify for their financial returns. Potential projects further from these places, even if they are on the same waterway only a few miles away, get de-prioritized as something akin to public charity. This is a mistake that results from an overly myopic view of return on investment which can be corrected by assessing project success through multiple metrics.

Health Impact Assessments (HIAs), for instance, are already widely used to gauge the public health consequences and benefits of projects.[22] In Chicago, an HIA was used to assess potential health impacts of a new trail in Englewood.[23] An HIA was started (but not completed) to assess the potential health impacts of turning a formerly industrial riverfront parcel into park space.[24] Elements of HIAs are also being incorporated into some riverfront activation and development projects, especially in industrial areas on the South Branch of the Chicago River and on the Calumet river system.[25]

Nationally, Health Impact Assessments are used to inform physical planning decisions, including economic, housing, and recreational and environmental projects.[26] They are important for tracking equity as well. Model HIAs should include a monitoring phase in which the results of the development are measured and tracked over time and compared to the predicted impacts.

Social impact calculators, meanwhile, can be used to quantify public health and social returns on investments. These have been used, for example, by the Low Impact Investment Fund in their Social Impact Calculator (LIIF), which directs private capital investment to projects in low-income communities. Metrics within social impact

calculations can be diverse and even project specific, based on input from local residents, and targeted to measure impact on existing residents. The last of these is especially important for preventing eco-gentrification from making waterfront projects look more socially valuable than they are.

Racial equity assessment tools can be used similarly to determine whether specific policies have unintended consequences for communities of color. This approach is currently being used in school and housing decisions, and is beginning to be applied to transportation and development projects. For example, Chicago United for Equity has facilitated Racial Equity Impact Assessments to assess the unintended consequences for students of color of Chicago Public School decisions such as school closures, merges, and building new schools.[27] The same assessment tools are available to identify the racially disproportionate negative consequences of waterway contamination and the equity benefits over time of remediation and re-development.

Successful Cases of Inclusive Urban Waterway Development

Newtown Creek Alliance - New York

A community-based organization in Brooklyn, New York "dedicated to restoring, revealing and revitalizing Newtown Creek." The creek was declared a Superfund site in 2010. Since then, Newtown Creek Alliance has secured $19.5 million to pay for environmental remediation and green infrastructure. Importantly, the Alliance rejected the typical downtown waterfront redevelopment model and is prioritizing improving the industrial profile of local industrial businesses and engaging in workforce development to create local green jobs. Through their efforts, the Alliance has seen many successes – from increasing green infrastructure to manage and filter stormwater, introducing new intertidal wetlands to improve water quality and protect the shoreline and developing new education - all of which are designed to support local industry, maintain jobs and protect humans and the environment.

West Oakland - California

In the face of rising property values and concerns about gentrification, the waterfront Oakland Army Base project goes beyond a typical Community Benefits Agreement, focusing on how the project will serve the community. It promotes local jobs and local hiring and prioritizes community engagement as a key priority in the process. In partnership with the City, stakeholders developed the Community Jobs Oversight Commission, a team of developers and community members charged with overseeing the project and the West Oakland Job Center, which provides support to job seekers and helps match available positions with local candidates. This democratic approach to equitable development demonstrates the value of government and developers shifting from status quo development to an authentically inclusive process.

Financing Equitable Development

The most obvious challenge for equitable waterway development is financing. There are, however, a number of proven mechanisms that cities can use to finance projects beyond those that would arrive as a result of new development in wealthy areas. This is particularly true of waterway improvement projects because they produce health, environmental, infrastructure, and climate change resilience benefits that have well-understood economic benefits.

Waterways are linear and connected systems. Investment in their health and accessibility in one area makes investments in other areas progressively more possible. Like transit lines, it is likely more fiscally efficient to think about how to develop a waterway as a continuous system, rather than a collection of disconnected sites. One way to accelerate this is to link the waterway development in wealthy areas to funding for waterway projects in low-income areas. This can be done, for example, through linked development, which requires new higher-income development that benefits from the city's investment to contribute to opportunity funds for lower-income neighborhoods. In Chicago, the Neighborhood Opportunity Fund transfers wealth from new development to spur similar development in other parts of the city.

Chicago's Innovative Finance Toolbox: Neighborhood Opportunity Fund

One option for cities experiencing concentrated economic growth is to transfer funding from more prosperous areas of the city into those needing investment. For example, Chicago's Neighborhood Opportunity Fund focuses on reforms to the Chicago Zoning Code to leverage new downtown development in and around the Loop, which generate funds that will be redirected to the City's South and West sides. Eligible projects for this funding transfer include grocery stores, restaurants, retail, theater, and art galleries. This general approach of linked development is increasingly common as an approach to investing in connected, yet disparate geographies (i.e. along a transit line), but to our knowledge has never been deployed along a waterway corridor.

In addition to linked development funding, cities can adopt "pay for success" public-private partnerships to finance projects not linked to development elsewhere while setting the metrics for success in ways that promote equity. These programs work by transferring the risk for the project to private firms that are contracted to complete the project. The city begins by defining its goals for the project (e.g. building waterfront access via a new park, or doing water quality remediation) and the metrics that it wants to achieve under the goals of the contract (e.g. meeting health impact goals, or higher local economic productivity). The city solicits private investors to invest the capital for the projects, and then requests proposals from private implementation firms to complete the projects in ways that meet the metrics set by the city. As the project is completed, the city checks to see that the metrics

are achieved and pays the implementation firm for meeting them. The firm then pays back the private investors with whatever return they agreed upon to the initial private investors.

This pay for success model has major benefits for projects aimed at environmental remediation and social equity. It allows alternative metrics for success to be included explicitly in the terms of the contract and relies on the private sector to figure out how best to meet them. Pay for success also works more quickly because the initial capital for the project comes from the private sector, rather than through the bonding process. Private firms also have an incentive to work quickly to secure their payments. Additionally, contracts of this type may be offered to individual property owners with water frontage to encourage them to support remediation and natural habitat restoration projects that need to extend beyond frontage owned by the city. The most significant obstacle to adopting this model is that it requires cities to give up some of their direct control over how projects actually get done. But the benefits in terms of speed and shifting risk to the private sector may well be worth it.

Public-private partnerships (PPPs) are similar to the pay for success model in that desired social metrics can be made into conditions of the private contract. But PPPs tend to share the financial risk more evenly since the funding typically comes directly from the public sector rather than from private investors. The trade-off is that PPPs allow cities to have more direct control over how projects are actually executed. All three of these financing models—linked investment, pay for success, and PPPs can make equity-focused waterway development achievable.

Public-Private Partnerships – Prince George's County, Maryland

In the Washington DC area, Prince George's County planned to completely overhaul their stormwater management system and substantially reduce its impervious surface by 2025. The County engaged a private firm called Corvias to not only meet these water management goals, but also to do them in a way that achieved locally valued metrics for economic inclusion by requiring the use of small, minority, and woman-owned businesses for nearly half of the projects. The contract required that 35 percent of the businesses Corvias used be small, and minority or woman-owned. However, Corvias succeeded in using more than 80 percent minority and woman-owned businesses, with local spending in excess of 90 percent. Such examples demonstrate the capacity of well-structured PPPs to achieve socially valuable goals while rapidly meeting project deadlines.

Recommendations: Equitable Urban Waterway Development

Waterway development has the potential to produce positive effects on a range of inputs essential to greater social equity, public health, environmental quality, and economic opportunity for marginalized urban communities. But these outcomes are far from guaranteed and may even be frustrated if development planning is not done with them as explicit parts of the project. Far more is required than simply

committing to "inclusion" or "communication." Development projects must be designed to manage eco-gentrification and to adequately motivate long-term funding that achieves social equity goals. The following recommendations offer ways to increase the likelihood that waterway development beyond the downtown core will be a benefit to historically marginalized communities.

Recommendation 1: Mitigate eco-gentrification by building in safeguards to prevent the displacement of low-income residents and residents of color, and to ensure their ability to equally benefit from waterway development.

Action 1A: Involve affected communities early, robustly, and consistently in the actual planning, implementation, and monitoring of projects through participatory modeling exercises and citizen representation.

We can learn very little about what a community needs, wants, or how it will change unless it is deeply involved in the process of protecting its own special assets. There are often historical reasons for low-income communities to distrust civic re-development plans, and the only way forward is through robust, consistent, and transparent shared decision-making. Cities and private developers should use participatory modeling techniques to integrate community decision making into waterway development decisions. This should be done throughout the process and beyond it to gather a record of the consequences that changes to the physical environment have on different sub-populations.

Action 1B: Couple new developments with long-term, multi-faceted investments intended to prevent community displacement.

Because the effects of new green development are long-term, support and planning must reflect the city's commitment to the long-term goal of improving social equity and economic inclusion. This likely includes targeting additional economic supports for businesses (e.g. tax breaks, small business improvement funds, and neighborhood development grants), affordable housing development and protections, and other infrastructural improvements in a package along with waterway development to help them manage any expected transitions.

If the goal is to improve quality of life for current residents, long-term efforts to prevent displacement must be included. Projects should be completed slowly and incrementally to avoid shocking home prices. It may also make sense to adopt the "just green enough" approach in which development intentionally avoids the traditional target of "parks, cafes, and a riverwalk," in favor of more subtle forms of environmental remediation.[28] Turning a neighborhood's brownfields, disused paved areas, and hazardous sites into more natural environments has been shown to bring most of the health and wellbeing benefits of more elaborate redevelopment without substantial displacement.[29]

Action 1C: Plan and assess the success of projects with explicit metrics for social equity ad economic inclusion.

Producing real benefits will likely mean investments in low-income communities that will show much more diffuse economic returns than cities typically desire, particularly in the short-term. These outcomes are, nevertheless, extremely important. They include improvements in public health, safety, and community investment by residents, which are very valuable even if they do not produce financial returns for private or public investors. Taking this broader view of value is an intentional choice and structures how funds are raised and deployed. Example metrics include measuring increases in residents' recreational activity, water quality improvements, and biodiversity along waterfronts. New remediation and construction projects themselves can include explicit goals for hiring local and minority or woman-owned businesses and opportunities for the community to participate in its design.

Recommendation 2: Treat waterways as connected systems to coordinate development and link spontaneous new development with socially and economically beneficial projects for communities less able to command resources.

Action 2A: Prioritize environmental services and restoration, which are as (or more) important than new waterfront amenities.

The attractions of new boardwalks, boathouses, and parks are obvious. But efforts to make previously industrial or disused waterways less toxic may be much more valuable in terms of improving residents' health and safety. They also add cumulative economic benefits. Several data and finance firms, for example Lotic Labs, have begun to quantify the economic returns on water and green infrastructure to prove that these investments have positive economic value.

New green space is a good thing, but the context around it matters for its value. Environmental services, for example rewilding riverfronts to better handle flooding, can provide significant advantages both in terms of public health and in reducing the economic losses from flood events. Wetland restoration has, in some cases, been found to drastically reduce water treatment costs and reduce the need for new gray infrastructure. Environmental Protection Agency research on a wide variety of low impact development and green infrastructure projects shows large economic savings across a diverse set of contexts.[30]

Cities should begin to recognize that natural capital improvements – wetlands, natural spaces, converted brownfields, and reforested areas – are a form of infrastructure. They perform measurable functions related to water management, air quality, and transportation, and should have a prominent place in infrastructure development planning.

Action 2B: Aim planning at the areas with the worst environmental exposure risk, and those along the expanding edges of communities that are rapidly gaining wealth.

Spontaneous waterfront development driven by rising wealth offers an opportunity for cities to step in and influence the direction of projects by requiring that social

equity and controls against displacement be included and monitored by developers. Tax incentives and pay for performance agreements can be implemented to ensure that these goals are met. This should help cities prioritize locations for new waterway development projects. The other area that should be targeted is places with the most severe water quality and soil contamination problems because these are unlikely to be redeveloped without targeted government assistance.

Action 2C: Facilitate physical and transportation connections between socially separated communities.

Waterways often have the benefit of physically connecting parts of the city, but when they are in bad shape, they create barriers to interaction and transportation. Preventing communities from becoming physically and economically isolated is an important element in helping them thrive. New waterway development not only increases access to nature, but it can also be used to build new transportation links between previously disconnected communities. If well planned, these can extend access for low-income neighborhoods to services that are less available near their homes.

Recommendation 3: Proactively finance waterway development and remediation projects to achieve social and economic equity.

Action 3A: Engage the private sector in creative financing for projects that deliver social impact.

Different sorts of funding provide their own unique incentives that influence the course and value of a project for locals. The most traditional funding sources are not necessarily the best ones when seeking to deliver equity, so cities may need to be creative. Funding can be transferred from more prosperous areas of the city, for example. Private loans and funds tied explicitly to social equity gains may also be available. Cities may also look for opportunities to link water infrastructure improvements and development of waterfront environmental services.

There is an increasing volume of private capital available to finance environmental remediation projects. Pay for performance and various forms of public-private-partnerships have been used to raise this money. These contracts can be written to pay firms to meet discrete goals relevant to social inclusion—for example sourcing sub-contracting work from local businesses or requiring some percentage of new residential units be reserved for lower-income residents. Developers might also be required to purchase environmental offsets for the privilege of a new development to be used for environmental remediation elsewhere in the river system.

Cities may also consider the way waterway projects fit into a wider set of improvements, thus favoring a dispersion of resources over one major investment at a time. Cities often desire big projects that can be “unveiled” to spectators at a specific point in time, ideally, they should pursue smaller-scale projects would be implemented in neighborhoods across urban areas simultaneously.”[31]

Action 3B: Require social equity and economic inclusion assessment and reporting on all projects

Financial returns are easy to assess. Without methods for measuring and assessing the social value of waterway development, discussion of its benefits will remain abstract. There are many ways to produce such measurements, and even if they remain challenging to precisely quantify, setting clear standards and attempting to meet them is important for building resources for future projects. These measurements should take a broad view of value, including gains in public health, reported satisfaction, and ecosystem health.

Conclusion

After a long period of neglect, cities have begun to rethink the value of their waterways. But the benefits of this development have not been equitably distributed. This is a trend that is likely to continue unless cities take a proactive role in using waterway development as a social equity mechanism. This is possible, but it does not seem likely to arrive spontaneously beyond the wealthiest parts of a city.

The risks of eco-gentrification can be mitigated through inclusive and participatory development planning, and the intentional use of evaluative metrics for projects that privilege the concerns of low-income people and people of color. Special forms of financing are likely necessary to support projects in less wealthy areas, and they are available and proven. Each city's resources, and each neighborhood's needs, are diverse, and projects need to be site and community specific. But across the cases considered in this report, it is clear that equitable waterway development must be a conscientious choice. Cities that develop adaptive and creative mechanisms for remediating waterways, providing expanded access, and encouraging equitable development will reap substantial benefits for all city residents.

This piece was informed by a private workshop on "Inclusive Development of Urban Waterways" held on June 7 at the 2018 Chicago Forum on Global Cities, hosted in partnership with the Financial Times. The forum was made possible with the support of AbbVie, UL, Grant Thornton, Hyatt Hotels Foundation, Kirkland & Ellis, United, and USG, and the Robert R. McCormick Foundation. The workshop was conducted under Chatham House rules. Special thanks to Maria Aiolova, cofounder at Terreform ONE; MarySue Barrett, president of the Metropolitan Planning Council; John Ettelson, president and CEO of William Blair; Pearce Flannery of the City of Galway; Michael Koh of the Centre for Liveable Cities; and Henk Ovink, special envoy for international water affairs for the Kingdom of the Netherlands for contributing their expertise to lead the discussion. Thanks also to William Blair for providing the meeting space for the session, and to Michael Tiboris, Fellow, Chicago Council on Global Affairs and Josh Ellis, Vice President of the Metropolitan Planning Council for organizing and moderating.

About the Chicago Council on Global Affairs

The Chicago Council on Global Affairs is an independent, nonpartisan membership organization that provides insight—and influences the public discourse—on critical global issues. We convene leading global voices, conduct independent research, and engage the public to explore ideas that will shape our global future. The Council is committed to bringing clarity and offering solutions to issues that transcend borders and transform how people, business, and governments engage the world. Learn more at thechicagocouncil.org and follow @ChicagoCouncil.

Endnotes

[1] Chicago Council on Global Affairs, "Urban Waterways in Global Cities" Forum Report, June 2017.

[2] Baum-Snow, Nathaniel, Matthew Freedman, and Ronni Pavan. "Why Has Urban Inequality Increased?" McGill University, Working Paper, 2014; Sassen, Saskia. *Expulsions: Brutality and Complexity in the Global Economy*. Cambridge, MA: Harvard University Press, 2014; Fainstein, Susan. *The Just City*. Ithaca, NY: Cornell University Press, 2010.

[3] Butler, Tim. "Re-urbanizing London Docklands: Gentrification, Suburbanization or New Urbanism?." *International Journal of Urban and Regional Research* 31, no. 4 (2007): 759-781; Anguelovski, Isabelle, Linda Shi, Eric Chu, Daniel Gallagher, Kian Goh, Zachary Lamb, Kara Reeve, and Hannah Teicher. "Equity impacts of urban land use planning for climate adaptation: Critical perspectives from the global north and south." *Journal of Planning Education and Research* 36, no. 3 (2016): 333-348; Wolch, Jennifer R., Jason Byrne, and Joshua P. Newell. "Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'." *Landscape and Urban Planning* 125 (2014): 234-244.

[4] Gordon, Robert J., Ian Dew-Becker. "Controversies About the Rise of American Inequality: A Survey" National Bureau of Economic Research, Working Paper No. 13982, 2008; Stone, Chad, Danilo Trisi, Arloc Sherman, and Roderick Taylor. "A Guide to Statistics on Historical Trends in Income Inequality" Center on Budget and Policy Priorities Report, 2018.

[5] Lester, James, David Allen, and Kelly Hill. *Environmental Injustice in the U.S.: Myths and Realities.* New York: Taylor & Francis, 2001.

[6] Clark, Lara P., Dylan B. Millet, and Julian D. Marshall. "National patterns in environmental injustice and inequality: outdoor NO2 air pollution in the United States." *PloS one* 9, no. 4 (2014): e94431.

[7] Chicago Council on Global Affairs, "Urban Waterways in Global Cities" Forum Report, June 2017.

[8] Korfmacher, Katrina Smith, Katia Aviles, B. J. Cummings, William Daniell, Jared Erdmann, and Valerie Garrison. "Health Impact Assessment of urban waterway decisions." *International journal of environmental research and public health* 12, no. 1 (2015): 300-321.

[9] Douglas, Timothy. "Amenitizing Urban Waterways: Planning Public Space Improvements with Vulnerable Communities in Mind." Luskin School of Public Affairs, University of California, Los Angeles, 2017.

[10] Wolch, Jennifer R., Jason Byrne, and Joshua P. Newell. "Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'." *Landscape and Urban Planning* 125 (2014): 234-244.

[11] Dunn, Alexandra Dapolito. "Siting Green Infrastructure: Legal and Policy Solutions to Alleviate Urban Poverty and Promote Healthy Communities." *Boston College Environmental Affairs Law Review* 37, no. 1 (2010): 41.

[12] Wessells, Anne Taufen, and Raul P. Lejano. "Urban Waterways and Waterfront Spaces: Social Construction of a Common Good." *Journal of the Southwest* 59, no. 1 (2017): 106-132.

[13] Dale, Ann, and Lenore L. Newman. "Sustainable development for some: green urban development and affordability." *Local environment* 14, no. 7 (2009): 669-681.

[14] Bliss, Laura. "The High Line's Next Balancing Act." CityLab. February 7, 2017. https://www.citylab.com/solutions/2017/02/the-high-lines-next-balancing-act-fair-and-affordable-development/515391/?utm_source=nl__link3_020717; Smith, Geoff, Sarah Duda, Jin Man Lee, and Michael Thompson. "Measuring the Impact of the 606: Understanding

How a Large Public Investment Impacted the Surrounding Housing Market." Institute for Housing Studies, DePaul University, 2016.

[15] Alexander J. Reichl (2016) The High Line and the ideal of democratic public space, Urban Geography, 37:6, 904-925, DOI: 10.1080/02723638.2016.1152843

[16] Hasse, Dagmar, et al. "Greening cities — To be socially inclusive? About the alleged paradox of society and ecology in cities." Habitat International 64 (2017) 41-48

[17] Martin, Amanda Whittemore. "Social equity in urban sustainability initiatives: strategies and metrics for Baltimore and beyond." PhD diss., Massachusetts Institute of Technology, 2011.

[18] Zellner, Moira L., Leilah B. Lyons, Charles J. Hoch, Jennifer Weizeorick, Carl Kunda, and Daniel C. Milz. "Modeling, Learning, and Planning Together: An Application of Participatory Agent-based Modeling to Environmental Planning." *Journal of the Urban & Regional Information Systems Association* 24, no. 1 (2012).

[19] Douglas, Timothy. "Amenitizing Urban Waterways: Planning Public Space Improvements with Vulnerable Communities in Mind." Luskin School of Public Affairs, University of California, Los Angeles, 2017; Pearsall, Hamil, and Joseph Pierce. "Urban sustainability and environmental justice: evaluating the linkages in public planning/policy discourse." *Local Environment* 15, no. 6 (2010): 569-580.

[20] Voinov, Alexey, Karen Jenni, Steven Gray, Nagesh Kolagani, Pierre D. Glynn, Pierre Bommel, Christina Prell et al. "Tools and methods in participatory modeling: Selecting the right tool for the job." *Environmental Modelling & Software* 109 (2018): 232-255.

[21] "Quality-of-Life Planning." LISC Chicago. http://www.lisc.org/chicago/our-work/comprehensive-community-development/quality-of-life-planning/.

[22] Korfmacher, Katrina Smith, Katia Aviles, B. J. Cummings, William Daniell, Jared Erdmann, and Valerie Garrison. "Health Impact Assessment of urban waterway decisions." *International journal of environmental research and public health* 12, no. 1 (2015): 300-321.

[23] Illinois Public Health Institute (IPHI) and the Chicago Department of Public Health (CDPH). "Health Impact Assessment of the Proposed Englewood Line Trail." November 2016.

[24] Adler Institute on Social Inclusion. "Update: Institue on Social Exclusion Assessing Health Impact in Chicago's Pilsen, Little Village Communities." Adler University, 2015.

[25] Riggio, Kara. "Neighborhoods take action on their local riverfront." Metropolitan Planning Council, 2017.

[26] Human Impact Partners, https://humanimpact.org/research/, 2019

[27] Chicago United for Equity, Citywide, https://www.chicagounitedforequity.org/citywide, 2019

[28] Rajamani, Maya. "'We Failed' To Design Park That Benefited Neighbors, High Line Creator Says." dna info. February 13, 2017. https://www.dnainfo.com/new-york/20170213/chelsea/high-line-citylab-robert-hammond/#.

[29] Wolch, Jennifer R., Jason Byrne, and Joshua P. Newell. "Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'." *Landscape and urban planning* 125 (2014): 234-244.

[30] U.S. Environmental Protection Agency. "Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs."

[31] Haffner, Jeanne. "The dangers of eco-gentrification: what's the best way to make a city greener?" *The Guardian.* May 6, 2015