The Next Urban Giants

A Practical Guide to the Future of City Building

INTRODUCTION

The following reference guide or “greenprint” was developed to document and highlight the key issues that emerged from the Next Urban Giants convening, which was held July 30-August 1, 2019 in Seattle, Washington. The goal of this workshop was to bring together a group of 50 experts from a wide array of sectors, disciplines and localities to discuss how growing megapolitan regions can increase resilience and equity through urban greening. This multidisciplinary workshop was funded by a National Science Foundation Sustainable Urban Systems conference grant (#1929824) awarded to Washington State University in connection with NSF’s Dear Colleague Letter (NSF 19-032).

Many individuals and organizations contributed their time and expertise to help plan, secure funding for, and conduct this conference. The conference committee was led by Planning Chair and Principal Investigator (PI), Brad Gaolach, from Washington State University. Conference planning committee members included: Brody Abbott from Ecotrust; Scott Altenhoff from the City of Eugene; Jessie Israel from The Nature Conservancy; Ani Jayakaran (Co-PI) from Washington State University; Julie Padowski (Co-PI) from Washington State University; Aaron Ramirez (Co-PI) from Reed College; Patricia Townsend (Co-PI) from Washington State University; Thaisa Way from the University of Washington; and Kim Zentz from Urbanova. A full conference participant acknowledgment roster can be found at the end of this document.

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Humans must equitably participate with nature and with each other.

Our climate is changing. We must think holistically about our place in the world and how we can play a regenerative role with nature beyond a mitigation mindset.

We must do this work for the benefit of and with the participation of all people. A holistic and inclusive approach should account for humanity's needs in a way that supports and integrates with natural systems. This is how we achieve true sustainability.

This guide is not meant to tell you what to think, but rather to suggest *how* to think. It is meant to help people describe to their decision-makers the direction we must go in to achieve these goals. It is meant for decision-makers to consider these concepts when crafting policy. Finally, it is meant to assist our society-building with authentic engagement that allows for humankind to thrive in balance with our environment.

Human Well-being

Photo credit: Khoo Teck Puat Hospital

Health & Social Well-being

There are certain fundamental human needs that must be met in order for all people to be well and thrive physically and psychologically. These basic needs are critical foundations for people to be able to achieve their maximum potential to themselves, their families, and their communities. We now know that in addition to the obvious needs for clean air and water, nutritious foods, and shelter, regular exposure to nature plays a major role in human well-being. By creating an environment that allows equitable access to each of these needs, stability is created which reduces stress, increases personal resilience, and allows for healthy and productive social interactions.

Policy Recommendations

- Enhance access to nutritious, affordable food and clean water
- Create zoning laws and local programs that allow and incentivize affordable housing
- Enhance access to comprehensive health and human services
- Provide inclusive and equitable access to quality education
- Provide ample access to nature and greenspace
- Foster community safety and well-being through local programs and design of the built environment

Case Study: Khoo Teck Puat Hospital Singapore, Republic of Singapore

This hospital was designed so that, in the words of their Ex-CEO, “one’s blood pressure lowers when he/she enters the hospital grounds.” This ambitious goal has been realized thanks to the total integration of nature into all elements of the buildings and campus. By immersing patients, visitors and staff in a therapeutic, forest-like environment, they are able to move beyond their physical ailments, worries and daily stressors, and heal. Every aspect of this site was designed to be calming and rejuvenating. This is the essence of salutogenic (health-promoting) design.

Making Connections

In addition to having a multitude of garden views, there are a number of engaging and educational rooftop food gardens growing 100 different types of fruit trees, 50 types of vegetables and 50 types of herbs. The organic produce that is grown in them is used in the hospital kitchen.

The many native plants and water features that were incorporated into the site design of this hospital campus attract a wide variety of birds and butterflies. It also serves as a peaceful community gathering spot, where neighbors can attend public lectures, exhibitions, and take part in educational programs.

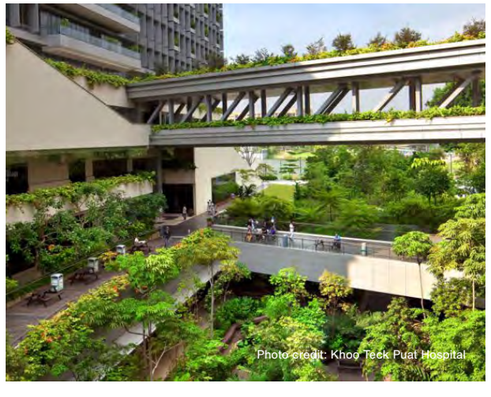


Photo credit: Khoo Teck Puat Hospital

Governance & Policy

A primary role of government is to help create and maintain the conditions for all people to find their own happiness. This is accomplished largely through sound planning and effective public administration, in order to help prevent the interests of the powerful and priveleged few from overriding the interests of the many. Good leadership, governance and policy-making are essential to help regulate the forces that contribute to the inequitable and unjust distribution of power and wealth, and to provide for the true common good.

Policy Recommendations

- Create planning processes that are iterative and focus on multi-generational horizons and outcomes
- Close the opportunity gap and create an environment for equitable economic growth
- Mitigate social, ecological, and conflict displacement and social injustices
- Protect vulnerable communities and correct past and prevent future injustices in the criminal justice system
- Create sustainable initiatives that encourage social and economic upward mobility

Case Study: Seattle Future City: Resilience Roadmap

Seattle's unique geographic location and exponential growth over the last several decades have brought an amazing amount of diversity to the city, but have also resulted in risks and vulnerabilities that reduce the city's ability for equity and resilience. The City of Seattle developed a framework delineating specific goals to guide policy decisions that foster an equitable environment for all residents to thrive in.

The Focus

Seattle's new framework focuses on lengthening their decision horizon to include multi-generational investment and decision-making. They created goals to incentivize economic opportunities to make Seattle an affordable city through the lenses of equity, civic pride, natural resilience, and climate change.

This multi-generational approach to decision making allows Seattle to prepare for acute shocks, such as earthquakes - while also addressing systemic issues faced by many cities such as social injustices, affordability, homelessness, and public safety.

Portland, OR

Equitable Engagement

For a community to successfully offer a sustainable and high quality of life for all residents, decision-making must include those who are most susceptible to social and economic challenges, especially those who have been historically omitted from the conversation. Equitable and inclusive community outreach and engagement is an iterative process and must be continuously maintained in order to minimize negative impacts on those most vulnerable. An equitable community outreach and engagement process must uplift all voices and share the power of decision-making with all residents.

Policy Recommendations

- Identify your community's history, demographics, social networks and economic conditions
- Create an iterative engagement process that is accessible to all and allows for listening, learning, and changing.
- Build trust and strengthen community relationships
- Maintain trust through sustained engagement
- Identify and remove policies and processes that disproportionately have negative impact on marginalized communities

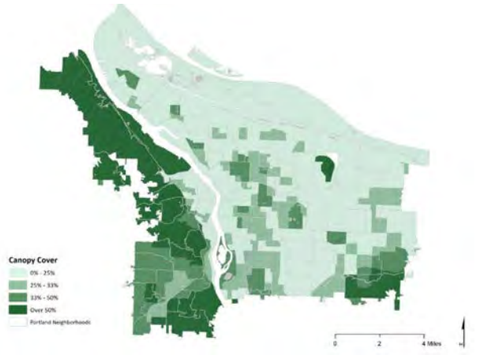
Case Study: Branch Out PDX Portland, Oregon

In 2016, Portland Parks and Recreation partnered with Portland State University to look at how the city might equitably increase their urban tree canopy cover (UTC) and ensure that historically underserved neighborhoods would both benefit from and play an active role in these efforts. Lower income neighborhoods, communities of color, and areas with a higher percentage of refugees and immigrants tend to have fewer trees and less of the essential ecosystem services that directly support human health and contribute to urban livability. These are the same communities that will be most severely impacted by our changing climate.

Inclusivity & Greening

A primary goal to getting more trees planted strategically and equitably throughout the city was to do so through increased public involvement and authentic engagement that cultivated respect, mutual understanding, and cooperation.

Key elements of the community engagement process were: a Community Advisory Committee (CAC) with strong representation from disadvantaged communities, culturally-specific focus groups to build trust and conduct stakeholder interviews, and a well-crafted and widely distributed public survey.



Tree Canopy in Portland
Image: Portland Parks & Recreation

Economy & Transportation

Prosperity

Prosperity through economic growth has long been the dominant idea of our current global society; however, economic growth alone does not ensure prosperous and fulfilling lives for humanity. We must take a holistic approach to growth by supporting social inclusion and protecting our planet so that it can support the needs of future generations. There is more than enough opportunity, income, and power to go around and we must create our society to build upon shared assets rather than the exploitation of many to enrich a few.

Policy Recommendations

- Create an environment that is just, equitable, and tolerant of all people with respect for gender, race, ethnicity, and cultural diversity
- Promote respect for human rights and human dignity
- Implement public policies that support an informed and healthy democracy
- Be mindful of and inclusive of the needs of the most vulnerable members of society
- Create equitable tax structure that minimizes wealth disparity and funds well-being initiatives
- Improve wages and job quality

Photo: The Urban Twist

Case Study: Transforming Our World: the 2030 Agenda for Sustainable Development United Nations, Worldwide

The United Nations took a step towards redefining prosperity by adopting this agenda. Their goal is to ensure that all people can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature. This holistic approach goes beyond material needs and includes values, relationships, freedom to think, act and participate.

Shared Prosperity

Indicators of success are measured at the global, regional, and national levels and address basic needs for humans to prosper including ending poverty and hunger, better education and healthcare, gender equality, sustainable economic growth, and sustainability of our planet.

This visionary planning document acknowledges the concept of nature as having certain rights. It points out that we humans, as stewards of the planet, must ensure that all of our decisions align with this fact, be inclusive, and environmentally sound.

Transportation

Transportation systems are more than a way to move people and goods. They provide the connectivity for healthy, vibrant communities and have a direct correlation with the health and well-being of the people and communities they serve. Communities should consider prioritizing accessibility and affordability of transportation options in addition to mobility so that people have better access to necessary elements for a high quality of life. Research has demonstrated that properly designed transportation systems provide health benefits, improve safety, lower stress, connect people with opportunities, and connect disadvantaged people to social support services.

Policy Recommendations

- Build safe and convenient walking, bicycling, and public transit systems
- Prioritize transportation funding for projects in low-income and rural communities
- Utilize full-cost/life cycle accounting; look at costs vs. value and not just implementation costs
- Support transportation modes that lessen environmental impacts
- Integrate land use and transportation planning to encourage equitable and affordable transit-oriented development

Photo credit: Alstom

Case Study: The Coradia iLint Frankfurt Rhine-Main Area, Germany

The Coradia iLint is the world's first passenger train powered by a hydrogen fuel cell. This zero-emission train produces only steam and condensed water as exhaust and emits low levels of noise. Specifically designed to utilize existing non-electrified rail infrastructure, it provides a clean and sustainable means for the transportation of people and can be built in large quantities.

The Future of Transit

As the demand for urban mobility increases, reducing the environmental impact from our transportation systems will be a crucial step in mitigating the effects of climate change. The trains use fuel cells to convert a mixture of hydrogen and oxygen into electricity.

Any surplus energy produced is stored in onboard ion-lithium batteries. Since steam and water are the only emissions, these trains can move many people around while eliminating a major source of greenhouse gas emissions.

Photo credit: Werner Pluta/Golem.de

Economic Development

A thriving economy should work in cooperation with natural systems in a way that allow both to thrive. Sustainable physical and virtual economies account for the planet, people, and profit in harmony with one another and do not prioritize one of these areas at the expense of the others. Sustainable economies offer stability, making them resilient to shocks and stresses that can often disproportionately impact vulnerable communities.

Policy Recommendations

- Incentivize businesses that support stakeholder value over shareholder value
- Use local assets and natural systems to create economic diversity
- Require education and licensing of businesses and developers that teach and require best holistic practices, energy efficiency, water conservation, and passive design techniques
- Disincentivize an extractive economy. Incentivize a recycling or replenishing economy

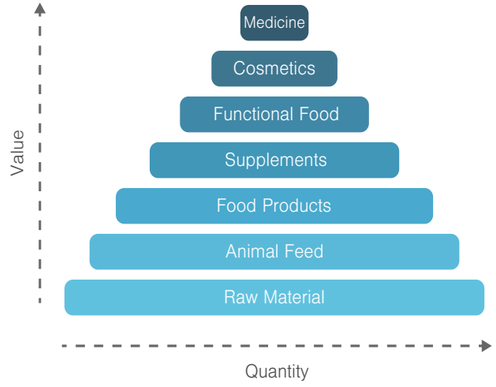
Case Study: Icelandic Ocean Cluster Reykjavik, Iceland

The Icelandic Ocean Cluster is a network of marine industries that leverage connections and interactions to foster sustainable economic development and innovation at a regional scale. The fishing industry has long been an important economic driver for Iceland and this coalition of entrepreneurs has allowed new businesses to thrive by fostering innovations and sustainable management of marine resources.

Their Model

The Icelandic Ocean Cluster provides incubator and research space for entrepreneurs in the marine industry. The shared working environment has created a platform for innovation across companies and sectors that has fostered new business opportunities and biotechnical advances in the industry.

Over 50 companies have created products that result in total utilization of caught fish. This has allowed supporting sectors to rise alongside the base industry of fishing. In 2011, it is estimated that the ocean cluster provided a total contribution of 27.1% to the Icelandic GDP.



Ecological Integration & Resilience

Liupanshui Minghu Wetland Park
Photo credit: Turenscape

Wellington, NZ

Food, Water, & Energy

According to the Food and Agriculture Organization of the United Nations, water security, energy security, and food security are interdependent sectors necessary for human well-being. Actions in one of these areas typically affect change in the others. As the world population continues to grow, demands on these systems increases and require sustainable management solutions.

Policy Recommendations

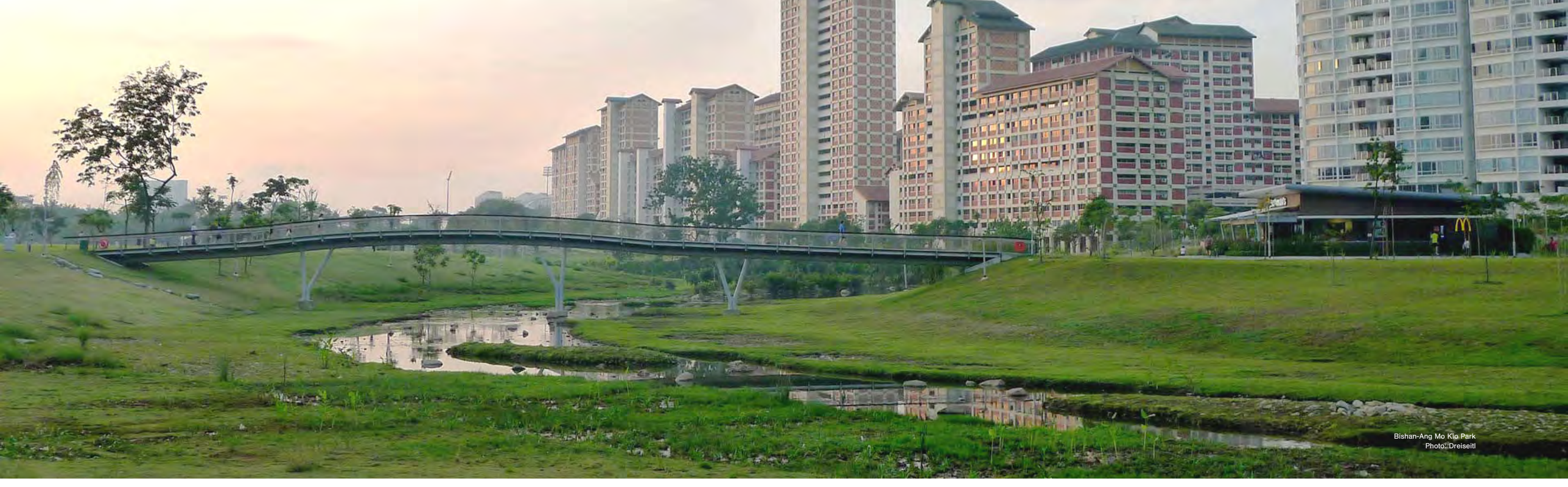
- Air quality, water quality, soil health, ecological connectivity must be at the forefront of these systems
- Maintain local control of production/management and be adaptable, scalable, replicable systems
- Systems must be decentralized, diverse, and well-coordinated; a network of networks (modularity)
- Strive for closed-loop systems that efficiently use waste and byproducts
- Create compact land use patterns that protect and minimize impacts on agricultural land

Case Study: Flexible Energy Supply Wellington, New Zealand

Nestled around a beautiful harbor near the sea, New Zealand's capital of Wellington has a long history of resilience. It's location, while ideal and picturesque, leaves the city highly susceptible to earthquakes and severe storms. The city's more than 400,000 residents decided to enhance their vulnerable power supply by shoring up critical infrastructure through decentralization.

Virtual Power Plant

A Virtual Power Plant utilizes numerous power sources that are independently owned and operated. Wellington implemented a three-pronged approach to enhancing their power system. They equipped homes with solar panels, which allowed homes to maintain power during outages and feed power back into the grid. Next, they empowered homeowners with a 'resilience upgrade' pack of emergency essentials that allows them to be community points of refuge during disruptions. Finally, they upgraded their central grid. The combination of these reduced homeowner power costs by up to 80% and reduced repair time of the grid by up to 12 weeks.



Bishan-Ang Mo Kio Park
Photo: Dreiseitl

Urban Design & Infrastructure

Our built environment should maximize human integration into natural systems. A city's architecture and urban form should be complementary to its local ecology and culture. We must design our cities to participate with nature instead of working against it. Our land use and development patterns must be compact, diverse, and connected and serve the overall well-being for all people.

Policy Recommendations

- Assess the local ecosystem to identify opportunities for environmental conservation and regeneration inclusive of hydrological systems, topography and soil conditions, and vegetation and habitat
- Build efficiently and compactly in order to preserve ecologically sensitive areas
- Incorporate biophilic design into architecture and infrastructure that protects and regenerates the environment
- Create equitable physical and digital connectivity across diverse populations

Brooklyn Bridge Park
Photo: Julienne Schaer

Case Study: Bishan-Ang Mo Kio Park
Bishan, Singapore

The Bishan-Ang Mo Kio Park converted an existing concrete drainage canal into a meandering river with ecologically restorative function in an urban area. The city is prone to flash flooding and the park operates as a floodplain, providing recreational greenspace when water levels are low that becomes a riparian conveyance channel during heavy rain. Similar to natural river systems, the new river channel meanders with varying widths creating natural habitats teeming with biodiversity.

Ecological Restoration

The enhanced naturalized river has increased its conveyance capacity by over 40% and increased the park's biodiversity by over 30% even though no new wildlife was introduced.

A total of 59 species of birds and 66 species of wildflower have been identified in the park. As a testimonial to the project, a family of otters now call the park home with otters previously having been spotted only along the coastal areas.

Photo: Dreiseitl

Resilience

At its essence, resilience is about adjustment to, and capacity for, change. The success of any sustainable system includes the ability to quickly recover from shocks and stress and evolve as needed. The world changes. Natural and human-made systems change. We must allow these systems to similarly adapt and evolve and communities must be aware of their strengths and weaknesses in order to best prepare for them.

Policy Recommendations

- Establish a community vision of resilience
- Identify risks and vulnerabilities in city systems; consider both natural and man-made disasters
- Collaborate with local and regional partners to inform and support each other and identify shared systemic relationships
- Develop a resilience plan comprised of goals, strategies, and priorities to mitigate the impacts of system shocks and stressors
- Provide a framework and resources to implement actions

Image: BIG Architects

Case Study: CYREN Network Amsterdam, Netherlands

As our communities become increasingly digitized, the threat of disruption to essential services also continues to increase. The Netherlands is one of the top three countries targeted for cyber attacks according to the Amsterdam Port Authority. Their port region is one of the largest digital logistical hubs in the world and being able to defend and recover from these attacks is crucial in maintaining operations on an international scale.

Digital Resilience

The CYREN Network (Cyber Resilient North Sea Canal Area) takes a collaborative approach and collects and shares information about cyber threats with companies in the network. This allows the companies to prepare for possible cyber attacks in the region.

It is supported by a hotline that companies can call if they notice any attacks that could impact the region. The hotline is maintained and staffed by the Harbour Master which allows quick and efficient dissemination of valuable information that could prevent or mitigate the damage of these attacks for other companies.

Further Information Regarding Urban Greening

Human Health and Social Well-being:

Green Cities: Good Health
http://depts.washington.edu/hhwb/
Green Infrastructure & Health Guide
https://willamettepartnership.org/wp-content/uploads/2018/07/Green-Infrastructure-Health-Guide_DIGITAL-VERSION-FINAL_reduced.pdf
Washington State Recreation & Conservation Office
https://www.rco.wa.gov/documents/fact_sheets/RCO.pdf

Governance & Policy:

Sustainability and Governance
https://meetingoftheminds.org/category/sustainability/governance
Green Governance: Ecological Survival, Human Rights and the Commons
http://wealthofthecommons.org/essay/green-governance-ecological-survival-human-rights-and-commons
Bottom-up approaches not always good for natural resource management
https://www.stockholmresilience.org/research/research-news/2019-06-24-a-buzz-or-a-baller.html
The Emerge Leadership Project
https://living-future.org/emerge-leadership-project/#education

Equitable Engagement:

The City Project
https://www.cityprojectca.org/healthy-green-land-use-equitable-development-and-civic-engagement-through-planning-by-and-for-the-community
Community Engagement Guidance
https://www.fundersnetwork.org/wp-content/uploads/2017/07/Partners-for-Places-Community-Engagement-Guidance.x78069.pdf
How cities are reworking their approaches to homelessness
https://www.smartcitiesdive.com/news/how-cities-are-reworking-their-approaches-to-homelessness/505950/

Prosperity:

The Case for Basic Income
https://meetingoftheminds.org/case-basic-income-16192
The Block Project
https://living-future.org/affordable-housing-the-block-project/
Economy and Equity
http://www.frameworksinstitute.org/economy-equity.html
How can cities redefine 'smart' to include equity? 6 leaders weigh in
https://www.smartcitiesdive.com/news/how-can-cities-redefine-smart-to-include-equity-6-leaders-weigh-in/562906/

Transportation:

New Urbanism-Green Transportation
http://www.newurbanism.org/transport.html
How & Why to Create a Culture of Innovation in Transportation Agencies
https://meetingoftheminds.org/how-why-to-create-a-culture-of-innovation-in-transportation-agencies-30013
Sustainable Transportation
https://www.asla.org/sustainabletransportation.aspx

Economic Development:

What is a "Green Economy?"
https://www.wri.org/blog/2011/04/qa-what-green-economy-0
The Economic Benefits of Green Infrastructure: A Case Study of Lancaster, PA
https://www.cnt.org/sites/default/files/publications/CNT_EPA_LancasterGICaseStudy.pdf
Markets for Better Water Quality
https://willamettepartnership.org/water-quality-trading/

Urban Design & Infrastructure:

Biophilic Design Initiative
https://living-future.org/biophilic-design-overview/
High-rise forests in Italy are fighting air pollution
https://www.theverge.com/2017/8/9/16112758/milan-vertical-forest-stefano-boeri-video
The Institute for Sustainable Infrastructure
https://sustainableinfrastructure.org/about-isi/
Cities and Urban Design Forecast
https://www.gensler.com/df2019-cities-urban-design

Food, Water, & Energy Resource:

What is Permaculture?
https://oaec.org/our-work/projects-and-partnerships/permaculture/what-is-permaculture/
The Permaculture Principles
https://www.youtube.com/watch?v=0mwRAf3z9ag
Social Equity Through Clean Energy
https://meetingoftheminds.org/social-equity-through-clean-energy-30837

Resilience:

Redefining Philanthropy for Urban Resilience
https://meetingoftheminds.org/redefining-philanthropy-for-urban-resilience-31100
Resilience Strategies along the Rural-Urban Transect
http://uli.org/wp-content/uploads/ULI-Documents/ULI-Resilience-Strategies-along-the-Rural-Urban-Transect-final.pdf
High Point Case Study from Seattle, WA
https://developingresilience.uli.org/case/high-point/

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